SECTION HAC

HEATER & AIR CONDITIONING CONTROL SYSTEM

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PRECAUTION

PRECAUTIONS

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

INFOID:0000000013554057

Risk of injury

There is a risk of injury caused by parts becoming projectiles if uncontrolled deployment of air bag or seat belt pre-tensioner occurs, or by storing air bag with the deployment side facing downwards. When scrapping air bag or seat belt pre-tensioner by means of controlled deployment, there is also a danger present if a sufficiently safe distance is not maintained, or if opening using cutting torches or other cutting tools, or due to smelting or if parts that are not yet triggered are exposed to a blaze or a smoldering fire at landfills.

Safety instructions/precautions

- Removed air bag must always be stored with deployment side facing up.
- Acquisition, transportation, storage, testing and assembly work should only be performed or supervised by properly trained personnel.
- Install air bag or seat belt pre-tensioner immediately following retrieval from storage.
- Air bag and seat belt pre-tensioner must be protected from flying sparks, open fires and temperature exceeding 100°C (212°F).
- Never transport air bag and seat belt pre-tensioner in the passenger compartment. Store them securely in the luggage room of the vehicle in their original replacement part packaging and secure them so that they cannot slip around.
- Never allow air bag and seat belt pre-tensioner to come into contact with grease, oil, or cleaning agents.
- Perform system tests using approved testing equipment only, and only when the units are properly installed and the vehicle is unoccupied.
- Before the initial hookup of the battery or an external power supply, the ignition must be switched on and the vehicle unoccupied.
- Air bag and seat belt pre-tensioner that fall from a height of more than 0.5 m must be replaced.
- When scrapping by means of controlled deployment of air bag and seat belt pre-tensioner, a safe distance of at least 10 m must be maintained.
- Before starting work on air bag and seat belt pre-tensioner and work on components that are connected to air bag and seat belt pre-tensioner or require and intervention in their electric circuit (e.g. when removing the steering wheel):
- Disconnect any external power sources (e.g. charger).
- Disconnect and insulate ground line of battery
- Before starting bodywork in combination with welding or retrofitting, during which work is performed on uninsulated, current-carrying lines or require an intervention in their electric circuit (e.g. when removing the steering wheel):
- Disconnect any external power sources (e.g. charger).
- Disconnect and insulate ground line of battery.
- During welding, disconnect plug connection and from control unit of air bag.
- When the air bag deploys, the pyrofuse activates and the power source from the battery is disconnected. This prevents possible fires caused by electric leakage after an accident occurs.

Precautions for Removing Battery Terminal

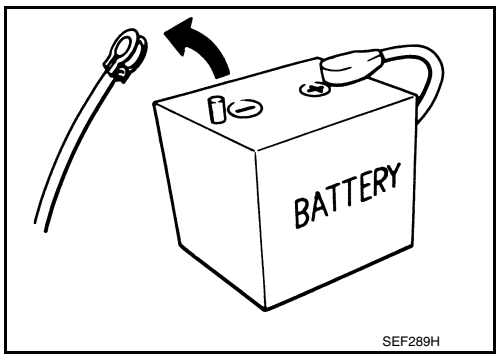
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When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

BR08DE	: 4 minutes	YD25DDTi	: 2 minutes
D4D engine	: 20 minutes	YS23DDT	: 4 minutes
HRA2DDT	: 12 minutes	YS23DDTT	: 4 minutes
K9K engine	: 4 minutes	ZD30DDTi	: 60 seconds
M9R engine	: 4 minutes	ZD30DDTT	: 60 seconds
R9M engine	: 4 minutes		
V9X engine	: 4 minutes		



NOTE:
ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

NOTE:
- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
  - Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
  - Driving for 30 minutes or more on a steep slope.

- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

NOTE:
If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

NOTE:
The removal of 12V battery may cause a DTC detection error.

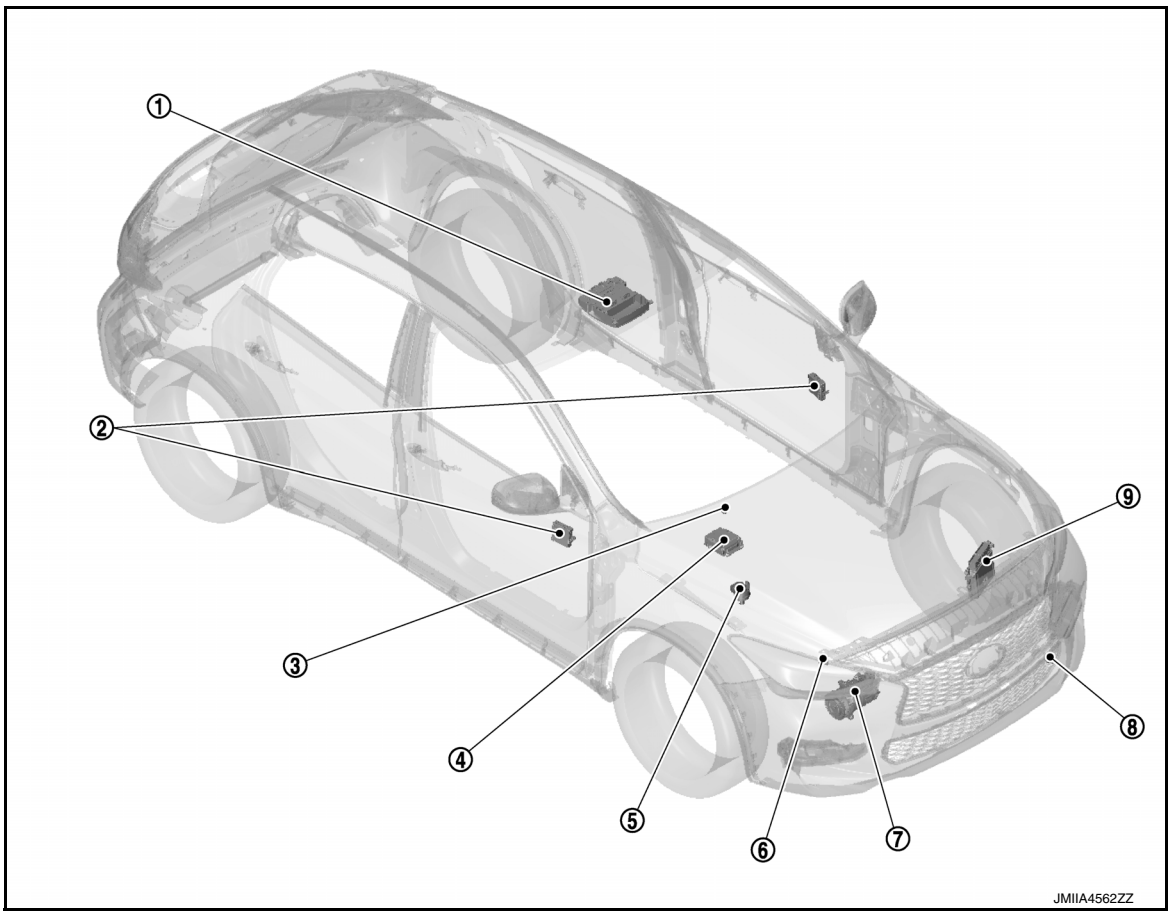
SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

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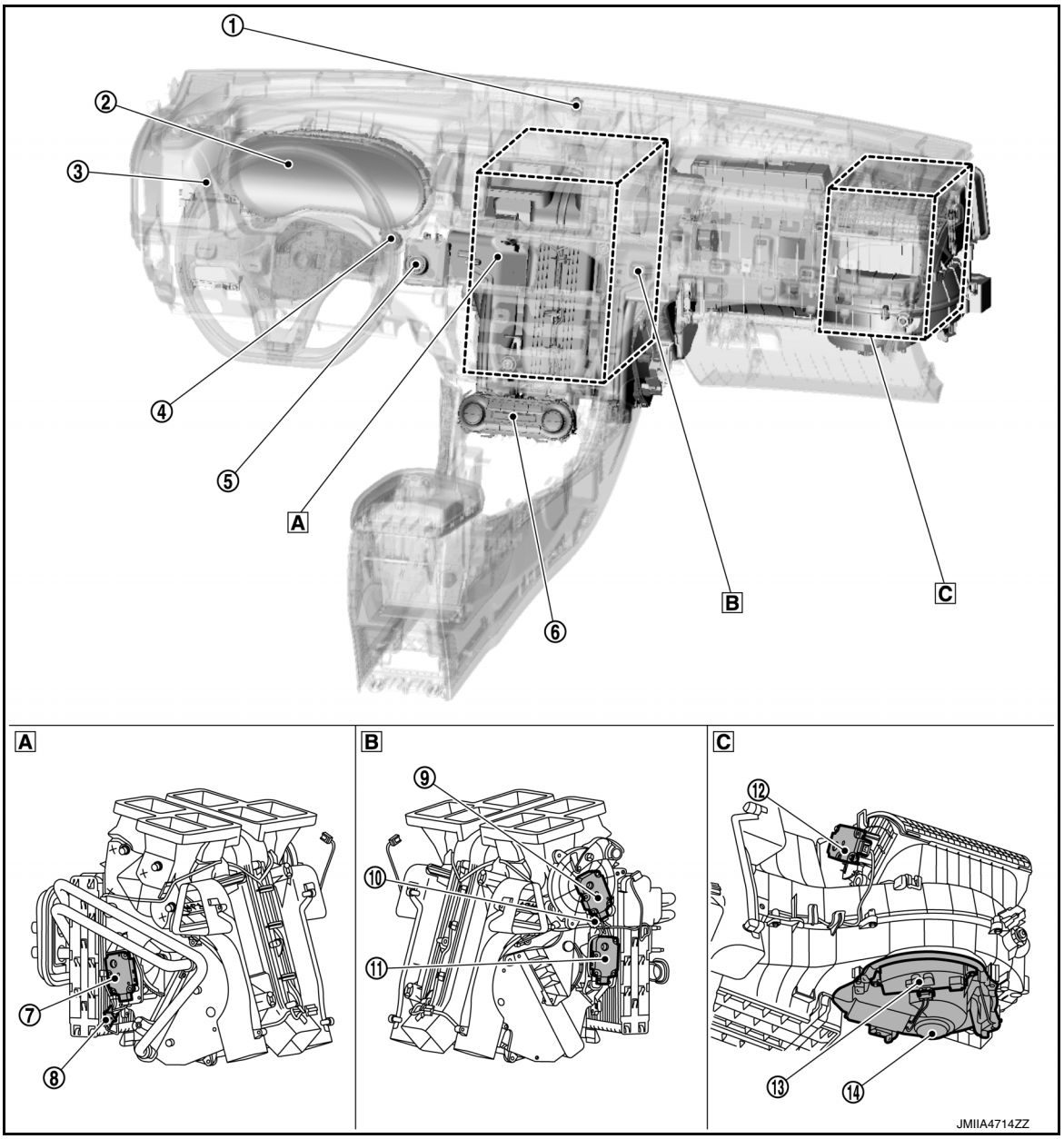
VEHICLE COMPARTMENT



No.	Component	Function
①	Overhead control panel control unit (Interior temperature sensor with integrated fan)	Refer to HAC-11, "Interior Temperature Sensor with Integrated Fan".
②	Front door control unit	• Transmits mainly the following signals to A/C auto amp. via CAN communication. - Door rotary tumbler switch status signal - Side window position signal Refer to DLK-10, "DOOR LOCK SYSTEM : Component Parts Location" for detailed installation location.
③	Air quality sensor	Refer to HAC-12, "Air Quality Sensor".
④	Air bag diagnosis sensor unit	• Transmits mainly the following signals to A/C auto amp. via CAN communication. - Crash signal Refer to SRC-8, "Component Parts Location" for detailed installation location.
⑤	Coolant circulation pump	Refer to HAC-12, "Coolant Circulation Pump".
⑥	Refrigerant pressure sensor	Refer to HAC-12, "Refrigerant Pressure Sensor".
⑦	Compressor	Refer to HAC-12, "Compressor".

No.	Component	Function
⑧	Ambient sensor	Refer to HAC-12, "Compressor".
⑨	ECM	• Receives mainly the following signal from A/C auto amp. via CAN communication. - Idle speed increase signal - Cooling fan motor request signal • Transmits mainly the following signals to A/C auto amp. via CAN communication. - Engine running signal - Engine coolant temperature signal - Engine speed signal • Controls the cooling fan motor. Refer to EC-27, "Component Parts Location" for detailed installation location.

INTERIOR COMPARTMENT



A Left side of heater & cooling unit assembly

B Right side of heater & cooling unit assembly

C Blower unit assembly

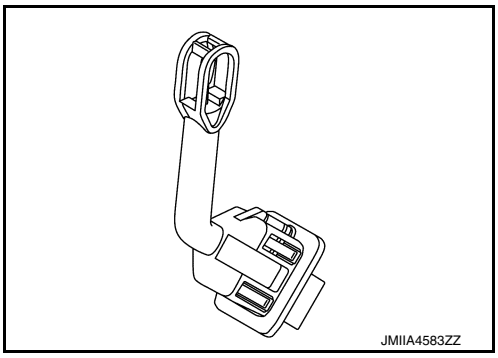
No.	Component		Function
①	Sunload sensor		HAC-11, "Sunload Sensor"
②	Combination meter		• Transmits mainly the following signals to A/C auto amp. via CAN communication. - Vehicle speed signal - Evaporator drying request signal
③	BCM		• BCM inputs the ambient temperature sensor signal. • Receives mainly the following signal from overhead control panel control unit via LIN communication. - Vehicle interior temperature signal • Transmits mainly the following signals to A/C auto amp. via CAN communication. - Outside temperature signal - Vehicle interior temperature signal - Door rotary tumbler switch status signal Refer to BCS-8, "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.
④	In-vehicle sensor		HAC-11, "In-vehicle Sensor"
⑤	Electronic ignition switch control unit		• Transmits mainly the following signals to A/C auto amp. via CAN communication. - Ignition switch status signal • Electronic ignition switch control unit has a gateway function for CAN communication.
⑥	A/C control (A/C auto amp.)		HAC-10, "A/C Control (A/C Auto Amp.)"
⑦	Heater & cooling unit assembly	Air mix door motor LH	HAC-9, "HEATER & COOLING UNIT ASSEMBLY : Air Mix Door Motor LH"
⑧		Intake sensor	HAC-8, "HEATER & COOLING UNIT ASSEMBLY : Intake Sensor"
⑨		Mode door motor	HAC-9, "HEATER & COOLING UNIT ASSEMBLY : Mode Door Motor"
⑩		Central air distribution position detection microswitch	HAC-8, "HEATER & COOLING UNIT ASSEMBLY : Central Air Distribution Position Detection Microswitch"
⑪		Air mix door motor RH	HAC-9, "HEATER & COOLING UNIT ASSEMBLY : Air Mix Door Motor RH"
⑫	Blower unit assembly	Intake door motor	HAC-10, "BLOWER UNIT ASSEMBLY : Intake Door Motor"
⑬		Blower regulator	HAC-10, "BLOWER UNIT ASSEMBLY : Blower Regulator"
⑭		Blower motor	HAC-10, "BLOWER UNIT ASSEMBLY : Blower Motor"

HEATER & COOLING UNIT ASSEMBLY

HEATER & COOLING UNIT ASSEMBLY : Intake Sensor

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Intake sensor measures temperature of evaporator temperature.

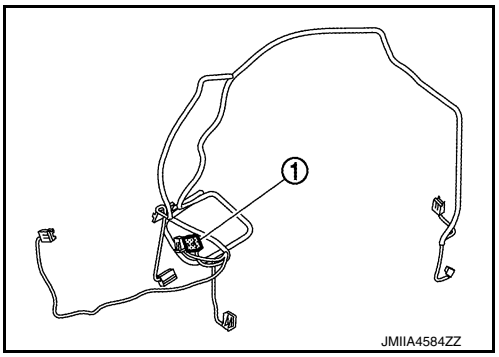


HEATER & COOLING UNIT ASSEMBLY : Central Air Distribution Position Detection

Microswitch

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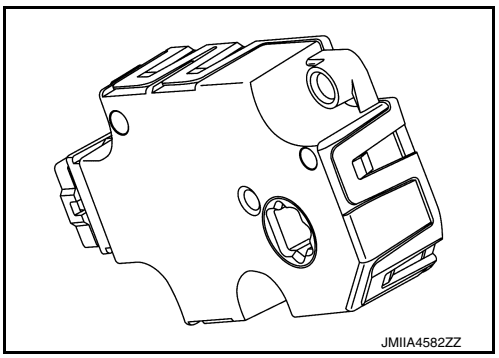
Central air distribution position detection microswitch ① measures mode door position.



HEATER & COOLING UNIT ASSEMBLY : Air Mix Door Motor LH

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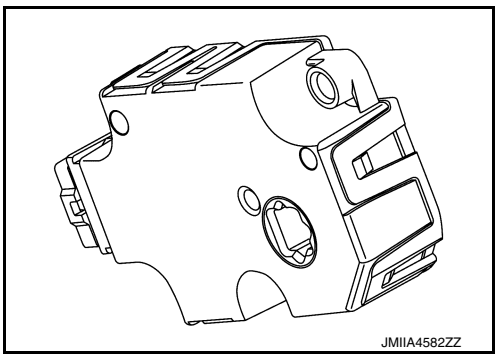
Rotation of motor is transmitted to air mix door LH. Air flow temperature is switched.



HEATER & COOLING UNIT ASSEMBLY : Air Mix Door Motor RH

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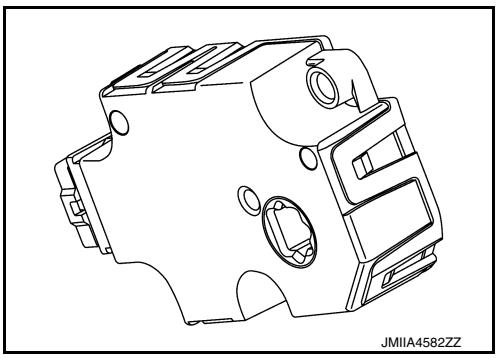
Rotation of motor is transmitted to air mix door RH. Air flow temperature is switched.



HEATER & COOLING UNIT ASSEMBLY : Mode Door Motor

INFOID:0000000013554064

Rotation of motor is transmitted to mode door. Air outlet is switched.

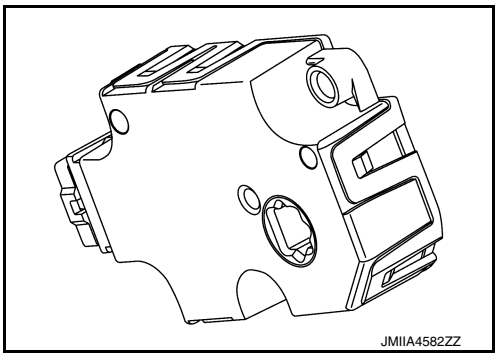


BLOWER UNIT ASSEMBLY

BLOWER UNIT ASSEMBLY : Intake Door Motor

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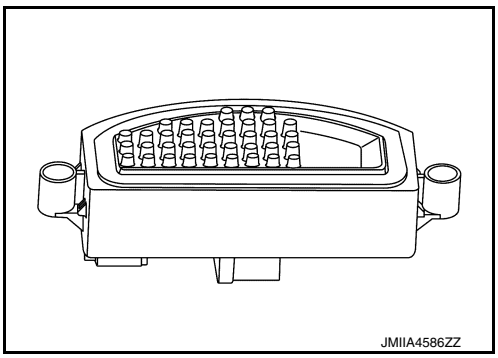
Rotation of motor is transmitted to intake door. Air inlet is switched.


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BLOWER UNIT ASSEMBLY : Blower Regulator

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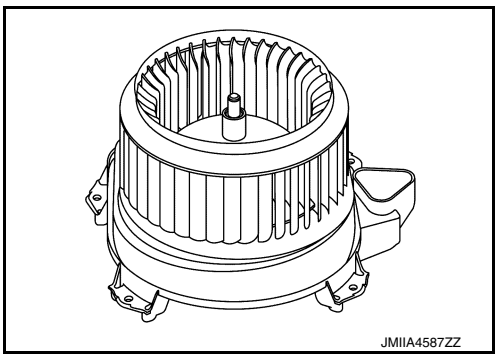
Blower regulator actuates the blower motor according to the request from A/C auto amp.


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BLOWER UNIT ASSEMBLY : Blower Motor

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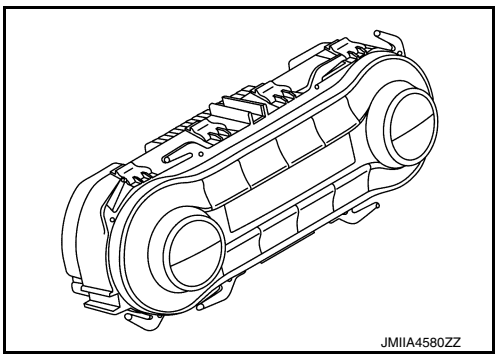
Rotation speed changes according to voltage from blower regulator.


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A/C Control (A/C Auto Amp.)

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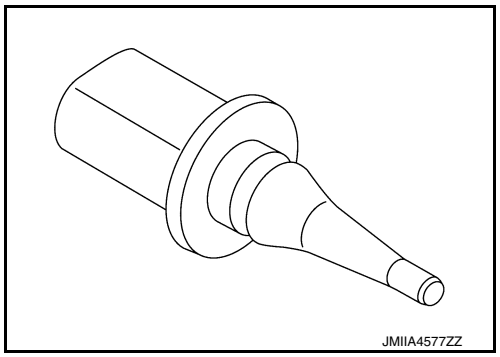
- A/C control has switches and display that can set and indicate the operation of automatic air conditioning system.
- A/C control integrates A/C auto amp. A/C auto amp. controls automatic air conditioning system by receiving and calculating signal from each sensor and switch. A/C auto amp. has self-diagnosis function. Diagnosis of air conditioning system can be performed quickly.


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Ambient Sensor

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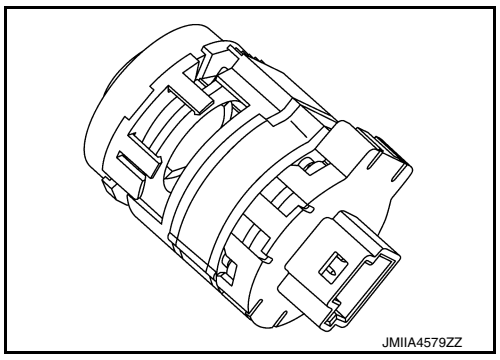
Ambient sensor measures outside temperature.


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In-vehicle Sensor

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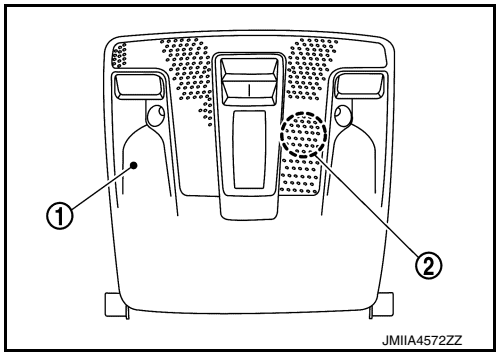
In-vehicle sensor measures interior temperature in the instrument panel area. The fan integrated in the in-vehicle sensor draws in air for measuring the temperature from the vehicle interior.


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Interior Temperature Sensor with Integrated Fan

INFOID:0000000013554071

Interior temperature sensor with integrated fan ② integrates overhead control panel control unit ①. Interior temperature sensor with integrated fan measures interior temperature in the roof area. The fan integrated in the in-vehicle sensor draws in air for measuring the temperature from the vehicle interior.

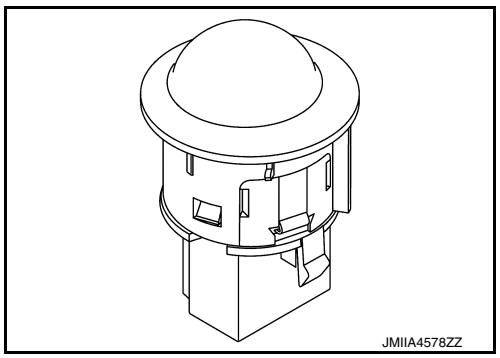


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Sunload Sensor

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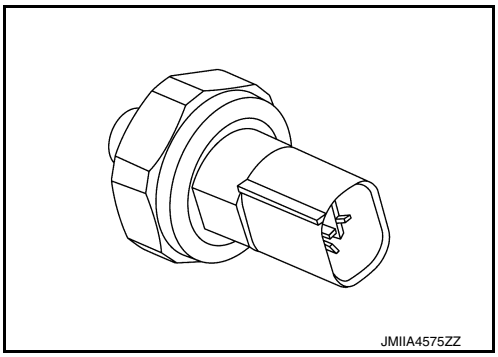
Sunload sensor records the angle of incidence and the intensity of the solar radiation in the vehicle.


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Refrigerant Pressure Sensor

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The refrigerant pressure sensor measures the pressure of the refrigerant.

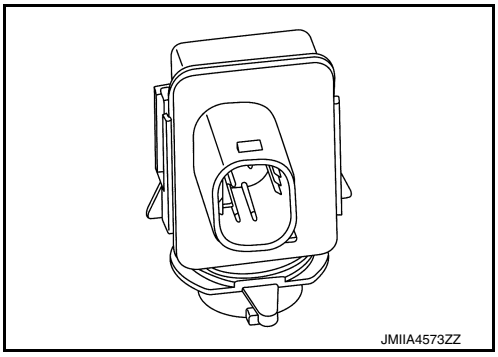


Air Quality Sensor

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The air quality sensor records the following environmental influences:
- Contamination of the outside air with carbon monoxide (CO)
- Contamination of the outside air with nitrogen oxide (NOx)

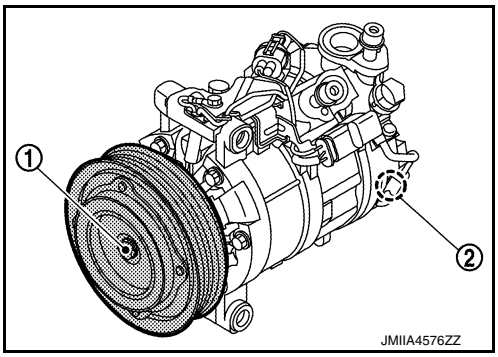
The air quality sensor also records the following values:
- Outside temperature
- Relative humidity
- Outside dew point temperature



Compressor

INFOID:0000000013554075

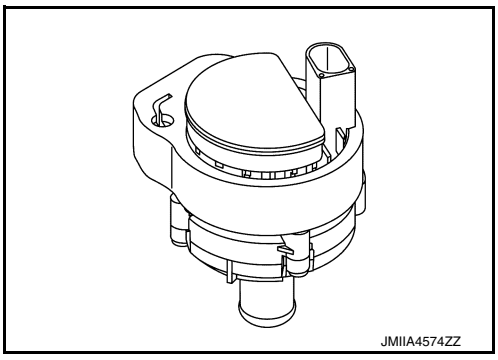
The compressor is responsible for induction and compression of the refrigerant. The compressor output is continuously regulated up to 100% through the ECV (Electrical Control Valve) ② by the A/C auto amp. The A/C auto amp. actuates the ECV directly. A magnet clutch ① is also installed. This can be used to completely disconnect the compressor from the belt drive power flow. This in turn enables additional fuel savings to be made. The A/C auto amp. actuates the magnetic clutch directly.



Coolant Circulation Pump

INFOID:0000000013554076

Coolant circulation pump is used to support the coolant circuit at low engine rpm or when the residual heat utilization function is being used.

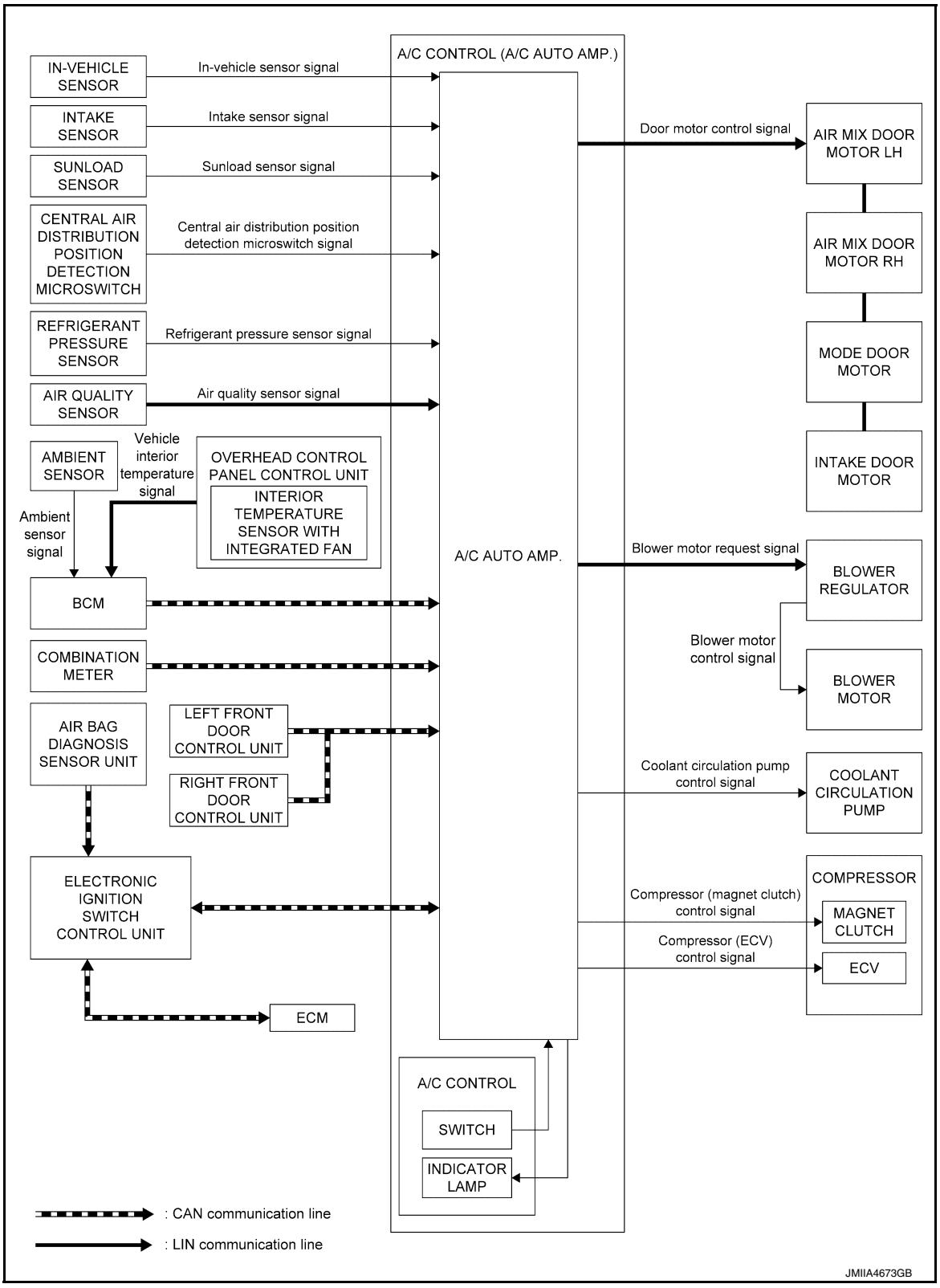


SYSTEM

System Description

INFOID:0000000013554077

SYSTEM DIAGRAM



FUNCTION REQUIREMENTS, GENERAL

For Regulating the Air Conditioning Control:

- Ignition switch ON
- Air conditioning system switched ON

For Cooling Operation:
- Engine running
- Compressor switched ON

For Evaporator Drying Process:
- Engine stop
- Compressor switched ON

For Residual Heat Utilization:
- Ignition switch OFF or Ignition switch ACC

NOTE:
The electronic ignition switch control unit transmits the ignition switch status signal to the A/C auto amp. via body CAN communication 1.
ECM transmits the engine running signal via chassis CAN communication, the electronic ignition switch control unit and the body CAN communication 1 to the A/C auto amp.

AIR CONDITIONING CONTROL, GENERAL

The electronic temperature control and the air distribution in the vehicle interior are carried out depending on the settings at the A/C control and the variables measured by various sensors (interior temperature, outside temperature, engine coolant temperature, vehicle speed, etc.).
Determination of these variables is described below.
The A/C auto amp. is networked via body CAN communication 1 and climate control LIN with the vehicle electronics system. This in turn makes it possible to incorporate relevant parameters in order to improve regulation quality and to lower power consumption.

NOTE:
If settings are altered on the A/C control that affect the temperature, the air distribution or the air flow, then the relevant adjustment values are shown briefly in the Audio/Navigation display.
The air conditioning control regulation function encompasses the following functions:
- Recording and evaluating variables function
- Air conditioning component actuation function
- Fresh air mode function
- Air recirculation mode function
- Defroster function
- Evaporator drying function
- Residual heat utilization function (For Mexico)
- Residual shutoff of the air conditioning system after an accident (crash signal transmitted) function
- Maximum cooling output function (Except for Mexico)

RECORDING AND EVALUATING VARIABLES FUNCTION

In addition to the settings made at the automatic air conditioning control and operating unit, the following variables are recorded and evaluated:
- Outside temperature
- Interior temperature
- Engine coolant temperature
- Temperature on evaporator
- Refrigerant pressure
- Solar radiation
- Air quality
- Vehicle speed
- Engine speed
- Door status
- Side window position

Outside Temperature

The ambient temperature sensor measures the outside temperature. The BCM reads in the ambient temperature sensor signal directly, calculates the outside temperature and transmits this via body CAN communication 1 to the A/C auto amp. The A/C auto amp. requires this value to reach the desired interior temperature by adjusting the air mix door accordingly. If the vehicle is stationary, the measured temperature can differ considerably from the outside temperature. The outside temperature is therefore only included in the control if the vehicle speed is 20 km/h (12 MPH) or more. The previously measured temperature is used at speeds of less than 20 km/h (12 MPH) and when the ignition is being switched ON and OFF.

Interior Temperature

The interior temperature is recorded as follows:

- Interior temperature in the roof area:
  The interior temperature sensor with integrated fan in the overhead control panel control unit records the interior temperature in the roof area. The overhead control panel control unit transmits the vehicle interior temperature signal via roof LIN to the BCM. The BCM transmits this via body CAN communication 1 to the A/C auto amp. The fan sucks in the air for temperature measurement from the vehicle interior.
- Interior temperature in the instrument panel area:
  The in-vehicle sensor records the interior temperature in the instrument panel area. The A/C auto amp. reads in the signals of the in-vehicle sensor directly. The fan integrated in the in-vehicle sensor draws in air for measuring the temperature from the vehicle interior.

NOTE:

The fans provide continuous circulation of the interior air at the interior temperature sensors. This ensures that the temperature measurement is extremely accurate. Temperature control that is almost independent of the flow conditions in the vehicle interior is therefore possible. A mean value is calculated from the measurements of the interior temperature sensors. This mean value and the value of the ambient temperature sensor are compared with a characteristics map stored in the A/C auto amp., and used to control the interior temperature. The mean value of the interior temperature is maintained in the following situations by the A/C auto amp.:

- Side window open
- Door open

This ensures that the air conditioning system immediately continues operating at the set specified temperature.

NOTE:

The interior temperature is controlled by actuation of the air mix door motor LH for the driver and by actuation of the air mix door motor RH for the front passenger.

Engine Coolant Temperature

The engine coolant temperature sensor records the temperature of the engine coolant.

The ECM reads in the signals of the engine coolant temperature sensor directly, calculates the engine coolant temperature and transmits this via chassis CAN communication, the electronic ignition switch control unit and the body CAN communication 1 to the A/C auto amp.

The engine coolant temperature is used to control the air mix door and to actuate the coolant circulation pump.

Temperature on Evaporator

To prevent the evaporator from icing up, the temperature there is recorded by the intake sensor. The signals of the intake sensor are read in directly by the A/C auto amp. If the evaporator temperature drops to approximately 2°C (36°F), the compressor is switched OFF.

Refrigerant Pressure

The refrigerant pressure sensor measures the pressure of the refrigerant. The refrigerant pressure is compared with a stored temperature/pressure curve. The compressor is switched OFF or not re-activated at a refrigerant pressure of less than 170 kPa (1.7 bar, 1.73 kg/cm^2, 24.7 psi) and 2800 kPa (28 bar, 28.56 kg/cm^2, 406 psi) bar or more. The refrigerant pressure sensor signals are read in directly by the A/C auto amp.

Solar Radiation

The sunload sensor records the angle of incidence and the intensity of the solar radiation in the vehicle. The A/C auto amp. reads in the signals of the sunload sensor directly.

The interior temperature and the fan speed are adapted in accordance with these values. In the event of one-sided solar radiation, an appropriate temperature difference is set between the left and the right specified control temperatures.

Air Quality

The air quality sensor records the following environmental influences:

- Contamination of the outside air with carbon monoxide (CO)
- Contamination of the outside air with nitrogen oxide (NOx)

The air quality sensor also records the following values:

- Outside temperature
- Relative humidity
- Outside dew point temperature

The A/C auto amp. reads in the data of the air quality sensor via climate control LIN, assesses this and controls the air recirculation function in accordance with these values.

Vehicle Speed

The combination meter transmits the vehicle speed signal via body CAN communication 1 to the A/C auto amp. The vehicle speed is used to control the ram air function and for internal calculation of the outside temperature.

Engine Speed

The ECM transmits the engine speed signal via chassis CAN communication, the electronic ignition switch control unit and the body CAN communication 1 to the A/C auto amp.
The engine speed is used among other things to regulate the compressor.

Door Status

The status of each door is determined by the following control units and transmitted via body CAN communication 1 to the A/C auto amp.:
- BCM
- Left front door control unit
- Right front door control unit

If the door is open, the A/C auto amp. maintains the current blower output in order to avoid unnecessary readjustment in the event of large differences between the air temperature inside and outside the vehicle.

Side window position

The position of the respective side window is determined by the following control units and transmitted via body CAN communication 1 to the A/C auto amp.:
- BCM
- Left front door control unit
- Right front door control unit

AIR CONDITIONING COMPONENT ACTUATION FUNCTION

The function for actuation of the air conditioning components consists of the following functions:
- Actuation of the blower motor function (For details, refer to HAC-18, "Air Flow Control")
- Actuation of the air ducting doors function (For details, refer to HAC-17, "Temperature Control", HAC-18, "Air Outlet Control" and HAC-18, "Air Inlet Control")
- Actuation of the compressor (For details, refer to HAC-18, "Compressor Control")
- Cooling fan motor actuation function (For details, refer to HAC-19, "Cooling Fan Control")
- Actuation of the coolant circulation pump (For details, refer to HAC-19, "Coolant Circulation Pump Control")

FRESH AIR MODE FUNCTION

The intake door is open and fresh air is delivered into the vehicle interior through the air conditioner housing.

AIR RECIRCULATION MODE FUNCTION

The air recirculation mode function encompasses the following functions:
- Air recirculation mode using air intake switch function
- Pollutant-sensitive air recirculation mode function

Air Recirculation Mode Using Intake Switch Function

When the intake switch on the A/C control is pressed for less than 1.5 seconds, the intake door is closed to prevent air entering from outside. The air only circulates in the vehicle interior and unpleasant odors and harmful gases are kept out. The indicator lamp above the intake switch lights up during air recirculation mode.
The A/C auto amp. reads in the status of the intake switch directly and actuates the intake door motor via climate control LIN.

Pollutant-sensitive Air Recirculation Mode Function

Function Requirements for pollutant-sensitive air recirculation mode
- Compressor switched ON
- Defrost mode not active

Function Sequence for Pollutant-sensitive air recirculation mode
- The air quality sensor records the pollutant levels of the outside air.
  The A/C auto amp. reads in the signals of the air quality sensor via climate control LIN. As of a certain pollutant concentration, the intake door is automatically set to the recirculated air position by the intake door motor. Outside air supply is prevented and only the inside air is recirculated.
  If the conditions for the pollutant-controlled air recirculation mode exist after the engine is started, a supply of fresh air is first provided for 30 seconds. Following this, operation continues first with 80% pollutant-controlled recirculated air and after another 10 seconds, as required, with 100% pollutant-controlled recirculated air. The pollutant-controlled air recirculation mode is not indicated by the indicator lamp in the intake switch.

DEFROSTER FUNCTION

By pressing the DEF switch, all air flaps apart from the mode door and the intake door are closed. These are fully opened. The indicator lamp in the respective switch lights up as function feedback. The mode door is adjusted so that the maximum air flow is directed to the windshield and the front side windows. The air mix door is set to full warm air supply. The blower motor is actuated by the A/C auto amp. via blower regulator in such a way that the best possible defrost mode is provided, depending on the temperature of the air flowing out. The compressor is activated in order to ensure that the air flowing out is dried. The air is dried and then heated up to the maximum temperature.

NOTE:

The warm air supply is controlled by actuation of the air mix door motor LH for the driver and by actuation of the air mix door motor RH for the front passenger.

EVAPORATOR DRYING FUNCTION

Function Requirements for Evaporator Drying

- Air conditioning was active at least once during the last ignition cycle
- Evaporator temperature 3°C (37°F) or more
- Outside temperature 20°C (68°F) or more
- Doors closed
- Kilometer reading 250 km (155 mile) or more

Function Sequence for Evaporator Drying

To counteract evaporator odors in the vehicle interior and fogging of windows when starting the air conditioning, an evaporator drying process is performed. With engine stop, the timer is activated in the combination meter.

The ECM transmits the engine running signal via chassis CAN communication to the combination meter.

After a waiting time of 1 hours the combination meter transmits the evaporator drying request signal via body CAN communication 1 to the A/C auto amp., which starts evaporator drying. To this end, the blower is activated at the lowest setting for 30 minutes.

The A/C auto amp. transmits the blower motor request signal via climate control LIN to the blower regulator. The blower regulator actuates the blower motor at the slowest speed.

RESIDUAL HEAT UTILIZATION FUNCTION (FOR MEXICO)

Pressing the REST switch on the A/C control switches ON the residual heat utilization function.

The A/C auto amp. actuates the coolant circulation pump directly. The coolant circulation pump delivers the still warm (residual heat) coolant through the heater core.

At the same time, the A/C auto amp. actuates the blower regulator via climate control LIN, which then actuates the blower motor at low speed. The intake air from the blower motor is routed past the heater core and heated up in the process.

The function is terminated after a time of 30 minutes. has elapsed or when the battery voltage drops below a certain value.

RESIDUAL SHUTOFF OF THE AIR CONDITIONING SYSTEM AFTER AN ACCIDENT (CRASH SIGNAL TRANSMITTED) FUNCTION

To prevent the ingress of noxious gases into the vehicle interior in the event of an accident, the A/C auto amp. starts the following activities:

- The blower motor is no longer actuated. Air is not circulated in the vehicle interior.
- The intake door is moved to the recirculated air position. Outside air can no longer enter the vehicle interior.
- The ECV is switched OFF. The compressor no longer circulates the refrigerant.
- The magnetic clutch is opened. The compressor is no longer driven.

The air bag diagnosis sensor unit transmits the crash signal via chassis CAN communication, the electronic ignition switch control unit and the body CAN communication 1 to the A/C auto amp.

MAXIMUM COOLING OUTPUT FUNCTION (EXCEPT FOR MEXICO)

By pressing the MAX COOL switch on the A/C control, the blower output is increased to 100%, the temperature is set to maximum cold, and air recirculation mode is switched to ON.

Temperature Control

INFOID:0000000013554078

ACTUATION OF THE AIR DUCTING DOORS

The air distribution in the vehicle interior is controlled by adjusting actuator motor (fresh air/recirculated air control and ram air the air ducting doors in the air conditioner housing. The A/C auto amp. actuates the following components via climate control LIN:

- Air mix door LH via air mix door motor LH
- Air mix door RH via air mix door motor RH

Air Outlet Control

INFOID:0000000013554079

ACTUATION OF THE AIR DUCTING DOORS

The air distribution in the vehicle interior is controlled by adjusting actuator motor (fresh air/recirculated air control and ram air the air ducting doors in the air conditioner housing. The A/C auto amp. actuates the following components via climate control LIN:

- Mode door via mode door motor

NOTE:

- The position of the mode door is recorded by the central air distribution position detection microswitch. The status of the microswitch is read in by the A/C auto amp. If an incorrect position is detected, the position of the mode door is readjusted by the A/C auto amp. via mode door motor.
- In order to prevent fogging of windows, the mode door is closed 2 minutes after ignition switch OFF. With the engine running signal or drivetrain operation signal, the mode door remains in this fixed position for an additional approximately 30 seconds. After that, all adjustments are possible again. For details of air outlets, refer to VTL-3, "System Description".

Air Flow Control

INFOID:0000000013554080

ACTUATION OF THE BLOWER MOTOR FUNCTION

Ventilation is achieved with the aid of the blower motor. The A/C auto amp. transmits the blower motor request signal via climate control LIN, which then actuates the blower motor.

NOTE:

- The blower motor drives a radial blower which circulates the air in the vehicle interior or which supplies fresh air to the vehicle interior. This prevents the glass panes from fogging up, supplies air to the vehicle occupants and enables pleasant and constant temperatures to be reached quickly in the vehicle interior. Depending on the current settings at the A/C control, the air is routed through various air ducts and air outlets into the vehicle interior.
- With voice command active, the blower output is reduced.
- The blower motor is switched OFF in the event of an accident (crash signal sent).

Air Inlet Control

INFOID:0000000013554081

ACTUATION OF THE AIR DUCTING DOORS

The air distribution in the vehicle interior is controlled by adjusting actuator motor (fresh air/recirculated air control and ram air the air ducting doors in the air conditioner housing. The A/C auto amp. actuates the following components via climate control LIN:

- Intake door via intake door motor

NOTE:

- The intake door is closed after an accident (crash signal sent).
- With ignition switch OFF, when one of the doors is opened the intake door is moved by the intake door motor to 50%. This achieves a significant reduction in the door closing forces. The function can be set with the CONSULT.

Compressor Control

INFOID:0000000013554082

ACTUATION OF THE COMPRESSOR

The compressor is responsible for induction and compression of the refrigerant. The compressor output is continuously regulated up to 100% through the ECV (Electrical Control Valve) by the A/C auto amp. The A/C auto amp. actuates the ECV directly. A magnet clutch is also installed. This can be used to completely disconnect the compressor from the belt drive power flow. This in turn enables additional fuel savings to be made. The A/C auto amp. actuates the magnetic clutch directly.

The A/C auto amp. also transmits the idle speed increase request signal via body CAN communication 1, the electronic ignition switch control unit and the chassis CAN communication to the ECM.

The ECM increases the idle speed in accordance with the additional load that occurs when the compressor is switched ON.

NOTE:

- The compressor can be switched ON and OFF by pressing the A/C switch or the OFF switch on the A/C control.

• The compressor is switched OFF via magnet clutch after an accident (crash signal transmitted).

Cooling Fan Control

INFOID:0000000013554083

COOLING FAN MOTOR ACTUATION FUNCTION

The cooling fan motor is used for cooling the engine coolant and refrigerant.
The A/C auto amp. calculates the specified cooling fan speed depending on the refrigerant pressure and transmits the cooling fan motor request signal via body CAN communication 1, the electronic ignition switch control unit and the chassis CAN communication to the ECM.
The ECM then calculates the specified cooling fan speed depending on the engine temperature, compares this with the request from the A/C auto amp. and then actuates the cooling fan motor accordingly.

Coolant Circulation Pump Control

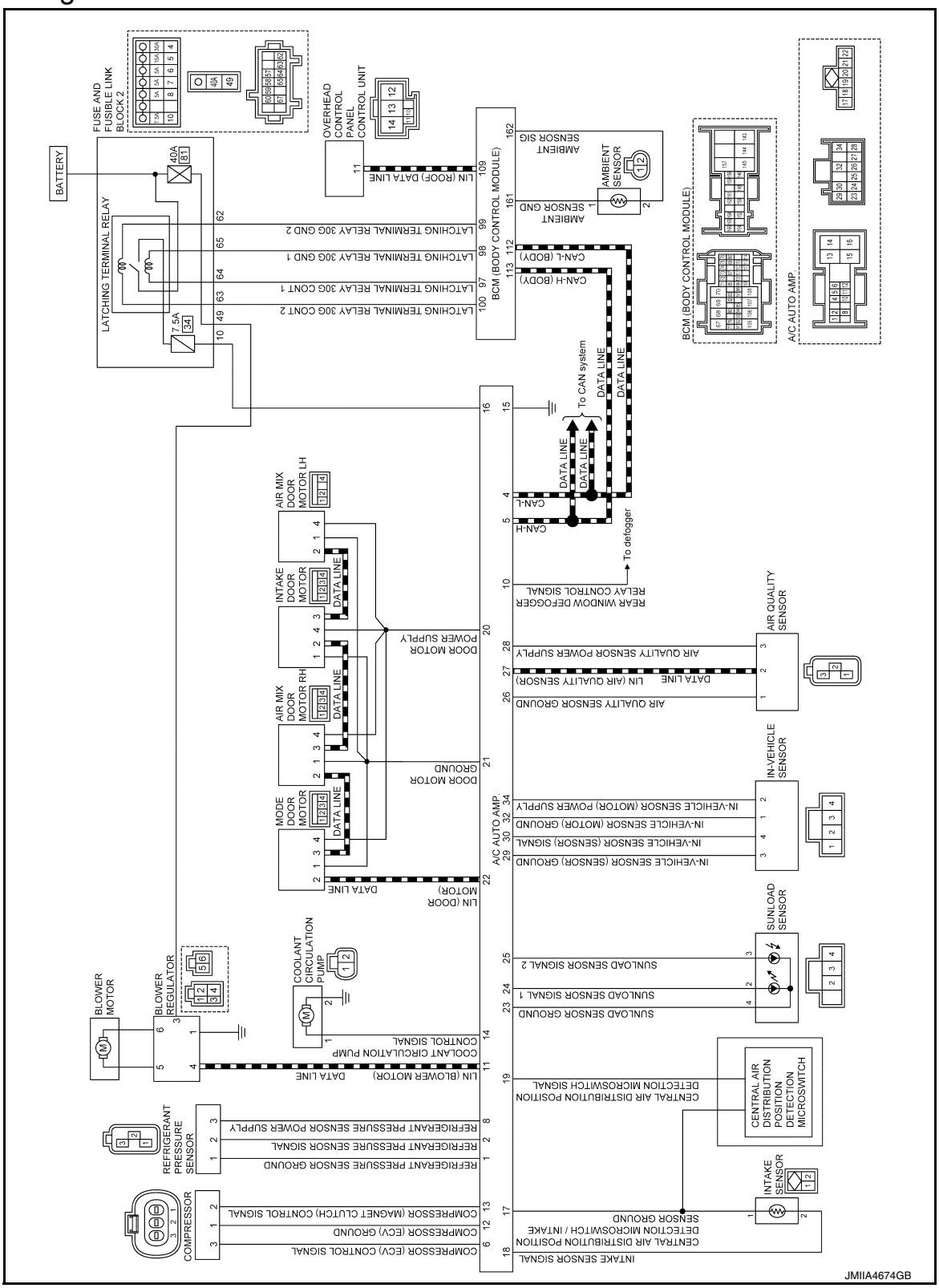
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ACTUATION OF THE COOLANT CIRCULATION PUMP FUNCTION

The coolant circulation pump is used to support the coolant circuit at low engine rpm or when the residual heat utilization function (For Mexico) is being used.
The coolant circulation pump is actuated directly by the A/C auto amp.

Circuit Diagram

INFOID:0000000013554085



Fail-safe

INFOID:0000000013554086

A/C auto amp. performs fail-safe control when any DTC are detected.

DTC		CONSULT screen items		Fail-safe
		(Trouble diagnosis content)	[Malfunction type]	
B1030	11	Intake sensor	[CIRC SHORT TO GRND]	Inhibit compressor control
	15		[CIRC SHORT TO BATTERY OR OPEN]	
B1058	07	Intake door motor	[MECHANICAL FAILURES]	Inhibit air inlet control
	49		[INTERNAL ELECTRONIC FAILURE]	
	51		[NOT PROGRAMMED]	
	87		[MISSING MESSAGE]	Restricted function
B106A	11	Rear window defogger relay	[CIRC SHORT TO GRND]	Inhibit rear window defogger function
	12		[CIRC SHORT TO BATTERY]	
	13		[CIRC OPEN]	
B107A	11	Refrigerant pressure sensor	[CIRC SHORT TO GRND]	Inhibit compressor control
	15		[CIRC SHORT TO BATTERY OR OPEN]	
B107D	11	Heater water pump	[CIRC SHORT TO GRND]	Inhibit compressor control
	12		[CIRC SHORT TO BATTERY]	Inhibit coolant circulation pump control
	13		[CIRC OPEN]	Inhibit compressor control
B10A2	07	Air mix door motor left	[MECHANICAL FAILURES]	Inhibit temperature control
	49		[INTERNAL ELECTRONIC FAILURE]	
	51		[NOT PROGRAMMED]	
	87		[MISSING MESSAGE]	Restricted function
B10A9	07	Air mix door motor right	[MECHANICAL FAILURES]	Inhibit temperature control
	49		[INTERNAL ELECTRONIC FAILURE]	
	51		[NOT PROGRAMMED]	
	87		[MISSING MESSAGE]	Restricted function
B1107	11	In-vehicle sensor	[CIRC SHORT TO GRND]	Restricted function
	15		[CIRC SHORT TO BATTERY OR OPEN]	
B1127	49	Air quality sensor	[INTERNAL ELECTRONIC FAILURE]	Restricted function
	87		[MISSING MESSAGE]	
B112F	07	Front blower regulator	[MECHANICAL FAILURES]	—
	13		[CIRC OPEN]	—
	49		[INTERNAL ELECTRONIC FAILURE]	Restricted function
	4B		[OVER TEMPERATURE]	—
	87		[MISSING MESSAGE]	Inhibit air flow control
B1135	00	Door motor	—	Restricted function
B1136	00	Door motor	—	Restricted function

DTC		CONSULT screen items		Fail-safe
		(Trouble diagnosis content)	[Malfunction type]	
B1178	07	Mode door motor	[MECHANICAL FAILURES]	Inhibit air outlet control
	49		[INTERNAL ELECTRONIC FAILURE]	
	51		[NOT PROGRAMMED]	
	87		[MISSING MESSAGE]	Restricted function
B11F6	01	In-vehicle sensor fan	[ELECTRICAL MALFUNCTION]	—
B1600	11	Sunload sensor left	[CIRC SHORT TO GRND]	Restricted function
	15		[CIRC SHORT TO BATTERY OR OPEN]	
B1603	11	Sunload sensor right	[CIRC SHORT TO GRND]	Restricted function
	15		[CIRC SHORT TO BATTERY OR OPEN]	
B1A9E	11	Refrigerant pressure sensor	[CIRC SHORT TO GRND]	Inhibit compressor control
	15		[CIRC SHORT TO BATTERY OR OPEN]	
B210A	00	Power Supply circuit	—	Restricted function
B210B	00	Power Supply circuit	—	Restricted function
B210D	00	Power supply	—	Restricted function
B210E	00	Power supply	—	Restricted function
B217E	11	The power supply to the LIN bus subscribers has a malfunction	[CIRC SHORT TO GRND]	Restricted function
	12		[CIRC SHORT TO BATTERY]	
B222D	00	Door motor	—	Restricted function
B22E2	11	Magnet clutch	[CIRC SHORT TO GRND]	Inhibit compressor control
	13		[CIRC OPEN]	
P0070	11	AMBIENT AIR TEMP SENSOR	[CIRC SHORT TO GRND]	The temperature displayed in the combination meter is 85°C.
	15		[CIRC SHORT TO BATTERY OR OPEN]	The temperature displayed in the combination meter is −40°C.
	84		[SIGNAL BELOW ALLOWABLE RANGE]	Transmitted temperature on the CAN communication signal is −40°C.
	85		[SIGNAL ABOVE ALLOWABLE RANGE]	Transmitted temperature on the CAN communication signal is 85°C.
B2611	01	Regulating valve	[ELECTRICAL MALFUNCTION]	Inhibit compressor control
U0019	88	Interior CAN communication	[BUS OFF]	Restricted function
U0155	00	COMMUNICATION ERROR (LOST)	—	Restricted function
U0203	00	Communication error	—	Restricted function
U0204	00	Communication error	—	Restricted function
U1008	00	Communication error (LIN bus 1)	—	Restricted function

OPERATION

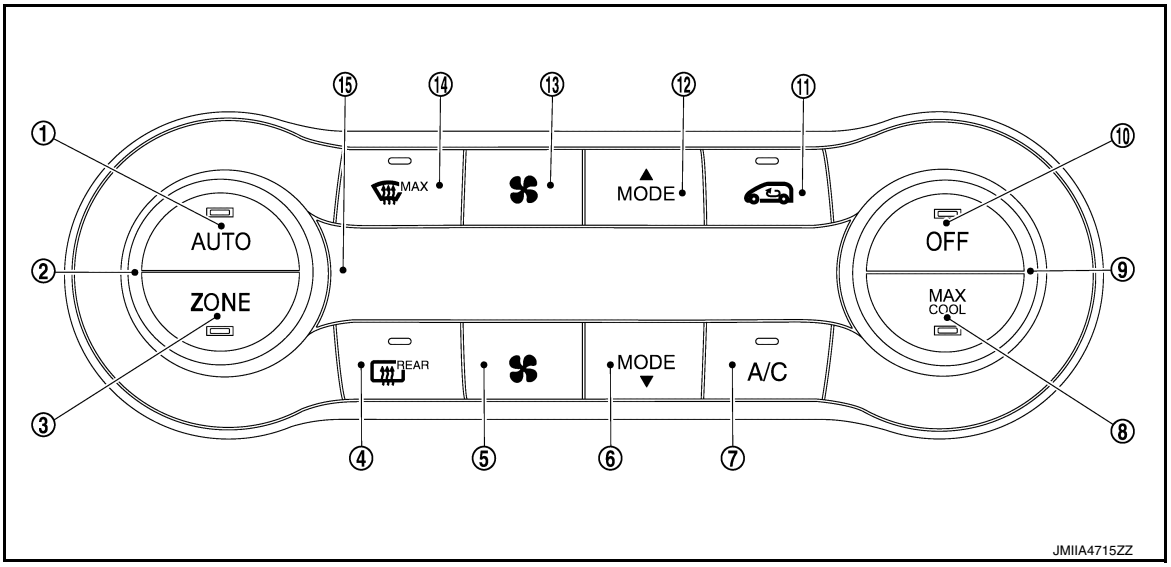
Switch Name and Function

INFOID:0000000013554087

OPERATION AND DISPLAY OF AUTOMATIC AIR CONDITIONING SYSTEM (EXCEPT FOR MEXICO)

Display: Display in A/C control
Air conditioning operation status is indicated on display in A/C control.

Operation: A/C control



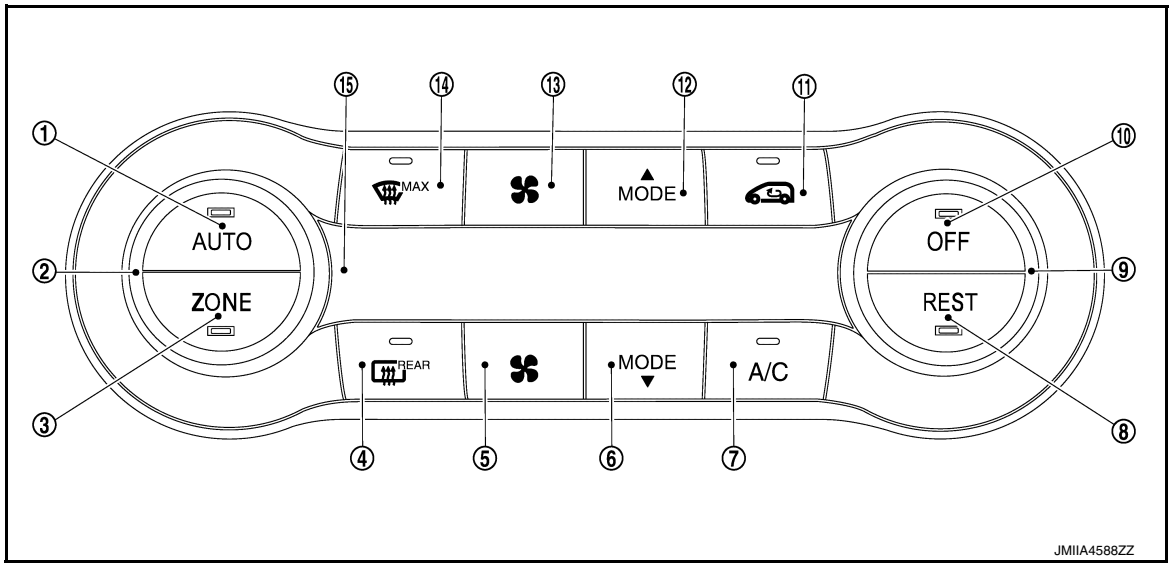
① AUTO switch
② Temperature control dial LH
③ ZONE switch
④ Rear window defogger switch
⑤ Fan switch (decrease)
⑥ MODE switch (downward)
⑦ A/C switch
⑧ MAX COOL switch
⑨ Temperature control dial RH
⑩ OFF switch
⑪ Intake switch
⑫ MODE switch (upward)
⑬ Fan switch (increase)
⑭ DEF switch
⑮ Display

Control element	Controllable function	Operating feedback
Rear window defogger switch	Rear window defogger ON/OFF	Integrated indicator lamp
Intake switch	Air recirculation mode ON/OFF	Integrated indicator lamp
DEF switch	Defrost mode ON/OFF	Integrated indicator lamp
A/C switch	Compressor ON/OFF	Integrated indicator lamp
Temperature control dial LH	Configuration of specified temperature at left	Display
Temperature control dial RH	Configuration of specified temperature at right	Display
OFF switch	Air conditioning ON/OFF	Integrated indicator lamp
MAX COOL switch	Maximum cooling output ON/OFF	Integrated indicator lamp
AUTO switch	Automatic mode ON/OFF	Integrated indicator lamp
ZONE switch	Take over settings of driver side for passenger side	Integrated indicator lamp
Fan switch (decrease)	Decrease air flow	Display
Fan switch (increase)	Increase air flow	Display
MODE switch (downward)	Change air outlet	Display
MODE switch (upward)	Change air outlet	Display

OPERATION AND DISPLAY OF AUTOMATIC AIR CONDITIONING SYSTEM (FOR MEXICO)

Display: Display in A/C control
Air conditioning operation status is indicated on display in A/C control.

Operation: A/C control



① AUTO switch
② Temperature control dial LH
③ ZONE switch
④ Rear window defogger switch
⑤ Fan switch (decrease)
⑥ MODE switch (downward)
⑦ A/C switch
⑧ REST switch
⑨ Temperature control dial RH
⑩ OFF switch
⑪ Intake switch
⑫ MODE switch (upward)
⑬ Fan switch (increase)
⑭ DEF switch
⑮ Display

Control element	Controllable function	Operating feedback
Rear window defogger switch	Rear window defogger ON/OFF	Integrated indicator lamp
Intake switch	Air recirculation mode ON/OFF	Integrated indicator lamp
DEF switch	Defrost mode ON/OFF	Integrated indicator lamp
A/C switch	Compressor ON/OFF	Integrated indicator lamp
Temperature control dial LH	Configuration of specified temperature at left	Display
Temperature control dial RH	Configuration of specified temperature at right	Display
OFF switch	Air conditioning ON/OFF	Integrated indicator lamp
REST switch	Residual heat utilization ON/OFF	Integrated indicator lamp
AUTO switch	Automatic mode ON/OFF	Integrated indicator lamp
ZONE switch	Take over settings of driver side for passenger side	Integrated indicator lamp
Fan switch (decrease)	Decrease air flow	Display
Fan switch (increase)	Increase air flow	Display
MODE switch (downward)	Change air outlet	Display
MODE switch (upward)	Change air outlet	Display

DIAGNOSIS SYSTEM (A/C AUTO AMP.)

CONSULT Function

INFOID:0000000013554088

APPLICATION ITEMS

Diagnosis mode	Description
Self Diagnostic Result	Displays the diagnosis results judged by A/C auto amp.
Data Monitor	Displays the input/output signal of A/C auto amp.
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on the CONSULT unit.
Active Test	Transmits a drive signal to the load to check their operation.
ECU Identification	Displays the software part number of A/C auto amp.
Configuration	Writes the vehicle specification when replacing A/C auto amp.

SELF DIAGNOSTIC RESULT

Self Diagnostic Item

Self diagnostic result that is judged by A/C auto amp. can be checked. Refer to HAC-36, "DTC Index".

- When “CRNT” is displayed on self diagnostic result, the system is presently malfunctioning.
- When “PAST” is displayed on self diagnostic result, system malfunction in the past is detected, but the system is presently normal.

FFD (Freeze Frame Data)

The A/C auto amp. control unit records the following vehicle condition at the time a particular DTC is detected, and displays on CONSULT.

MONITOR ITEM	UNIT	Description
Original Odometer Value	km	Odometer value stored when the respective DTC is detected for the first time.
Most Recent Odometer Value	km	Odometer value stored or updated when the DTC was detected the last time.
Frequency Counter	—	The frequency counter is defined as the total number of times the DTC status has transitioned from “stored - not active” to “active”.
Ignition cycle counter	—	Indicates the number of consecutive operation cycles recorded since a DTC first became stored - not active and is no longer an active DTC. This information is needed for Self-healing functionality.

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

MONITOR ITEM	UNIT	Description
ENG SPD LO OR NO SIG BAT	No/YES	—
ENG IDLE SPD IS UNSTABLE	No/YES	—
CIRC 15 OFF OR START ACTU	No/YES	—
BLOWER POWER TOO SMALL	No/YES	—
BLOW REG OR BLOW MOTOR	No/YES	—
EVAPORATOR TEMP SEN	No/YES	—
EVAP TEMP TOO SMALL	No/YES	—

MONITOR ITEM	UNIT	Description
OUTSIDE TEMP IS TOO LOW	No/YES	—
COD REF CMP DIS SET YES	No/YES	—
REF COMP MECHANICAL DEF	No/YES	—
REF CIRC UNDERFILL	No/YES	—
BREAK REF CMP NO SUCCES	No/YES	—
ROTA SPD INLET EXC OR INC	No/YES	—
BREAK REF CMP NO PER-FOR	No/YES	—
LIMIT REF CMP HI CLNT TEMP	No/YES	—
FAN MOTOR	No/YES	—
REFRIGERANT PRESS LOW	No/YES	—
REFRIGERANT PRESS HIGH	No/YES	—
A/C BUTTON NOT PRESSED	No/YES	—
SHUTOFF REF COMP ENG CU	No/YES	—
TORQUE RED REF CMP ENG	No/YES	—
SWITCHED OFF BY DIAG	No/YES	—
SPECIFIED EVAP TEMP	No/YES	—
EVAPORATOR DRYING	No/YES	—
FAULT ON MAGNET CLUTCH	No/YES	—
EVAP SHUT AND BAT SHUT	No/YES	—
WAIT TIME AFTER OPEN VAL	No/YES	—
CRASH EVENT	No/YES	—
NO ENABL ENRGY MNGE SYS	No/YES	—
EL REFRIGERANT COMP	No/YES	—
Low pressure detected (Electronic Coolant Com-pressor)	No/YES	—
EVAP TEMPERATURE SEN	°C	—
REFRIGERANT PRESS SEN	bar	—
ENGINE SPEED	U/min	—
OUTSIDE TEMP SENSOR	°C	—
Outside temperature	°C	—
COOLANT TEMPERA-TURE	°C	—

MONITOR ITEM	UNIT	Description
POWER SUPPLY VOLTAGE	V	—
COMPRESSOR COUPLING	OFF/On	—
REFRIGERANT COMPRESSOR	%	—
REFRIGERANT COMPRESSOR	A	—
REAR WINDSHIELD HEATER	OFF/On	—
OVERTEMPERATURE	No/YES	—
CUTOFF OVRVOLT TRMNL 30	No/YES	—
SHUTOFF UNDERVOLTAGE	No/YES	—
Pow consumption blower rgltr	A	—
Voltage at blower motor	V	—
Current temp blower regulator	A	—
Supply volt of blower regulator	V	—
Pow request to PTC heater bstr	Overflow	**NOTE:** This item cannot be monitored.
CURRENT OUTPUT	Overflow	—
POWER CONSUMPTION	A	—
BATTERY VOLTAGE	V	—
OPERATING CONDITION	ACTIVE/ NOT ACT	—
The power consumption of component 'R22/3 (PTC heater booster)' is too high.	No/YES	**NOTE:** This item cannot be monitored.
Over temperature	No/YES	—
Undervoltage	No/YES	—
Overvoltage	No/YES	—
COMPRESSOR INLET FINISH	No/YES	—
INTERIOR TEMP SENSOR	°C	—
Light intensity of R dual sun sen	W/m^2	—
Light intensity of L dual sun sen	W/m^2	—
INT TEMP SEN INTEGRAT FAN	°C	—
Ambient temperature	°C	—
TEMP OF WINDSHIELD	°C	—
RELATIVE AIR HUMIDITY	%	—
DEW POINT	°C	—
FUNCTION DEFROST ACTIVE	NOT ACT/ ACTIVE	—

MONITOR ITEM	UNIT	Description
PTC HEATER BOOSTER	NOT ACT/ ACTIVE	**NOTE:** This item cannot be monitored.
COOLING VEHICLE INTERIOR	NOT ACT/ ACTIVE	—
OUTSIDE TEMP HIGH	NOT ACT/ ACTIVE	—
START/STOP FUNC DEACTIV	NOT ACT/ ACTIVE	—
RISK FOG WIND AND WINDOW	NOT ACT/ ACTIVE	—
NOT INITIALIZED	NOT ACT/ ACTIVE	—
DATA TRANSFER ERROR	NOT ACT/ ACTIVE	—
AUTO AIR CNT AND OPR UNIT	NOT ACT/ ACTIVE	—
TEMP MEASURED EVAP HIGH	NOT ACT/ ACTIVE	—
COOLANT CRCLTN PUMP	OFF/On	—
AIR QUALITY	—	—

WORK SUPPORT

Test Item	Description
Teach in of actuator motors	Use after a replace of door motor
Normalization of actuator motors	Use after a replace of door motor
Breaking in of refrigerant compressor	Use after a replace of compressor
Re learning	—

ACTIVE TEST

Test Item	Description
Refrigerant compressor magnetic clutch	Compressor (magnet clutch) can be operated. • Close: Magnet clutch turns ON. • Open: Magnet clutch turns OFF.
LED of automatic air conditioning cont operating unit	A/C control (Indicator lamp) can be operated. • On: All indicator lamp turns ON. • Off: All indicator lamp turns OFF.
Refrigerant compressor	Compressor (ECV duty ratio) can be operated. • Up: ECV duty ratio increases at a rate of 1% per adjustment. • Down: ECV duty ratio decreases at a rate of 1% per adjustment. • Qu: ECV duty ratio increases at a rate of 10% per adjustment. • Qd: ECV duty ratio decreases at a rate of 10% per adjustment.
Coolant circulation pump	Coolant circulation pump can be operated. • On: Coolant circulation pump turns ON. • Off: Coolant circulation pump tuns OFF.
Blower regulator	Blower motor (blower motor duty ratio) can be operated. • Up: Blower motor duty ratio increases at a rate of 1% per adjustment. • Down: Blower motor duty ratio decreases at a rate of 1% per adjustment. • Qu: Blower motor duty ratio increases at a rate of 10% per adjustment. • Qd: Blower motor duty ratio decreases at a rate of 10% per adjustment.
Central air distribution actuator motor	—
Fresh air recirculated air flap actuator motor	—
Left blend air flap actuator motor	—

Test Item	Description
FAN MOTOR	—
PTC heater booster	**NOTE:** This item cannot be tested.
Rear windshield heater	—
SW and cont illumi of auto air cond cont and operat unit	—
Right blend air flap actuator motor	—
M2 4 central air distribution actuator motor actual value	—
M2 5 fresh air recirculated air flap actuator motor act val	—
M2 6 left blend air flap actuator motor actual valuel	—
M2 7 right blend air flap actuator motor actual value	—

ECU IDENTIFICATION

Software part number of A/C auto amp. can be checked.

CONFIGURATION

The vehicle specification can be written when A/C auto amp. control unit is replaced. Refer to HAC-49, "Description".

ECU DIAGNOSIS INFORMATION

A/C AUTO AMP.

Reference Value

INFOID:0000000013554089

VALUES ON THE DIAGNOSIS TOOL

NOTE:

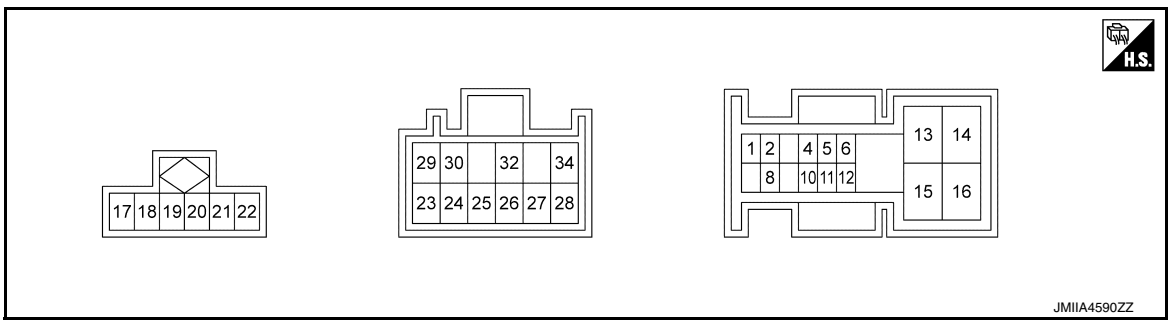
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

MONITOR ITEM	Condition	Value/Status
ENG SPD LO OR NO SIG BAT	—	—
ENG IDLE SPD IS UNSTABLE	—	—
CIRC 15 OFF OR START ACTU	—	—
BLOWER POWER TOO SMALL	—	—
BLOW REG OR BLOW MOTOR	—	—
EVAPORATOR TEMP SEN	—	—
EVAP TEMP TOO SMALL	—	—
OUTSIDE TEMP IS TOO LOW	—	—
COD REF CMP DIS SET YES	—	—
REF COMP MECHANICAL DEF	—	—
REF CIRC UNDERFILL	—	—
BREAK REF CMP NO SUCCES	—	—
ROTA SPD INLET EXC OR INC	—	—
BREAK REF CMP NO PERFOR	—	—
LIMIT REF CMP HI CLNT TEMP	—	—
FAN MOTOR	—	—
REFRIGERANT PRESS LOW	—	—
REFRIGERANT PRESS HIGH	—	—
A/C BUTTON NOT PRESSED	—	—
SHUTOFF REF COMP ENG CU	—	—
TORQUE RED REF CMP ENG	—	—
SWITCHED OFF BY DIAG	—	—
SPECIFIED EVAP TEMP	—	—
EVAPORATOR DRYING	—	—

MONITOR ITEM	Condition	Value/Status
FAULT ON MAGNET CLUTCH	—	—
EVAP SHUT AND BAT SHUT	—	—
WAIT TIME AFTER OPEN VAL	—	—
CRASH EVENT	—	—
NO ENABL ENRGY MNGE SYS	—	—
EL REFRIGERANT COMP	—	—
Low pressure detected (Electronic Coolant Compressor)	—	—
EVAP TEMPERATURE SEN	—	—
REFRIGERANT PRESS SEN	—	—
ENGINE SPEED	—	—
OUTSIDE TEMP SENSOR	—	—
Outside temperature	—	—
COOLANT TEMPERATURE	—	—
POWER SUPPLY VOLTAGE	—	—
COMPRESSOR COUPLING	—	—
REFRIGERANT COMPRESSOR	—	—
REFRIGERANT COMPRESSOR	—	—
REAR WINDSHIELD HEATER	—	—
OVERTEMPERATURE	—	—
CUTOFF OVRVOLT TRMNL 30	—	—
SHUTOFF UNDERVOLTAGE	—	—
Pow consumption blower rgltr	—	—
Voltage at blower motor	—	—
Current temp blower regulator	—	—
Supply volt of blower regulator	—	—
Pow request to PTC heater bstr	**NOTE:** This item cannot be monitored.	
CURRENT OUTPUT	—	—
POWER CONSUMPTION	—	—
BATTERY VOLTAGE	—	—
OPERATING CONDITION	—	—

MONITOR ITEM	Condition	Value/Status
PTC heater booster	**NOTE:** This item cannot be monitored.	
Over temperature	—	—
Undervoltage	—	—
Overvoltage	—	—
COMPRESSOR INLET FINISH	—	—
INTERIOR TEMP SENSOR	—	—
Light intensity of R dual sun sen	—	—
Light intensity of L dual sun sen	—	—
INT TEMP SEN INTEGRAT FAN	—	—
Ambient temperature	—	—
TEMP OF WINDSHIELD	—	—
RELATIVE AIR HUMIDITY	—	—
DEW POINT	—	—
FUNCTION DEFROST ACTIVE	—	—
PTC HEATER BOOSTER	**NOTE:** This item cannot be monitored.	
COOLING VEHICLE INTERIOR	—	—
OUTSIDE TEMP HIGH	—	—
START/STOP FUNC DEACTIV	—	—
RISK FOG WIND AND WINDOW	—	—
NOT INITIALIZED	—	—
DATA TRANSFER ERROR	—	—
AUTO AIR CNT AND OPR UNIT	—	—
TEMP MEASURED EVAP HIGH	—	—
COOLANT CRCLTN PUMP	—	—
AIR QUALITY	—	—

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
1 (BR)	Ground	Refrigerant pressure sensor ground	—	Ignition switch ON		0 V
2 (B)	Ground	Refrigerant pressure sensor signal	Input	Ignition switch ON		Voltage varies with refrigerant pressure
4 (BR)	—	CAN-L	Input/ Output	—		—
5 (R)	—	CAN-H	Input/ Output	—		—
6 (V)	Ground	Compressor (ECV) control signal	Input/ Output	—		Voltage varies with ECV duty ratio
8 (L)	Ground	Refrigerant pressure sensor power supply	Input	Ignition switch ON		5 V
10 (Y)	Ground	Rear window defogger relay control signal	Output	Ignition switch ON: Rear window defogger switch	OFF	Battery voltage
					ON	0 V
11 (V)	—	LIN (Blower motor)	Input/ Output	—		—
12 (G)	Ground	Compressor (ECV) ground	—	Ignition switch ON		0 V
13 (P)	Ground	Compressor (magnet clutch) control signal	Output	Engine running: A/C switch ON		13.5 V
14 (R)	Ground	Coolant circulation pump control signal	Output	Ignition switch OFF or ACC: REST switch ON		13.5 V
15 (BR)	Ground	Ground	—	Ignition switch ON		0 V
16 (O)	Ground	Battery power supply	—	Ignition switch OFF		Battery voltage
17 (BR/G)	Ground	Central air distribution position detection microswitch / intake sensor ground	—	Ignition switch ON		0 V
18 (G)	Ground	Intake sensor signal	Input	Ignition switch ON		Voltage varies with evaporator temperature
19 (L/W)	Ground	Central air distribution position detection microswitch signal	Input	Ignition switch ON		5 V
20 (R/W)	Ground	Door motor power supply	Output	Ignition switch ON		12 V
21 (BR/W)	Ground	Door motor ground	—	Ignition switch ON		0 V
22 (Y)	—	LIN (Door motor)	Input/ Output	—		—
23 (V)	Ground	Sunload sensor ground	—	Ignition switch ON		0 V
24 (Y)	Ground	Sunload sensor signal 1	Input	Ignition switch ON		Voltage varies with amount of sunload
25 (L)	Ground	Sunload sensor signal 2	Input	Ignition switch ON		Voltage varies with amount of sunload

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
26 (BR)	Ground	Air quality sensor ground	—	Ignition switch ON	0 V
27 (O)	—	LIN (Air quality sensor)	Input/ Output	—	—
28 (V)	Ground	Air quality sensor power supply	Output	Ignition switch ON	12 V
29 (B)	Ground	In-vehicle sensor (sensor) ground	—	Ignition switch ON	0 V
30 (L)	Ground	In-vehicle sensor (sensor) signal	Input	Ignition switch ON	Voltage varies with interior temperature
32 (G)	Ground	In-vehicle sensor (motor) ground	—	Ignition switch ON	0 V
34 (R)	Ground	In-vehicle sensor (motor) power supply	Output	Ignition switch ON	12 V

Fail-safe

INFOID:0000000013554090

A/C auto amp. performs fail-safe control when any DTC are detected.

DTC		CONSULT screen items		Fail-safe
		(Trouble diagnosis content)	[Malfunction type]	
B1030	11	Intake sensor	[CIRC SHORT TO GRND]	Inhibit compressor control
	15		[CIRC SHORT TO BATTERY OR OPEN]	
B1058	07	Intake door motor	[MECHANICAL FAILURES]	Inhibit air inlet control
	49		[INTERNAL ELECTRONIC FAILURE]	
	51		[NOT PROGRAMMED]	
	87		[MISSING MESSAGE]	Restricted function
B106A	11	Rear window defogger relay	[CIRC SHORT TO GRND]	Inhibit rear window defogger function
	12		[CIRC SHORT TO BATTERY]	
	13		[CIRC OPEN]	
B107A	11	Refrigerant pressure sensor	[CIRC SHORT TO GRND]	Inhibit compressor control
	15		[CIRC SHORT TO BATTERY OR OPEN]	
B107D	11	Heater water pump	[CIRC SHORT TO GRND]	Inhibit compressor control
	12		[CIRC SHORT TO BATTERY]	Inhibit coolant circulation pump control
	13		[CIRC OPEN]	Inhibit compressor control
B10A2	07	Air mix door motor left	[MECHANICAL FAILURES]	Inhibit temperature control
	49		[INTERNAL ELECTRONIC FAILURE]	
	51		[NOT PROGRAMMED]	
	87		[MISSING MESSAGE]	Restricted function

DTC		CONSULT screen items		Fail-safe
		(Trouble diagnosis content)	[Malfunction type]	
B10A9	07	Air mix door motor right	[MECHANICAL FAILURES]	Inhibit temperature control
	49		[INTERNAL ELECTRONIC FAILURE]	
	51		[NOT PROGRAMMED]	
	87		[MISSING MESSAGE]	Restricted function
B1107	11	In-vehicle sensor	[CIRC SHORT TO GRND]	Restricted function
	15		[CIRC SHORT TO BATTERY OR OPEN]	
B1127	49	Air quality sensor	[INTERNAL ELECTRONIC FAILURE]	Restricted function
	87		[MISSING MESSAGE]	
B112F	07	Front blower regulator	[MECHANICAL FAILURES]	—
	13		[CIRC OPEN]	—
	49		[INTERNAL ELECTRONIC FAILURE]	Restricted function
	4B		[OVER TEMPERATURE]	—
	87		[MISSING MESSAGE]	Inhibit air flow control
B1135	00	Door motor	—	Restricted function
B1136	00	Door motor	—	Restricted function
B1178	07	Mode door motor	[MECHANICAL FAILURES]	Inhibit air outlet control
	49		[INTERNAL ELECTRONIC FAILURE]	
	51		[NOT PROGRAMMED]	
	87		[MISSING MESSAGE]	Restricted function
B11F6	01	In-vehicle sensor fan	[ELECTRICAL MALFUNCTION]	—
B1600	11	Sunload sensor left	[CIRC SHORT TO GRND]	Restricted function
	15		[CIRC SHORT TO BATTERY OR OPEN]	
B1603	11	Sunload sensor right	[CIRC SHORT TO GRND]	Restricted function
	15		[CIRC SHORT TO BATTERY OR OPEN]	
B1A9E	11	Refrigerant pressure sensor	[CIRC SHORT TO GRND]	Inhibit compressor control
	15		[CIRC SHORT TO BATTERY OR OPEN]	
B210A	00	Power Supply circuit	—	Restricted function
B210B	00	Power Supply circuit	—	Restricted function
B210D	00	Power supply	—	Restricted function
B210E	00	Power supply	—	Restricted function
B217E	11	The power supply to the LIN bus subscribers has a malfunction	[CIRC SHORT TO GRND]	Restricted function
	12		[CIRC SHORT TO BATTERY]	
B222D	00	Door motor	—	Restricted function
B22E2	11	Magnet clutch	[CIRC SHORT TO GRND]	Inhibit compressor control
	13		[CIRC OPEN]	

DTC		CONSULT screen items		Fail-safe
		(Trouble diagnosis content)	[Malfunction type]	
P0070	11	AMBIENT AIR TEMP SENSOR	[CIRC SHORT TO GRND]	The temperature displayed in the combination meter is 85°C.
	15		[CIRC SHORT TO BATTERY OR OPEN]	The temperature displayed in the combination meter is −40°C.
	84		[SIGNAL BELOW ALLOWABLE RANGE]	Transmitted temperature on the CAN communication signal is −40°C.
	85		[SIGNAL ABOVE ALLOWABLE RANGE]	Transmitted temperature on the CAN communication signal is 85°C.
B2611	01	Regulating valve	[ELECTRICAL MALFUNCTION]	Inhibit compressor control
U0019	88	Interior CAN communication	[BUS OFF]	Restricted function
U0155	00	COMMUNICATION ERROR (LOST)	—	Restricted function
U0203	00	Communication error	—	Restricted function
U0204	00	Communication error	—	Restricted function
U1008	00	Communication error (LIN bus 1)	—	Restricted function

DTC Index

INFOID:0000000013554091

DTC		CONSULT screen items		Fail-safe	Reference
		(Trouble diagnosis content)	[Malfunction type]		
B1030	11	Intake sensor	[CIRC SHORT TO GRND]	×	HAC-53, "DTC Description"
	15		[CIRC SHORT TO BATTERY OR OPEN]	×	
B1058	07	Intake door motor	[MECHANICAL FAILURES]	×	HAC-56, "DTC Description"
	49		[INTERNAL ELECTRONIC FAILURE]	×	
	51		[NOT PROGRAMMED]	×	
	87		[MISSING MESSAGE]	×	
B106A	11	Rear window defogger relay	[CIRC SHORT TO GRND]	×	DEF-31, "DTC Description"
	12		[CIRC SHORT TO BATTERY]	×	
	13		[CIRC OPEN]	×	
B107A	11	Refrigerant pressure sensor	[CIRC SHORT TO GRND]	×	HAC-60, "DTC Description"
	15		[CIRC SHORT TO BATTERY OR OPEN]	×	
B107D	11	Heater water pump	[CIRC SHORT TO GRND]	×	HAC-63, "DTC Description"
	12		[CIRC SHORT TO BATTERY]	×	
	13		[CIRC OPEN]	×	
B10A2	07	Air mix door motor left	[MECHANICAL FAILURES]	×	HAC-66, "DTC Description"
	49		[INTERNAL ELECTRONIC FAILURE]	×	
	51		[NOT PROGRAMMED]	×	
	87		[MISSING MESSAGE]	×	

DTC		CONSULT screen items		Fail-safe	Reference
		(Trouble diagnosis content)	[Malfunction type]		
B10A9	07	Air mix door motor right	[MECHANICAL FAILURES]	×	HAC-70, "DTC Description"
	49		[INTERNAL ELECTRONIC FAILURE]	×	
	51		[NOT PROGRAMMED]	×	
	87		[MISSING MESSAGE]	×	
B1107	11	In-vehicle sensor	[CIRC SHORT TO GRND]	×	HAC-74, "DTC Description"
	15		[CIRC SHORT TO BATTERY OR OPEN]	×	
B1127	49	Air quality sensor	[INTERNAL ELECTRONIC FAILURE]	×	HAC-77, "DTC Description"
	87		[MISSING MESSAGE]	×	
B112F	07	Front blower regulator	[MECHANICAL FAILURES]		HAC-79, "DTC Description"
	13		[CIRC OPEN]		
	49		[INTERNAL ELECTRONIC FAILURE]	×	
	4B		[OVER TEMPERATURE]		
	87		[MISSING MESSAGE]	×	
B1135	00	Door motor	—	×	HAC-83, "DTC Description"
B1136	00	Door motor	—	×	HAC-85, "DTC Description"
B1178	07	Mode door motor	[MECHANICAL FAILURES]	×	HAC-87, "DTC Description"
	49		[INTERNAL ELECTRONIC FAILURE]	×	
	51		[NOT PROGRAMMED]	×	
	87		[MISSING MESSAGE]	×	
B11F6	01	In-vehicle sensor fan	[ELECTRICAL MALFUNCTION]		HAC-91, "DTC Description"
B1600	11	Sunload sensor left	[CIRC SHORT TO GRND]	×	HAC-92, "DTC Description"
	15		[CIRC SHORT TO BATTERY OR OPEN]	×	
B1603	11	Sunload sensor right	[CIRC SHORT TO GRND]	×	HAC-95, "DTC Description"
	15		[CIRC SHORT TO BATTERY OR OPEN]	×	
B1A9E	11	Refrigerant pressure sensor	[CIRC SHORT TO GRND]	×	HAC-98, "DTC Description"
	15		[CIRC SHORT TO BATTERY OR OPEN]	×	
B210A	00	Power Supply circuit	—	×	HAC-101, "DTC Description"
B210B	00	Power Supply circuit	—	×	HAC-102, "DTC Description"
B210D	00	Power supply	—	×	HAC-103, "DTC Description"
B210E	00	Power supply	—	×	HAC-104, "DTC Description"
B217E	11	The power supply to the LIN bus subscribers has a malfunction	[CIRC SHORT TO GRND]	×	HAC-105, "DTC Description"
	12		[CIRC SHORT TO BATTERY]	×	
B222D	00	Door motor	—	×	HAC-107, "DTC Description"

DTC		CONSULT screen items		Fail-safe	Reference
		(Trouble diagnosis content)	[Malfunction type]		
B22E2	11	Magnet clutch	[CIRC SHORT TO GRND]	×	HAC-108, "DTC Description"
	13		[CIRC OPEN]	×	
P0070	11	AMBIENT AIR TEMP SENSOR	[CIRC SHORT TO GRND]	×	HAC-110, "DTC Description"
	15		[CIRC SHORT TO BATTERY OR OPEN]	×	
	84		[SIGNAL BELOW ALLOWABLE RANGE]	×	
	85		[SIGNAL ABOVE ALLOWABLE RANGE]	×	
B2611	01	Regulating valve	[ELECTRICAL MALFUNCTION]	×	HAC-113, "DTC Description"
U0019	88	Interior CAN communication	[BUS OFF]	×	HAC-115, "DTC Description"
U0155	00	COMMUNICATION ERROR (LOST)	—	×	HAC-116, "DTC Description"
U0203	00	Communication error	—	×	HAC-117, "DTC Description"
U0204	00	Communication error	—	×	HAC-118, "DTC Description"
U1008	00	Communication error (LIN bus 1)	—	×	HAC-119, "DTC Description"

BCM, OVERHEAD CONTROL PANEL CONTROL UNIT

List of ECU Reference

INFOID:0000000013554092

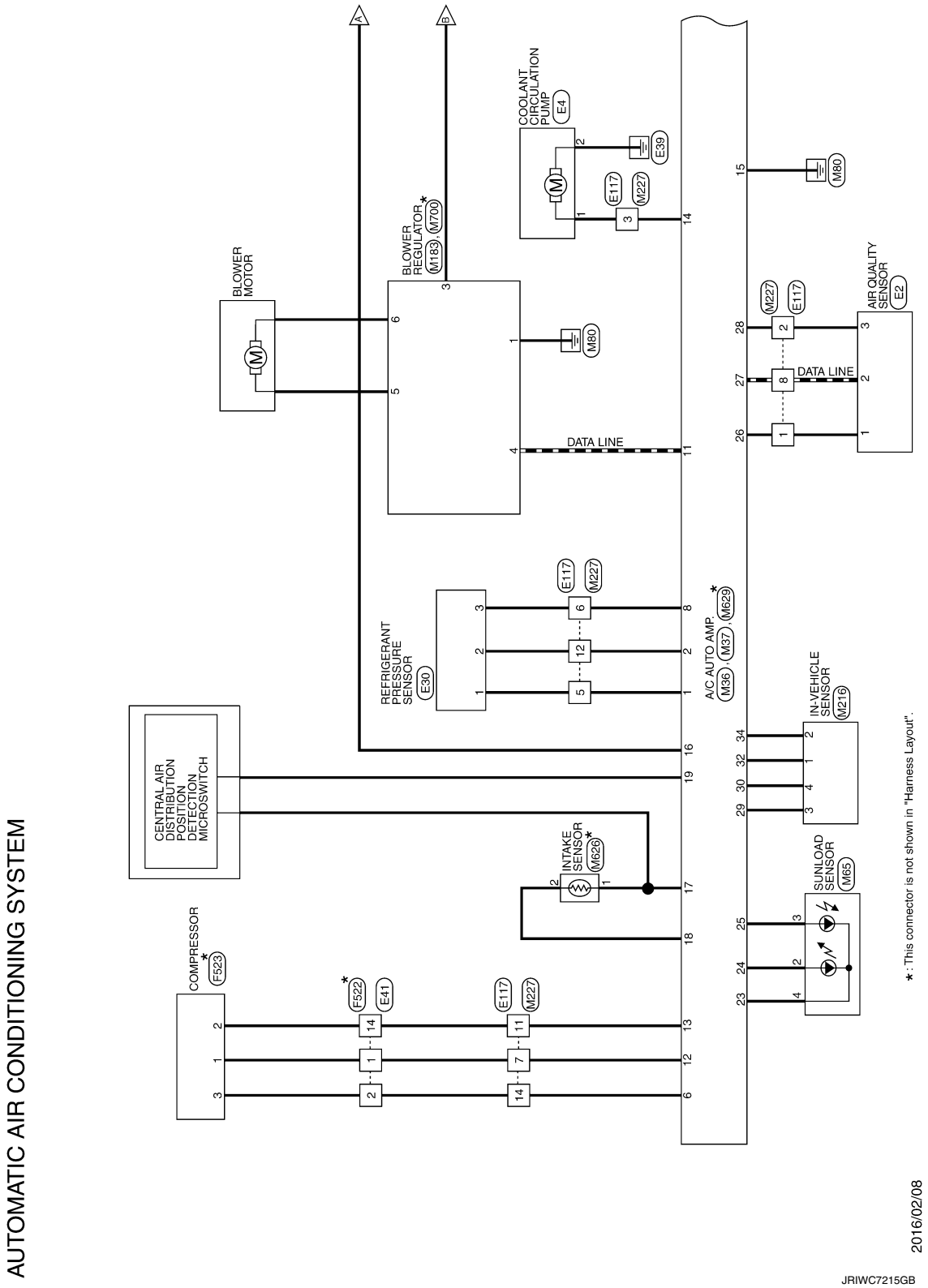
ECU	Reference
BCM	BCS-32, "Reference Value"
	BCS-50, "Fail-safe"
	BCS-51, "DTC Index"
Overhead control panel control unit	INL-24, "Reference Value"

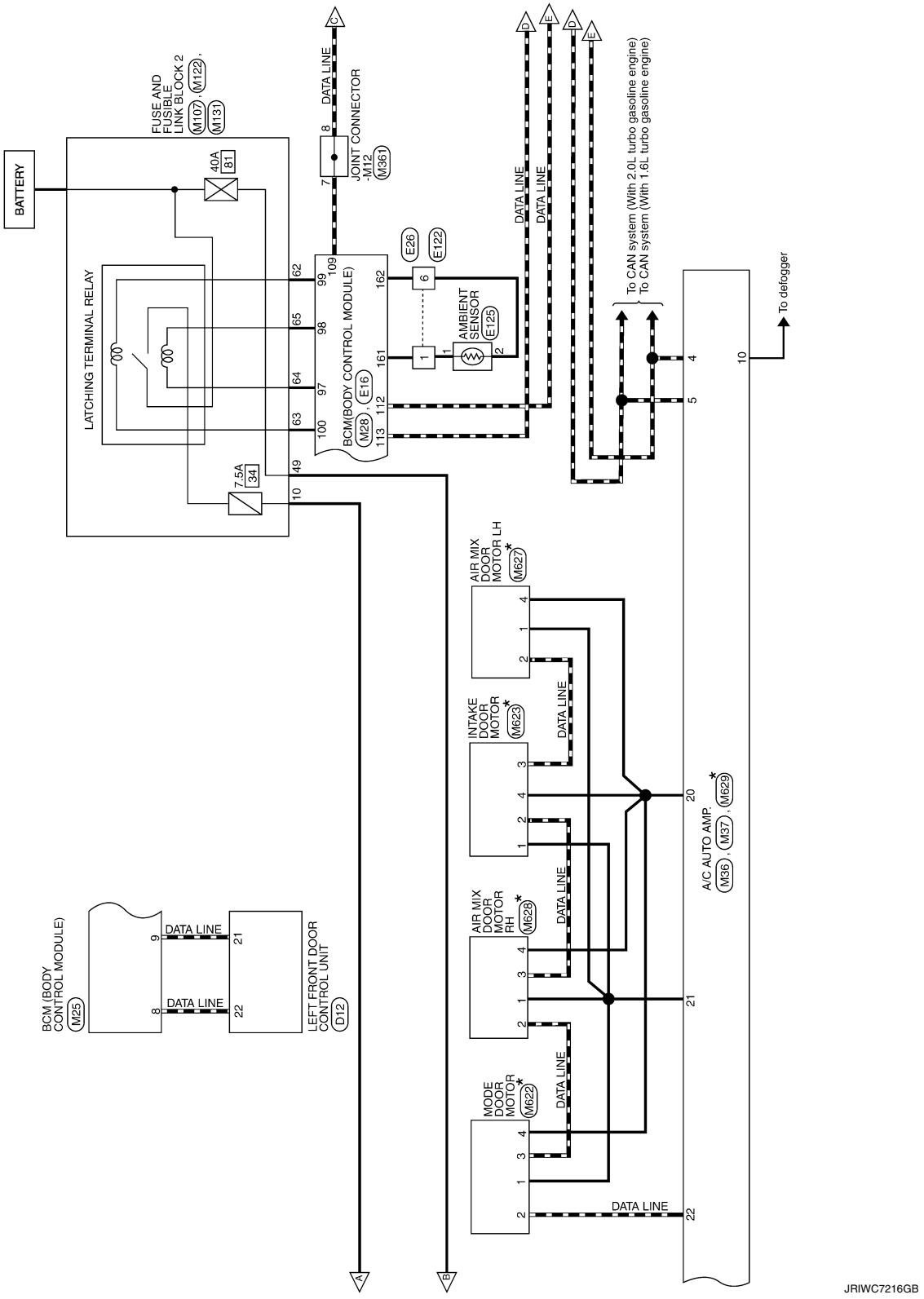
WIRING DIAGRAM

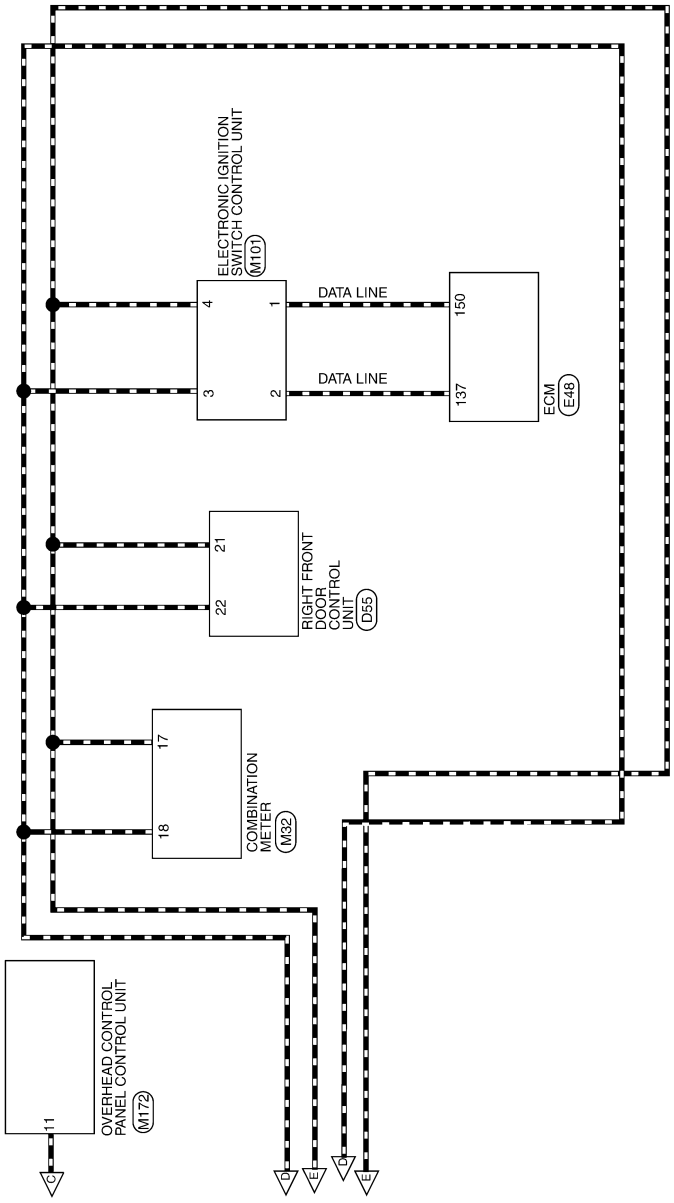
AUTOMATIC AIR CONDITIONING SYSTEM

Wiring Diagram

INFOID:0000000013554093




BATTERY
FUSE AND FUSIBLE LINK BLOCK 2 (M107), (M122), (M131)
40A 81
7.5A 34
LATCHING TERMINAL RELAY
DATA LINE
JOINT CONNECTOR M12 (M361)
BCM(BODY CONTROL MODULE) (M28), (E16)
AMBIENT SENSOR (E125)
(E26)
(E122)
To CAN system (With 2.0L turbo gasoline engine)
To CAN system (With 1.6L turbo gasoline engine)
To defogger
AIR MIX DOOR MOTOR LH (M627)*
INTAKE DOOR MOTOR (M623)*
AIR MIX DOOR MOTOR RH (M628)*
MODE DOOR MOTOR (M622)*
A/C AUTO AMP. (M36), (M37), (M629)*
BCM (BODY CONTROL MODULE) (M25)
LEFT FRONT DOOR CONTROL UNIT (D12)
JRIWC7216GB


ELECTRONIC IGNITION SWITCH CONTROL UNIT
M101
4
1
3
2
DATA LINE
DATA LINE
150
137
ECM
E48
21
22
RIGHT FRONT DOOR CONTROL UNIT
D55
17
18
COMBINATION METER
M32
11
OVERHEAD CONTROL PANEL CONTROL UNIT
M172
C
D
E
G
H
JRIWC7217GB

AUTOMATIC AIR CONDITIONING SYSTEM

Connector No.	D12
Connector Name	LEFT FRONT DOOR CONTROL UNIT
Connector Type	MB_A00254062B1

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
21	BR	BODY CAN 2-L
22	R	BODY CAN 2-H
23	L	ROTARY CATCH SIGNAL
24	BR	GROUND
25	R	BATTERY POWER SUPPLY

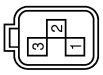
Connector No.	D55
Connector Name	RIGHT FRONT DOOR CONTROL UNIT
Connector Type	MB_A00254062B1

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
21	BR	BODY CAN 1-L
22	R	BODY CAN 1-H
24	BR	GROUND
25	R	BATTERY POWER SUPPLY

Connector No.	E2
Connector Name	AIR QUALITY SENSOR
Connector Type	MB_A22054006B1

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	-
2	O	-
3	V	-

Connector No.	E4
Connector Name	COOLANT CIRCULATION PUMP
Connector Type	MB_A05254538261

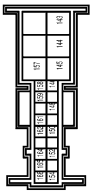
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	R	-
2	BR	-

Connector No.	E16
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	MB_A16654001B1

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
143	Y	FRONT FOG LAMP RH
144	W	HIGH BEAM RH
145	GR	LOW BEAM LH
146	P	FRONT TURN SIGNAL RH
148	V	FR BRAKE WEAR SENSOR RH
150	GR	PARKING LAMP RH
152	L	LIN (BAT SENSOR)
154	Y	HEADLAMP AIMING RH
157	O	SSK STAT
158	R	COOLANT LEVEL SW SIG
159	BR	COOLANT LEVEL SW GND
161	P	AMBIENT SENSOR GND
162	G	AMBIENT SENSOR SIG
164	O	BRAKE FLUID LEVEL SW GND
165	V	HEADLAMP AIMING LH
166	R	DECOUPLING RELAY CONT

Connector No.	E26
Connector Name	WIRE TO WIRE
Connector Type	RH10MB

H.S.

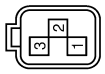


Terminal No.	Color Of Wire	Signal Name [Specification]
1	P	-
2	R	-
3	B	-

6	G	-
7	W	-
8	V	-

Connector No.	E30
Connector Name	REFRIGERANT PRESSURE SENSOR
Connector Type	MB_A00654022B1

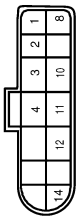
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	GR	-
2	B	-
3	L	-

Connector No.	E41
Connector Name	WIRE TO WIRE
Connector Type	MB_A02754598261

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	-
2	-	-
3	R	-
4	V	-
8	V	-
10	P	-
11	G	-
12	BR	-
14	W	-

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AUTOMATIC AIR CONDITIONING SYSTEM

Connector No.	E48
Connector Name	ECM
Connector Type	MB_A0075406981

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
97	R	POWER SUPPLY (ECM)
98	BR	ECM GROUND
99	V	POWER SUPPLY (ECM)
100	BR	ECM GROUND
101	R	POWER SUPPLY (ECM)
102	B	ECM GROUND
103	L	COOLING FAN CONTROL SIGNAL
104	R	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 1)
105	G	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 2)
106	BR	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 1)
111	B	IGNITION SIGNAL
112	Y	POWER SUPPLY (BATTERY)
116	W	STARTER RELAY-L
119	GR	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 2)
120	O	SENSOR GROUND
122	R	HOT START SIGNAL
123	GR	MOTOR RELAY CONTROL SIGNAL
127	O	FUEL PUMP ON SIGNAL
132	G	ACCELERATOR PEDAL POSITION SENSOR 1
136	Y	POWERTRAIN SENSOR CAN-H
137	W	CAN-H
138	GR	POWERTRAIN CAN-H
141	B	WATER PUMP RELAY CONTROL SIGNAL
145	W	ACCELERATOR PEDAL POSITION SENSOR 2
146	G	FUEL TANK PRESSURE SENSOR
147	L	CRASH SIGNAL
148	W	STARTER RELAY-H
149	B	POWERTRAIN SENSOR CAN-L
150	G	CAN-L
151	L	POWERTRAIN CAN-L
152	V	EVAP CANISTER VENT CONTROL VALVE
153	BR	EVAP PURGE CONTROL VALVE

Connector No.	E117
Connector Name	WIRE TO WIRE
Connector Type	MB_A2205459928

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	-
2	V	-
3	R	-
4	P	-
5	GR	-
6	L	-
7	G	-
8	O	-
10	Y	-
11	W	-
12	B	-
13	R	-
14	V	-

Connector No.	E122
Connector Name	WIRE TO WIRE
Connector Type	RH10FB

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	Y	-
2	R	-
3	B	-
6	G	-
7	W	-
8	V	-

Connector No.	E125
Connector Name	AMBIENT SENSOR
Connector Type	MB_A2105402081

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	Y	-
2	G	-

Connector No.	F522
Connector Name	WIRE TO WIRE
Connector Type	MB_A0055452928

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	-
2	-	-
3	R	-
4	V	-
8	V	-
10	P	-
11	G	-
12	BR	-
14	W	-

Connector No.	F523
Connector Name	COMPRESSOR
Connector Type	A0225452426

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	-	-
2	-	-
3	-	-

Connector No.	M25
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	MB_A0075405081

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	ROTARY LIGHT SW GND
2	O	ROTARY LIGHT SW (PU/PR/TAIL)
3	R	ROTARY LIGHT SW (AUTO/LOW)
4	G	ROTARY LIGHT SW (FR FOG)
5	Y	-
7	GR	SWITCH INDICATOR
8	R	CAN-H (BODY 2)
9	BR	CAN-L (BODY 2)
12	O	LIN (BS)
14	G	FOOT LAMP

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AUTOMATIC AIR CONDITIONING SYSTEM

Connector No.	M28
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	MB_A1665400481

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
67	V	BACK DOOR UNLOCK
69	GR	STOP LAMP [BODY RH]
70	B	REAR TURN SIGNAL LH
71	GR	BACK-UP LAMP RH
72	Y	LICENSE PLATE LAMP RH
73	L	RR POWER WINDOW SW RH UP
74	B	RR POWER WINDOW SW RH DOWN
75	L	RR POWER WINDOW SW RH GND
76	GR	HALL SENSOR RH POWER SUPPLY
77	R	SUB BAT-
78	B	TERMINAL RELAY 15R1 CONT
80	B	REAR WIPER RELAY CONT
82	GR	TAIL LAMP [BODY LH]
83	P	TERMINAL RELAY 15R2 CONT
85	B	TAIL LAMP [BK LH]
87	R	BAT (VIA LATCHING TERMINAL RELAY 30G)
89	O	HALL SENSOR RH GND
90	V	HALL SENSOR RH SIGNAL
91	P	FUEL LEVEL SENSOR GND
92	L	FUEL LEVEL SENSOR
93	GR	FUEL LEVEL SENSOR
94	Y	FUEL FILLER LID STATUS
97	G	LATCHING TERMINAL RELAY 30G CONT 1
98	B	LATCHING TERMINAL RELAY 30G GND 1
99	W	LATCHING TERMINAL RELAY 30G GND 2
100	V	LATCHING TERMINAL RELAY 30G CONT 2
101	Y	REAR DOOR INSIDE HANDLE LAMP CONT
102	GR	AMBIENT LAMP CONT
103	V	SUB BAT RELAY CONT
105	G	RR DOOR LH UNLOCK
106	W	FUEL FILLER LID UNLOCK
107	L	RR DOOR LH LOCK
108	R	SUB BAT+
109	O	LIN (ROOF)
112	BR	CAN-L (BODY 1)
113	R	CAN-H (BODY 1)

114	B	INJECTION RELAY CONT

Connector No.	M32
Connector Name	COMBINATION METER
Connector Type	MB_A0525452726

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	GROUND
4	R	BATTERY POWER SUPPLY
12	GR	CAN-L
13	W	CAN-H
17	BR	CAN-L
18	R	CAN-H

Connector No.	M36
Connector Name	A/C AUTO AMP.
Connector Type	MB_A0025405581

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	REFRIGERANT PRESSURE SENSOR GROUND
2	B	REFRIGERANT PRESSURE SENSOR SIGNAL
4	BR	CAN-L
5	R	CAN-H
6	V	COMPRESSOR (ECV) CONTROL SIGNAL
8	L	REFRIGERANT PRESSURE SENSOR POWER SUPPLY
10	Y	REAR WINDOW DEFOGGER RELAY CONTROL SIGNAL
11	V	LIN (BLOWER MOTOR)
12	G	COMPRESSOR (ECV) GROUND
13	P	COMPRESSOR (MAGNET CLUTCH) CONTROL SIGNAL
14	R	COOLANT CIRCULATION PUMP CONTROL SIGNAL

15	BR	GROUND
16	O	BATTERY POWER SUPPLY

Connector No.	M37
Connector Name	A/C AUTO AMP.
Connector Type	MB_A0265456226

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
23	V	SUNLOAD SENSOR GROUND
24	Y	SUNLOAD SENSOR SIGNAL 1
25	L	SUNLOAD SENSOR SIGNAL 2
26	BR	AIR QUALITY SENSOR GROUND
27	O	LIN (AIR QUALITY SENSOR)
28	V	AIR QUALITY SENSOR POWER SUPPLY
29	B	IN-VEHICLE SENSOR (SENSOR) GROUND
30	L	IN-VEHICLE SENSOR (SENSOR) SIGNAL
32	G	IN-VEHICLE SENSOR (MOTOR) GROUND
34	R	IN-VEHICLE SENSOR (MOTOR) POWER SUPPLY

Connector No.	M65
Connector Name	SUNLOAD SENSOR
Connector Type	MB_A0375456528

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
2	Y	-
3	L	-
4	V	-

Connector No.	M101
Connector Name	ELECTRONIC IGNITION SWITCH CONTROL UNIT
Connector Type	MB_A0265458426

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	CHASSIS CAN-L
2	W	CHASSIS CAN-H
3	R	BODY CAN 1-H
4	BR	BODY CAN 1-L
6	W	STEERING LOCK OPERATION
9	GR	REMOTE KEYLESS
10	W	POWER SUPPLY
11	BR	DIAGNOSTIC CAN-L
12	L	DIAGNOSTIC CAN-H

Connector No.	M107
Connector Name	FUSE AND FUSIBLE LINK BLOCK 2
Connector Type	MB_A0055459701

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
4	O	-
7	L	-
8	R	-
10	O	-

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AUTOMATIC AIR CONDITIONING SYSTEM

Connector No.	M122
Connector Name	FUSE AND FUSIBLE LINK BLOCK 2
Connector Type	MB_A0065452701

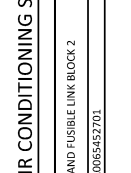
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
49	R	-

Connector No.	M131
Connector Name	FUSE AND FUSIBLE LINK BLOCK 2
Connector Type	MB_A2205459928

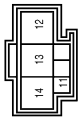
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
57	R	-
58	P	-
59	O	-
60	R	-
62	W	-
63	V	-
64	G	-
65	B	-
67	Y	-

Connector No.	M172
Connector Name	OVERHEAD CONTROL PANEL CONTROL UNIT
Connector Type	MB_A0025406781

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
11	O	LIN (ROOF)
12	B	GND
13	G	BATTERY POWER SUPPLY
14	O	BATTERY POWER SUPPLY

Connector No.	M183
Connector Name	BLOWER REGULATOR
Connector Type	MB_A0485456728

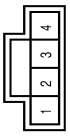
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	-
3	R	-
4	V	-

Connector No.	M216
Connector Name	IN-VEHICLE SENSOR
Connector Type	MB_A0375456528

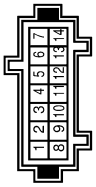
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	-
2	R	-
3	B	-
4	L	-

Connector No.	M227
Connector Name	WIRE TO WIRE
Connector Type	MB_A0365458728

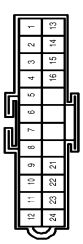
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	-
2	V	-
3	R	-
4	BR	-
5	BR	-
6	L	-
7	G	-
8	O	-
10	W	-
11	P	-
12	B	-
13	R	-
14	V	-

Connector No.	M361
Connector Name	JOINT CONNECTOR-M12
Connector Type	FEA24JG

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	-
2	W	-
3	W	-
4	W	-
5	Y	-
6	Y	-
7	O	-
8	O	-
9	R	-
10	R	-
11	R	-
12	R	-
13	G	-
14	W	-
15	P	-
16	P	-
21	L	-
22	L	-
23	W	-
24	W	-

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AUTOMATIC AIR CONDITIONING SYSTEM

Connector No.	M622
Connector Name	MODE DOOR MOTOR
Connector Type	M04FBR

H.S.

1 2 3 4

Terminal No.	Color Of Wire	Signal Name [Specification]
1	-	-
2	-	-
3	-	-
4	-	-

Connector No.	M623
Connector Name	INTAKE DOOR MOTOR
Connector Type	M04FBR

H.S.

1 2 3 4

Terminal No.	Color Of Wire	Signal Name [Specification]
1	-	-
2	-	-
3	-	With auto A/C
4	-	-

Connector No.	M626
Connector Name	INTAKE SENSOR
Connector Type	A02FW

H.S.

1 2

Terminal No.	Color Of Wire	Signal Name [Specification]
1	-	-
2	-	-

Connector No.	M627
Connector Name	AIR MIX DOOR MOTOR LH
Connector Type	M04FBR

H.S.

1 2 3 4

Terminal No.	Color Of Wire	Signal Name [Specification]
1	-	-
2	-	-
3	-	-
4	-	-

Connector No.	M628
Connector Name	AIR MIX DOOR MOTOR RH
Connector Type	M04FBR

H.S.

1 2 3 4

Terminal No.	Color Of Wire	Signal Name [Specification]
1	-	-
2	-	-
3	-	-
4	-	-

Connector No.	M629
Connector Name	A/C AUTO AMP.
Connector Type	A06FW

H.S.

17 18 19 20 21 22

Terminal No.	Color Of Wire	Signal Name [Specification]
17	BR/G	CENTRAL AIR DISTRIBUTION POSITION (DEFROSTER) INTAKE DOOR SPECIFICATION
18	G	INTAKE SENSOR SIGNAL
19	L/W	CENTRAL AIR DISTRIBUTION POSITION (DEFROSTER) MODE DOOR SWITCH SIGNAL
20	R/W	DOOR MOTOR POWER SUPPLY
21	BR/W	DOOR MOTOR GROUND
22	Y	LIN (DOOR MOTOR)

Connector No.	M700
Connector Name	BLOWER REGULATOR
Connector Type	MB_A0435459628

H.S.

5 6

Terminal No.	Color Of Wire	Signal Name [Specification]
5	O	-
6	BR	-

JRIWC7222GB

BASIC INSPECTION

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT (A/C AUTO AMP.)

Description

INFOID:0000000013554094

When replacing A/C auto amp., the procedures of AFTER REPLACEMENT must be performed. For work procedure, refer to HAC-48, "Work Procedure".

AFTER REPLACEMENT

After replacing A/C auto amp., the following items must be performed:

- Configuration

Work Procedure

INFOID:0000000013554095

1.PERFORM CONFIGURATION (WRITING VEHICLE SPECIFICATION)

With CONSULT

Perform configuration. Refer to HAC-49, "Description".

NOTE:

Log in to the network, according to the CONSULT screen.

>> END

CONFIGURATION (A/C AUTO AMP.)

Description

INFOID:0000000013554096

Vehicle specification needs to be written with CONSULT because it is not written after replacing the A/C auto amp.
The configuration requires network connection. CONSULT connects to network and then it downloads the configuration data from the server. Then CONSULT writes the vehicle specification to the A/C auto amp.
Refer to HAC-49, "Work Procedure".
NOTE:
For details the network connection and operation, refer to “CONSULT Operation Manual”.
The configuration no need to “save” configuration data from the A/C auto amp. The configuration data is always generated freshly at the server and then downloaded to the CONSULT.
CAUTION:
- **Complete the procedure of “Read / Write Configuration” in order.**
- **If incorrect “Read / Write Configuration”, incidents might occur.**
- **Never perform “Read / Write Configuration” except for new A/C auto amp.**

Work Procedure

INFOID:0000000013554097

1.WRITING VEHICLE SPECIFICATION

CONSULT Configuration
Perform “WRITE CONFIGURATION” for CONTROL UNIT to “CONSULT Operation Manual”.
NOTE:
- Log in the network according to CONSULT guidance.
- For details the network connection and operation, refer to “CONSULT Operation Manual”.

>> WORK END

TEACH-IN OF ACTUATOR MOTORS

Description

INFOID:0000000013554098

If door motor is replaced, it is necessary to perform "Teach in of actuator motors" using CONSULT. For work procedure, refer to HAC-50, "Work Procedure".

Work Procedure

INFOID:0000000013554099

1.PERFORM TEACH IN OF ACTUATOR MOTORS

With CONSULT
1. Turn ignition switch ON.
2. Select "Teach in of actuator motors" in "Work support" of "HVAC" using CONSULT.
3. Touch "Start".
4. Make sure the "COMPLETED" is displayed on CONSULT screen.

>> INSPECTION END

BREAKING-IN OF REFRIGERANT COMPRESSOR

Description

INFOID:0000000013554100

If compressor is replaced, it is necessary to perform "Breaking in of refrigerant compressor" using CONSULT. For work procedure, refer to HAC-51, "Work Procedure".

Work Procedure

INFOID:0000000013554101

1.PRECONDITIONS

Perform satisfied the following condition.
- The air conditioning system must be properly filled with refrigerant.
- Air conditioning system ON.
- Engine start at idle speed.
- A/C switch ON.

>> GO TO 2.

2.PERFORM BREAKING IN OF REFRIGERANT COMPRESSOR

With CONSULT
1. Select "Breaking in of refrigerant compressor" in "Work support" of "HVAC" using CONSULT.
2. Touch "Start".
   NOTE:
   - This process lasts approx. 90 seconds.
   - During the operation the A/C switch indicator lamp flashes.
3. Make sure the "COMPLETED" is displayed on CONSULT screen.

>> INSPECTION END

NORMALIZATION OF ACTUATOR MOTORS

Description

INFOID:0000000013554102

If door motor is replaced, it is necessary to perform "Normalization of actuator motors" using CONSULT. For work procedure, refer to HAC-52, "Work Procedure".

NOTE:

If a door motor was replaced, then the "Teach-in of actuator motors" operation must be performed first. Refer to HAC-50, "Description".

Work Procedure

INFOID:0000000013554103

1.PRECONDITIONS

Perform satisfied the following condition.

- The battery voltage must be between 12.5 V and 14.5 V, connect a charger if necessary.
- The vehicle interior temperature and the outside temperature must be above 10°C (50°F).

>> GO TO 2.

2.PERFORM NORMALIZATION OF ACTUATOR MOTORS

With CONSULT

1. Turn ignition switch ON.
2. Select "Normalization of actuator motors" in "Work support" of "HVAC" using CONSULT.
3. Touch "Start".
4. Make sure the "COMPLETED" is displayed on CONSULT screen.

>> INSPECTION END

DTC/CIRCUIT DIAGNOSIS

B1030 INTAKE SENSOR

DTC Description

INFOID:0000000013554104

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B1030	11	Intake sensor (Intake sensor)	[CIRC SHORT TO GRND]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Intake sensor signal
				Threshold	Circuit short to ground
				Diagnosis delay time	0.2 – 1 second
	15		[CIRC SHORT TO BATTERY OR OPEN]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Intake sensor signal
				Threshold	Circuit short to battery or open
				Diagnosis delay time	0.2 – 1 second

POSSIBLE CAUSE (B1030-11)

- Intake sensor signal circuit short to ground
- Intake sensor
- A/C auto amp.

POSSIBLE CAUSE (B1030-15)

- Intake sensor signal circuit short to battery or open
- Intake sensor
- A/C auto amp.

FAIL-SAFE

Inhibit compressor control

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 11 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-53, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554105

1. CHECK INTAKE SENSOR CIRCUIT (SHORT TO GROUND)

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

Intake sensor		—	Continuity
Connector	Terminal		
M626	2	Ground	Not existed
	1		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK INTAKE SENSOR CIRCUIT (SHORT TO BATTERY)

Check voltage between intake sensor harness connector and ground.

+		-	Voltage (Approx.)
Intake sensor			
Connector	Terminal		
M626	2	Ground	0 V
	1		

Is the inspection result normal?

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

3.CHECK INTAKE SENSOR CIRCUIT (OPEN)

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	
M626	2	M629	18	Existed
	1		17	

Is the inspection result normal?

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

4.ERASE DTC

With CONSULT
1. Connect intake sensor connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-53, "DTC Description".

Is DTC "B1030-11", "B1030-15" detected?

YES >> GO TO 5.
NO >> INSPECTION END

5.REPLACE INTAKE SENSOR AND ERASE DTC

With CONSULT
1. Turn ignition switch OFF.
2. Replace intake sensor. Refer to HAC-126, "Removal and Installation".
3. Turn ignition switch ON.
4. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
5. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-53, "DTC Description".

Is DTC "B1030-11", "B1030-15" detected?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".

NO >> INSPECTION END

B1058 INTAKE DOOR MOTOR

DTC Description

INFOID:0000000013554106

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B1058	07	Intake door motor (Intake door motor)	[MECHANICAL FAILURES]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Mechanical error
				Diagnosis delay time	—
	49		[INTERNAL ELECTRONIC FAILURE]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Internal electrical error
				Diagnosis delay time	—
	51		[NOT PROGRAMMED]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Normalization of the actuator motors is not completed
				Diagnosis delay time	Less than 30 seconds
	87		[MISSING MESSAGE]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Message missing
				Diagnosis delay time	Less than 30 seconds

POSSIBLE CAUSE (B1058-07)

- Mechanical components of the intake door
- Intake door motor

POSSIBLE CAUSE (B1058-49, B1058-87)

- Harness or connectors
- Intake door motor

POSSIBLE CAUSE (B1058-51)

Teach-in of actuator motors is not completed

FAIL-SAFE (B1058-07, B1058-49, B1058-51)

Inhibit air inlet control

FAIL-SAFE (B1058-87)

Restricted function

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 40 seconds.

2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-57, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554107

B1058-07

1.CHECK ADJUSTMENT RANGE OF THE ACTUATOR MOTORS

With CONSULT
1. Turn ignition switch ON.
2. Select “Check adjustment range of actuator motors” in "Active Test" mode of “HVAC” using CONSULT.
   NOTE:
   Test condition:
   • The battery voltage must be between 12.5 V and 14.5 V, connect a charger if necessary.
   • The vehicle interior temperature and the outside temperature must be above 10°C (50°F).
3. Touch "Start".
   NOTE:
   This process lasts approx. 1 minute.

Is the inspection result normal?

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

2.CHECK MECHANICAL COMPONENTS OF THE INTAKE DOOR

Check mechanical components of the intake door. Refer to HAC-130, "Exploded View".

Is the inspection result normal?

YES >> Replace intake door motor. Refer to HAC-130, "INTAKE DOOR MOTOR : Removal and Installation".
NO >> Repair or replace the malfunctioning part.

3.ERASE DTC

With CONSULT
1. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
2. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-56, "DTC Description".

Is DTC "B1058-07" detected?

YES >> Perform normalization of actuator motors. Refer to HAC-52, "Description".
NO >> INSPECTION END

B1058-49, B1058-87

1.CHECK INTAKE DOOR MOTOR CIRCUIT (SHORT TO GROUND)

1. Turn ignition switch OFF.
2. Disconnect the following connectors.
- A/C auto amp.
- Air mix door motor LH
- Air mix door motor RH
- Mode door motor
- Intake door motor
3. Check continuity between intake door motor harness connector and ground.

Intake door motor		—	Continuity
Connector	Terminal		
M623	2	Ground	Not existed
	1		
	4		
	3		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK INTAKE DOOR MOTOR CIRCUIT (SHORT TO BATTERY)

Check voltage between intake door motor harness connector and ground.

+		-	Voltage (Approx.)
Intake door motor			
Connector	Terminal		
M623	2	Ground	0 V
	1		
	4		
	3		

Is the inspection result normal?

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

3.CHECK INTAKE DOOR MOTOR CIRCUIT (OPEN)

Check continuity between following harness connectors.

A/C auto amp.		Mode door motor		Continuity
Connector	Terminal	Connector	Terminal	
M629	22	M622	2	Existed

Mode door motor		Air mix door motor RH		Continuity
Connector	Terminal	Connector	Terminal	
M622	3	M628	2	Existed

Air mix door motor RH		Intake door motor		Continuity
Connector	Terminal	Connector	Terminal	
M628	3	M623	2	Existed

Intake door motor		Air mix door motor LH		Continuity
Connector	Terminal	Connector	Terminal	
M623	3	M627	2	Existed

Is the inspection result normal?

YES >> Replace intake door motor. Refer to HAC-130, "INTAKE DOOR MOTOR : Removal and Installation".
NO >> Repair harness or connector.

B1058-51

1.PERFORM TEACH-IN OF ACTUATOR MOTORS

Perform teach-in of actuator motors. Refer to HAC-50, "Description".

>> INSPECTION END

B107A REFRIGERANT PRESSURE SENSOR

DTC Description

INFOID:0000000013554108

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B107A	11	Refrigerant pressure sensor (Refrigerant pressure sensor)	[CIRC SHORT TO GRND]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Refrigerant pressure sensor signal
				Threshold	Circuit short to ground
				Diagnosis delay time	0.2 – 1 second
	15		[CIRC SHORT TO BATTERY OR OPEN]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Refrigerant pressure sensor signal
				Threshold	Circuit short to battery or open
				Diagnosis delay time	0.2 – 1 second

POSSIBLE CAUSE (B107A-11)

- Refrigerant pressure sensor signal circuit short to ground
- Refrigerant pressure sensor
- A/C auto amp.

POSSIBLE CAUSE (B107A-15)

- Refrigerant pressure sensor signal circuit short to battery or open
- Refrigerant pressure sensor
- A/C auto amp.

FAIL-SAFE

Inhibit compressor control

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 11 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-60, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554109

1.CHECK REFRIGERANT PRESSURE SENSOR CIRCUIT (SHORT TO GROUND)

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

Refrigerant pressure sensor		—	Continuity
Connector	Terminal		
E30	1	Ground	Not existed
	2		
	3		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK REFRIGERANT PRESSURE SENSOR CIRCUIT (SHORT TO BATTERY)

Check voltage between refrigerant pressure sensor harness connector and ground.

+		-	Voltage (Approx.)
Refrigerant pressure sensor			
Connector	Terminal		
E30	1	Ground	0 V
	2		
	3		

Is the inspection result normal?

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

3.CHECK REFRIGERANT PRESSURE SENSOR CIRCUIT (OPEN)

Check continuity between refrigerant pressure sensor harness connector and A/C auto amp. harness connector.

Refrigerant pressure sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
E30	1	M36	1	Existed
	2		2	
	3		8	

Is the inspection result normal?

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

4.ERASE DTC

With CONSULT
1. Connect refrigerant pressure sensor connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-60, "DTC Description".

Is DTC "B107A-11", "B107A-15" detected?

YES >> GO TO 5.
NO >> INSPECTION END

5.REPLACE REFRIGERANT PRESSURE SENSOR AND ERASE DTC

With CONSULT
1. Turn ignition switch OFF.
2. Replace refrigerant pressure sensor. Refer to HA-32, "REFRIGERANT PRESSURE SENSOR : Removal and Installation".
3. Turn ignition switch ON.

4. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
5. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-60, "DTC Description".

Is DTC "B107A-11", "B107A-15" detected?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

B107D COOLANT CIRCULATION PUMP

DTC Description

INFOID:0000000013554110

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B107D	11	Heater water pump (Heater water pump)	[CIRC SHORT TO GRND]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Coolant circulation pump power supply
				Threshold	When coolant circulation pump ON, output voltage inactive, output current too high
				Diagnosis delay time	Less than 1 second
	12		[CIRC SHORT TO BATTERY]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Coolant circulation pump power supply
				Threshold	When coolant circulation pump OFF, output voltage active
				Diagnosis delay time	Less than 1 second
	13		[CIRC OPEN]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Coolant circulation pump power supply
				Threshold	When coolant circulation pump ON, output voltage active, output current 0 A
				Diagnosis delay time	Less than 1 second

POSSIBLE CAUSE (B107D-11)

- Coolant circulation pump circuit short to ground
- Coolant circulation pump
- A/C auto amp.

POSSIBLE CAUSE (B107D-12)

- Coolant circulation pump circuit short to battery
- Coolant circulation pump
- A/C auto amp.

POSSIBLE CAUSE (B107D-13)

- Coolant circulation pump circuit open
- Coolant circulation pump
- A/C auto amp.

FAIL-SAFE (B107D-11, B107D-13)

Inhibit compressor control

FAIL-SAFE (B107D-12)

Inhibit coolant circulation pump control

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 11 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-64, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554111

1. CHECK COOLANT CIRCULATION PUMP POWER SUPPLY CIRCUIT (SHORT TO GROUND)

1. Turn ignition switch OFF.
2. Disconnect coolant circulation pump connector and A/C auto amp. connector.
3. Check continuity between coolant circulation pump harness connector and ground.

Coolant circulation pump		—	Continuity
Connector	Terminal		
E4	1	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2. CHECK COOLANT CIRCULATION PUMP POWER SUPPLY CIRCUIT (SHORT TO BATTERY)

Check voltage between coolant circulation pump harness connector and ground.

+		-	Voltage (Approx.)
Coolant circulation pump			
Connector	Terminal		
E4	1	Ground	0 V

Is the inspection result normal?

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

3. CHECK COOLANT CIRCULATION PUMP POWER SUPPLY CIRCUIT (OPEN)

Check continuity between coolant circulation pump harness connector and A/C auto amp. harness connector.

Coolant circulation pump		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
E4	1	M36	14	Existed

Is the inspection result normal?

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

4. CHECK COOLANT CIRCULATION PUMP GROUND CIRCUIT (OPEN)

Check continuity between coolant circulation pump and ground.

Coolant circulation pump		—	Continuity
Connector	Terminal		
E4	2	Ground	Existed

Is the inspection result normal?

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

5. ERASE DTC

With CONSULT
1. Connect coolant circulation pump connector and A/C auto amp. connector.

2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-63, "DTC Description".

Is DTC "B107D-11", "B107D-12", "B107D-13" detected?

YES >> GO TO 6.
NO >> INSPECTION END

6. REPLACE COOLANT CIRCULATION PUMP AND ERASE DTC

With CONSULT

1. Turn ignition switch OFF.
2. Replace coolant circulation pump. Refer to HA-43, "Removal and Installation".
3. Turn ignition switch ON.
4. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
5. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-63, "DTC Description".

Is DTC "B107D-11", "B107D-12", "B107D-13" detected?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

B10A2 AIR MIX DOOR MOTOR LH

DTC Description

INFOID:0000000013554112

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B10A2	07	Air mix door motor left (Air mix door motor left)	[MECHANICAL FAILURES]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Mechanical error
				Diagnosis delay time	—
	49		[INTERNAL ELECTRONIC FAILURE]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Internal electrical error
				Diagnosis delay time	—
	51		[NOT PROGRAMMED]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Normalization of the actuator motors is not completed
				Diagnosis delay time	Less than 30 seconds
	87		[MISSING MESSAGE]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Message missing
				Diagnosis delay time	Less than 30 seconds

POSSIBLE CAUSE (B10A2-07)

- Mechanical components of the air mix door LH
- Air mix door motor LH

POSSIBLE CAUSE (B10A2-49, B10A2-87)

- Harness or connectors
- Air mix door motor LH

POSSIBLE CAUSE (B10A2-51)

Teach-in of actuator motors is not completed

FAIL-SAFE (B10A2-07, B10A2-49, B10A2-51)

Inhibit temperature control

FAIL-SAFE (B10A2-87)

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 40 seconds.

2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-67, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554113

B10A2-07

1.CHECK ADJUSTMENT RANGE OF THE ACTUATOR MOTORS

With CONSULT
1. Turn ignition switch ON.
2. Select “Check adjustment range of actuator motors” in "Active Test" mode of “HVAC” using CONSULT.
   NOTE:
   Test condition:
   • The battery voltage must be between 12.5 V and 14.5 V, connect a charger if necessary.
   • The vehicle interior temperature and the outside temperature must be above 10°C (50°F).
3. Touch "Start".
   NOTE:
   This process lasts approx. 1 minute.

Is the inspection result normal?

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

2.CHECK MECHANICAL COMPONENTS OF THE AIR MIX DOOR LH

Check mechanical components of the air mix door LH. Refer to HAC-130, "Exploded View".

Is the inspection result normal?

YES >> Replace heater & cooling unit assembly. Refer to HA-38, "HEATER & COOLING UNIT ASSEMBLY : Removal and Installation".
NO >> Repair or replace the malfunctioning part.

3.ERASE DTC

With CONSULT
1. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
2. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-66, "DTC Description".

Is DTC "B10A2-07" detected?

YES >> Perform normalization of actuator motors. Refer to HAC-52, "Description".
NO >> INSPECTION END

B10A2-49, B10A2-87

1.CHECK AIR MIX DOOR MOTOR LH CIRCUIT (SHORT TO GROUND)

1. Turn ignition switch OFF.
2. Disconnect the following connectors.
- A/C auto amp.
- Air mix door motor LH
- Air mix door motor RH
- Mode door motor
- Intake door motor
3. Check continuity between air mix door motor LH harness connector and ground.

Air mix door motor LH		—	Continuity
Connector	Terminal		
M627	2	Ground	Not existed
	1		
	4		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK AIR MIX DOOR MOTOR LH CIRCUIT (SHORT TO BATTERY)

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

+		-	Voltage (Approx.)
Air mix door motor LH			
Connector	Terminal		
M627	2	Ground	0 V
	1		
	4		

Is the inspection result normal?

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

3.CHECK AIR MIX DOOR MOTOR LH CIRCUIT (OPEN)

Check continuity between following harness connectors.

A/C auto amp.		Mode door motor		Continuity
Connector	Terminal	Connector	Terminal	
M629	22	M622	2	Existed

Mode door motor		Air mix door motor RH		Continuity
Connector	Terminal	Connector	Terminal	
M622	3	M628	2	Existed

Air mix door motor RH		Intake door motor		Continuity
Connector	Terminal	Connector	Terminal	
M628	3	M623	2	Existed

Intake door motor		Air mix door motor LH		Continuity
Connector	Terminal	Connector	Terminal	
M623	3	M627	2	Existed

Is the inspection result normal?

YES >> Replace heater & cooling unit assembly. Refer to HA-38, "HEATER & COOLING UNIT ASSEMBLY : Removal and Installation".
NO >> Repair harness or connector.

B10A2-51

1.PERFORM TEACH-IN OF ACTUATOR MOTORS

Perform teach-in of actuator motors. Refer to HAC-50, "Description".

>> INSPECTION END

B10A9 AIR MIX DOOR MOTOR RH

DTC Description

INFOID:0000000013554114

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B10A9	07	Air mix door motor right (Air mix door motor right)	[MECHANICAL FAILURES]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Mechanical error
				Diagnosis delay time	—
	49		[INTERNAL ELECTRONIC FAILURE]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Internal electrical error
				Diagnosis delay time	—
	51		[NOT PROGRAMMED]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Normalization of the actuator motors is not completed
				Diagnosis delay time	Less than 30 seconds
	87		[MISSING MESSAGE]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Message missing
				Diagnosis delay time	Less than 30 seconds

POSSIBLE CAUSE (B10A9-07)

- Mechanical components of the air mix door RH
- Air mix door motor RH

POSSIBLE CAUSE (B10A9-49, B10A9-87)

- Harness or connectors
- Air mix door motor RH

POSSIBLE CAUSE (B10A9-51)

Teach-in of actuator motors is not completed

FAIL-SAFE (B10A9-07, B10A9-49, B10A9-51)

Inhibit temperature control

FAIL-SAFE (B10A9-87)

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 40 seconds.

2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-71, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554115

B10A9-07

1.CHECK ADJUSTMENT RANGE OF THE ACTUATOR MOTORS

With CONSULT
1. Turn ignition switch ON.
2. Select “Check adjustment range of actuator motors” in "Active Test" mode of “HVAC” using CONSULT.
   NOTE:
   Test condition:
   - The battery voltage must be between 12.5 V and 14.5 V, connect a charger if necessary.
   - The vehicle interior temperature and the outside temperature must be above 10°C (50°F).
3. Touch "Start".
   NOTE:
   This process lasts approx. 1 minute.

Is the inspection result normal?

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

2.CHECK MECHANICAL COMPONENTS OF THE AIR MIX DOOR RH

Check mechanical components of the air mix door RH. Refer to HAC-130, "Exploded View".

Is the inspection result normal?

YES >> Replace heater & cooling unit assembly. Refer to HA-38, "HEATER & COOLING UNIT ASSEMBLY : Removal and Installation".
NO >> Repair or replace the malfunctioning part.

3.ERASE DTC

With CONSULT
1. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
2. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-70, "DTC Description".

Is DTC "B10A9-07" detected?

YES >> Perform normalization of actuator motors. Refer to HAC-52, "Description".
NO >> INSPECTION END

B10A9-49, B10A9-87

1.CHECK AIR MIX DOOR MOTOR RH CIRCUIT (SHORT TO GROUND)

1. Turn ignition switch OFF.
2. Disconnect the following connectors.
- A/C auto amp.
- Air mix door motor LH
- Air mix door motor RH
- Mode door motor
- Intake door motor

3. Check continuity between air mix door motor RH harness connector and ground.

Air mix door motor RH		—	Continuity
Connector	Terminal		
M628	2	Ground	Not existed
	1		
	4		
	3		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK AIR MIX DOOR MOTOR RH CIRCUIT (SHORT TO BATTERY)

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

+		-	Voltage (Approx.)
Air mix door motor RH			
Connector	Terminal		
M628	2	Ground	0 V
	1		
	4		
	3		

Is the inspection result normal?

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

3.CHECK AIR MIX DOOR MOTOR RH CIRCUIT (OPEN)

Check continuity between following harness connectors.

A/C auto amp.		Mode door motor		Continuity
Connector	Terminal	Connector	Terminal	
M629	22	M622	2	Existed

Mode door motor		Air mix door motor RH		Continuity
Connector	Terminal	Connector	Terminal	
M622	3	M628	2	Existed

Air mix door motor RH		Intake door motor		Continuity
Connector	Terminal	Connector	Terminal	
M628	3	M623	2	Existed

Intake door motor		Air mix door motor LH		Continuity
Connector	Terminal	Connector	Terminal	
M623	3	M627	2	Existed

Is the inspection result normal?

YES >> Replace heater & cooling unit assembly. Refer to HA-38, "HEATER & COOLING UNIT ASSEMBLY : Removal and Installation".
NO >> Repair harness or connector.

B10A9-51

1.PERFORM TEACH-IN OF ACTUATOR MOTORS

Perform teach-in of actuator motors. Refer to HAC-50, "Description".

>> INSPECTION END

B1107 IN-VEHICLE SENSOR

DTC Description

INFOID:0000000013554116

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B1107	11	In-vehicle sensor (In-vehicle sensor)	[CIRC SHORT TO GRND]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Intake sensor signal
				Threshold	Circuit short to ground
				Diagnosis delay time	0.2 – 1 second
	15		[CIRC SHORT TO BATTERY OR OPEN]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Intake sensor signal
				Threshold	Circuit short to battery or open
				Diagnosis delay time	0.2 – 1 second

POSSIBLE CAUSE (B1107-11)

- In-vehicle sensor signal circuit short to ground
- In-vehicle sensor
- A/C auto amp.

POSSIBLE CAUSE (B1107-15)

- In-vehicle sensor signal circuit short to battery or open
- In-vehicle sensor
- A/C auto amp.

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 11 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-74, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554117

1.CHECK IN-VEHICLE SENSOR CIRCUIT (SHORT TO GROUND)

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

In-vehicle sensor		—	Continuity
Connector	Terminal		
M216	3	Ground	Not existed
	4		
	1		
	2		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK IN-VEHICLE SENSOR CIRCUIT (SHORT TO BATTERY)

Check voltage between in-vehicle sensor harness connector and ground.

+		-	Voltage (Approx.)
In-vehicle sensor			
Connector	Terminal		
M216	3	Ground	0 V
	4		
	1		
	2		

Is the inspection result normal?

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

3.CHECK IN-VEHICLE SENSOR CIRCUIT (OPEN)

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	
M216	3	M629	29	Existed
	4		30	
	1		32	
	2		34	

Is the inspection result normal?

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

4.ERASE DTC

With CONSULT
1. Connect in-vehicle sensor connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-74, "DTC Description".

Is DTC "B1107-11", "B1107-15" detected?

YES >> GO TO 5.
NO >> INSPECTION END

5.REPLACE IN-VEHICLE SENSOR AND ERASE DTC

With CONSULT
1. Turn ignition switch OFF.

2. Replace in-vehicle sensor. Refer to HAC-126, "Removal and Installation".
3. Turn ignition switch ON.
4. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
5. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-74, "DTC Description".

Is DTC "B1107-11", "B1107-15" detected?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

B1127 AIR QUALITY SENSOR

DTC Description

INFOID:0000000013554118

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B1127	49	Air quality sensor (Air quality sensor)	[INTERNAL ELECTRONIC FAILURE]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Component reports an internal error: Faulty sensor
				Diagnosis delay time	Less than 30 seconds
	87		[MISSING MESSAGE]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Message missing
				Diagnosis delay time	Less than 30 seconds

POSSIBLE CAUSE

- Harness or connectors
- Air quality sensor

FAIL-SAFE

Restricted function

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 40 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-77, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554119

1.CHECK AIR QUALITY SENSOR CIRCUIT (SHORT TO GROUND)

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

Air quality sensor		—	Continuity
Connector	Terminal		
E2	1	Ground	Not existed
	2		
	3		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK AIR QUALITY SENSOR CIRCUIT (SHORT TO BATTERY)

Check voltage between air quality sensor harness connector and ground.

+		-	Voltage (Approx.)
Air quality sensor			
Connector	Terminal		
E2	1	Ground	0 V
	2		
	3		

Is the inspection result normal?

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

3.CHECK INTAKE DOOR MOTOR CIRCUIT (OPEN)

Check continuity between air quality sensor harness connector and A/C auto amp. harness connector.

Air quality sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
E2	1	M37	26	Existed
	2		27	
	3		28	

Is the inspection result normal?

YES >> Replace air quality sensor. Refer to HAC-128, "Removal and Installation".
NO >> Repair harness or connector.

B112F BLOWER MOTOR

DTC Description

INFOID:0000000013554120

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B112F	07	Front blower regulator (Front blower regulator)	[MECHANICAL FAILURES]	Diagnosis condition	—
				Signal (Terminal)	—
				Threshold	—
				Diagnosis delay time	—
	13		[CIRC OPEN]	Diagnosis condition	—
				Signal (Terminal)	—
				Threshold	—
				Diagnosis delay time	—
	49		[INTERNAL ELECTRONIC FAILURE]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	When any of the following items detected • Internal error • Circuit short or open • Over-temperature limit active • Interuption to the motor LIN communication error
				Diagnosis delay time	5 seconds or more
	4B		[OVER TEMPERATURE]	Diagnosis condition	—
				Signal (Terminal)	—
				Threshold	—
				Diagnosis delay time	—
	87		[MISSING MESSAGE]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	—
				Diagnosis delay time	—

POSSIBLE CAUSE

- Fuse
- Harness or connectors
- Blower motor
- Blower regulator
- A/C auto amp.

FAIL-SAFE (B112F-07, B112F-13, B112F-4B)

—

FAIL-SAFE (B112F-49)
Restricted function

FAIL-SAFE (B112F-87)
Inhibit air flow control

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 15 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-80, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554121

1.CHECK FUSIBLE LINK

1. Turn ignition switch OFF.
2. Check 40A fusible link (No. 81, located in fuse and fusible link block 2).
   NOTE:
   Refer to PG-72, "Fuse and Fusible Link Arrangement".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

2.CHECK BLOWER REGULATOR POWER SUPPLY

Check voltage between blower regulator harness connector and ground.

+		-	Voltage (Approx.)
Blower regulator			
Connector	Terminal		
M183	3	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair blower regulator power supply circuit

3.CHECK BLOWER REGULATOR GROUND CIRCUIT

1. Disconnect blower regulator connector.
2. Check continuity between blower regulator harness connector and ground.

Blower regulator		—	Continuity
Connector	Terminal		
M183	1	Ground	Existed

Is the inspection result normal?

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

4.CHECK LIN (BLOWER MOTOR) CIRCUIT (SHORT TO GROUND)

Check continuity between blower regulator harness connector and ground.

Blower regulator		—	Continuity
Connector	Terminal		
M183	4	Ground	Not existed

Is the inspection result normal?

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

5. CHECK LIN (BLOWER MOTOR) CIRCUIT (SHORT TO BATTERY)

Check voltage between blower regulator harness connector and ground.

+		-	Voltage (Approx.)
Blower regulator			
Connector	Terminal		
M183	4	Ground	0 V

Is the inspection result normal?

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

6. CHECK LIN (BLOWER MOTOR) CIRCUIT (OPEN)

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

Blower regulator		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
M183	4	M36	11	Existed

Is the inspection result normal?

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

7. CHECK BLOWER MOTOR CIRCUIT (SHORT TO GROUND)

Check continuity between blower regulator harness connector and ground.

Blower regulator		—	Continuity
Connector	Terminal		
M700	5	Ground	Not existed
	6		

Is the inspection result normal?

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

8. CHECK BLOWER MOTOR CIRCUIT (SHORT TO BATTERY)

Check voltage between blower regulator harness connector and ground.

+		-	Voltage (Approx.)
Blower regulator			
Connector	Terminal		
M700	5	Ground	0 V
	6		

Is the inspection result normal?

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

9.CHECK BLOWER MOTOR CIRCUIT (OPEN)

Check continuity between blower regulator harness connectors.

Blower regulator		Blower regulator		Continuity
Connector	Terminal	Connector	Terminal	
M700	5	M700	6	Existed

Is the inspection result normal?

YES >> GO TO 10.
NO >> Replace blower motor. Refer to VTL-14, "Removal and Installation".

10.ERASE DTC

With CONSULT
1. Connect blower regulator connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-79, "DTC Description".

Is DTC "B112F-07", "B112F-13", "B112F-49", "B112F-4B", "B112F-87" detected?

YES >> GO TO 11.
NO >> INSPECTION END

11.REPLACE BLOWER REGULATOR AND ERASE DTC

With CONSULT
1. Turn ignition switch OFF.
2. Replace blower regulator. Refer to HAC-129, "Removal and Installation".
3. Turn ignition switch ON.
4. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
5. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-79, "DTC Description".

Is DTC "B112F-07", "B112F-13", "B112F-49", "B112F-4B", "B112F-87" detected?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

B1135 DOOR MOTOR

DTC Description

INFOID:0000000013554122

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B1135	00	Door motor (Door motor)	—	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Message missing
				Diagnosis delay time	Duration of the automatic address allocation routine

POSSIBLE CAUSE

- Harness or connectors
- Teach-in of actuator motors is not completed

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 10 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-83, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554123

1.CHECK DOOR MOTOR CIRCUIT (SHORT TO GROUND)

1. Turn ignition switch OFF.
2. Disconnect the following connectors.

- A/C auto amp.
- Air mix door motor LH
- Air mix door motor RH
- Mode door motor
- Intake door motor

3. Check continuity between mode door motor harness connector and ground.

Mode door motor		—	Continuity
Connector	Terminal		
M622	2	Ground	Not existed
	1		
	4		
	3		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK INTAKE DOOR MOTOR CIRCUIT (SHORT TO BATTERY)

Check voltage between mode door motor harness connector and ground.

+		-	Voltage (Approx.)
Mode door motor			
Connector	Terminal		
M622	2	Ground	0 V
	1		
	4		
	3		

Is the inspection result normal?

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

3.CHECK INTAKE DOOR MOTOR CIRCUIT (OPEN)

Check continuity between following harness connectors.

A/C auto amp.		Mode door motor		Continuity
Connector	Terminal	Connector	Terminal	
M629	22	M622	2	Existed

Mode door motor		Air mix door motor RH		Continuity
Connector	Terminal	Connector	Terminal	
M622	3	M628	2	Existed

Air mix door motor RH		Intake door motor		Continuity
Connector	Terminal	Connector	Terminal	
M628	3	M623	2	Existed

Intake door motor		Air mix door motor LH		Continuity
Connector	Terminal	Connector	Terminal	
M623	3	M627	2	Existed

Is the inspection result normal?

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

4.PERFORM TEACH-IN OF ACTUATOR MOTORS

Perform teach-in of actuator motors. Refer to HAC-50, "Description".

>> INSPECTION END

B1136 DOOR MOTOR

DTC Description

INFOID:0000000013554124

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B1136	00	Door motor (Door motor)	—	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Stored adjustment of at least one damper motor is invalid
				Diagnosis delay time	Less than 1 second

POSSIBLE CAUSE

- Harness or connectors
- Mechanical components of the each door

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 11 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-85, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554125

1.CHECK DOOR MOTOR CIRCUIT (SHORT TO GROUND)

1. Turn ignition switch OFF.
2. Disconnect the following connectors.

- A/C auto amp.
- Air mix door motor LH
- Air mix door motor RH
- Mode door motor
- Intake door motor

3. Check continuity between mode door motor harness connector and ground.

Mode door motor		—	Continuity
Connector	Terminal		
M622	2	Ground	Not existed
	1		
	4		
	3		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK DOOR MOTOR CIRCUIT (SHORT TO BATTERY)

Check voltage between mode door motor harness connector and ground.

+		-	Voltage (Approx.)
Mode door motor			
Connector	Terminal		
M622	2	Ground	0 V
	1		
	4		
	3		

Is the inspection result normal?

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

3.CHECK DOOR MOTOR CIRCUIT (OPEN)

Check continuity between following harness connectors.

A/C auto amp.		Mode door motor		Continuity
Connector	Terminal	Connector	Terminal	
M629	22	M622	2	Existed

Mode door motor		Air mix door motor RH		Continuity
Connector	Terminal	Connector	Terminal	
M622	3	M628	2	Existed

Air mix door motor RH		Intake door motor		Continuity
Connector	Terminal	Connector	Terminal	
M628	3	M623	2	Existed

Intake door motor		Air mix door motor LH		Continuity
Connector	Terminal	Connector	Terminal	
M623	3	M627	2	Existed

Is the inspection result normal?

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

4.PERFORM NORMALIZATION OF ACTUATOR MOTORS

Perform normalization of actuator motors. Refer to HAC-52, "Description".

>> INSPECTION END

B1178 MODE DOOR MOTOR

DTC Description

INFOID:0000000013554126

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B1178	07	Mode door motor (Mode door motor)	[MECHANICAL FAILURES]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Mechanical error
				Diagnosis delay time	—
	49		[INTERNAL ELECTRONIC FAILURE]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Internal electrical error
				Diagnosis delay time	—
	51		[NOT PROGRAMMED]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Normalization of the actuator motors is not completed
				Diagnosis delay time	Less than 30 seconds
	87		[MISSING MESSAGE]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	—
				Threshold	Message missing
				Diagnosis delay time	Less than 30 seconds

POSSIBLE CAUSE (B1178-07)

- Mechanical components of the mode door
- Mode door motor

POSSIBLE CAUSE (B1178-49, B1178-87)

- Harness or connectors
- Mode door motor

POSSIBLE CAUSE (B1178-51)

Teach-in of actuator motors is not completed

FAIL-SAFE (B1178-07, B1178-49, B1178-51)

Inhibit air outlet control

FAIL-SAFE (B1178-87)

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 40 seconds.

2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-88, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554127

B1178-07

1.CHECK ADJUSTMENT RANGE OF THE ACTUATOR MOTORS

With CONSULT
1. Turn ignition switch ON.
2. Select “Check adjustment range of actuator motors” in "Active Test" mode of “HVAC” using CONSULT.
   NOTE:
   Test condition:
   • The battery voltage must be between 12.5 V and 14.5 V, connect a charger if necessary.
   • The vehicle interior temperature and the outside temperature must be above 10°C (50°F).
3. Touch "Start".
   NOTE:
   This process lasts approx. 1 minute.

Is the inspection result normal?

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

2.CHECK MECHANICAL COMPONENTS OF THE MODE DOOR

Check mechanical components of the mode door. Refer to HAC-130, "Exploded View".

Is the inspection result normal?

YES >> Replace heater & cooling unit assembly. Refer to HA-38, "HEATER & COOLING UNIT ASSEMBLY : Removal and Installation".
NO >> Repair or replace the malfunctioning part.

3.ERASE DTC

With CONSULT
1. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
2. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-87, "DTC Description".

Is DTC "B1178-07" detected?

YES >> Perform normalization of actuator motors. Refer to HAC-52, "Description".
NO >> INSPECTION END

B1178-49, B1178-87

1.CHECK MODE DOOR MOTOR CIRCUIT (SHORT TO GROUND)

1. Turn ignition switch OFF.
2. Disconnect the following connectors.
- A/C auto amp.
- Air mix door motor LH
- Air mix door motor RH
- Mode door motor
- Intake door motor
3. Check continuity between mode door motor harness connector and ground.

Mode door motor		—	Continuity
Connector	Terminal		
M622	2	Ground	Not existed
	1		
	4		
	3		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK MODE DOOR MOTOR CIRCUIT (SHORT TO BATTERY)

Check voltage between mode door motor harness connector and ground.

+		-	Voltage (Approx.)
Mode door motor			
Connector	Terminal		
M622	2	Ground	0 V
	1		
	4		
	3		

Is the inspection result normal?

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

3.CHECK MODE DOOR MOTOR CIRCUIT (OPEN)

Check continuity between following harness connectors.

A/C auto amp.		Mode door motor		Continuity
Connector	Terminal	Connector	Terminal	
M629	22	M622	2	Existed

Mode door motor		Air mix door motor RH		Continuity
Connector	Terminal	Connector	Terminal	
M622	3	M628	2	Existed

Air mix door motor RH		Intake door motor		Continuity
Connector	Terminal	Connector	Terminal	
M628	3	M623	2	Existed

Intake door motor		Air mix door motor LH		Continuity
Connector	Terminal	Connector	Terminal	
M623	3	M627	2	Existed

Is the inspection result normal?

YES >> Replace heater & cooling unit assembly. Refer to HA-38, "HEATER & COOLING UNIT ASSEMBLY : Removal and Installation".
NO >> Repair harness or connector.

B1178-51

1.PERFORM TEACH-IN OF ACTUATOR MOTORS

Perform teach-in of actuator motors. Refer to HAC-50, "Description".

>> INSPECTION END

B11F6 INTERIOR TEMPERATURE SENSOR WITH INTEGRATED FAN

DTC Description

INFOID:0000000013554128

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B11F6	01	In-vehicle sensor fan (In-vehicle sensor fan)	[ELECTRICAL MALFUNCTION]	Diagnosis condition	Ignition switch ACC
				Signal (Terminal)	—
				Threshold	Fault/damaged of the interior temperature sensor with integrated fan received from overhead control panel control unit
				Diagnosis delay time	2 seconds

POSSIBLE CAUSE

- Overhead control panel control unit power supply and ground circuit
- Overhead control panel control unit

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ACC and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “BCM” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-91, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554129

1.CHECK OVERHEAD CONTROL PANEL CONTROL UNIT POWER SUPPLY AND GROUND CIRCUIT

Check overhead control panel control unit power supply and ground circuit. Refer to INL-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning part.

2.ERASE DTC

With CONSULT
1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “BCM” using CONSULT.
3. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-91, "DTC Description".

Is DTC "B11F6-01" detected?

YES >> Replace overhead control panel control unit. Refer to INL-114, "Removal and Installation".
NO >> INSPECTION END

B1600 SUNLOAD SENSOR

DTC Description

INFOID:0000000013554130

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B1600	11	Sunload sensor left (Sunload sensor left)	[CIRC SHORT TO GRND]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Sunload sensor signal
				Threshold	Circuit short to ground
				Diagnosis delay time	0.2 – 1 second
	15		[CIRC SHORT TO BATTERY OR OPEN]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Sunload sensor signal
				Threshold	Circuit short to battery or open
				Diagnosis delay time	0.2 – 1 second

POSSIBLE CAUSE (B1600-11)

- Sunload sensor signal circuit short to ground
- Sunload sensor
- A/C auto amp.

POSSIBLE CAUSE (B1600-15)

- Sunload sensor signal circuit short to battery or open
- Sunload sensor
- A/C auto amp.

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 11 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-92, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554131

1.CHECK SUNLOAD SENSOR CIRCUIT (SHORT TO GROUND)

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

Sunload sensor		—	Continuity
Connector	Terminal		
M65	4	Ground	Not existed
	2		
	3		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK SUNLOAD SENSOR CIRCUIT (SHORT TO BATTERY)

Check voltage between sunload sensor harness connector and ground.

+		-	Voltage (Approx.)
Sunload sensor			
Connector	Terminal		
M65	4	Ground	0 V
	2		
	3		

Is the inspection result normal?

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

3.CHECK SUNLOAD SENSOR CIRCUIT (OPEN)

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	
M65	4	M37	23	Existed
	2		24	
	3		25	

Is the inspection result normal?

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

4.ERASE DTC

With CONSULT
1. Connect sunload sensor connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-92, "DTC Description".

Is DTC "B1600-11", "B1600-15" detected?

YES >> GO TO 5.
NO >> INSPECTION END

5.REPLACE SUNLOAD SENSOR AND ERASE DTC

With CONSULT
1. Turn ignition switch OFF.
2. Replace sunload sensor. Refer to HAC-125, "Removal and Installation".
3. Turn ignition switch ON.
4. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

5. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-92, "DTC Description".

Is DTC "B1600-11", "B1600-15" detected?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

B1603 SUNLOAD SENSOR

DTC Description

INFOID:0000000013554132

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B1603	11	Sunload sensor right (Sunload sensor right)	[CIRC SHORT TO GRND]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Sunload sensor signal
				Threshold	Circuit short to ground
				Diagnosis delay time	0.2 – 1 second
	15		[CIRC SHORT TO BATTERY OR OPEN]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Sunload sensor signal
				Threshold	Circuit short to battery or open
				Diagnosis delay time	0.2 – 1 second

POSSIBLE CAUSE (B1603-11)

- Sunload sensor signal circuit short to ground
- Sunload sensor
- A/C auto amp.

POSSIBLE CAUSE (B1603-15)

- Sunload sensor signal circuit short to battery or open
- Sunload sensor
- A/C auto amp.

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 11 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-95, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554133

1.CHECK SUNLOAD SENSOR CIRCUIT (SHORT TO GROUND)

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

Sunload sensor		—	Continuity
Connector	Terminal		
M65	4	Ground	Not existed
	2		
	3		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK SUNLOAD SENSOR CIRCUIT (SHORT TO BATTERY)

Check voltage between sunload sensor harness connector and ground.

+		-	Voltage (Approx.)
Sunload sensor			
Connector	Terminal		
M65	4	Ground	0 V
	2		
	3		

Is the inspection result normal?

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

3.CHECK SUNLOAD SENSOR CIRCUIT (OPEN)

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	
M65	4	M37	23	Existed
	2		24	
	3		25	

Is the inspection result normal?

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

4.ERASE DTC

With CONSULT
1. Connect sunload sensor connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-95, "DTC Description".

Is DTC "B1603-11", "B1603-15" detected?

YES >> GO TO 5.
NO >> INSPECTION END

5.REPLACE SUNLOAD SENSOR AND ERASE DTC

With CONSULT
1. Turn ignition switch OFF.
2. Replace sunload sensor. Refer to HAC-125, "Removal and Installation".
3. Turn ignition switch ON.
4. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

5. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-95, "DTC Description".

Is DTC "B1603-11", "B1603-15" detected?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

B1A9E REFRIGERANT PRESSURE SENSOR

DTC Description

INFOID:0000000013554134

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B1A9E	11	Refrigerant pressure sensor (Refrigerant pressure sensor)	[CIRC SHORT TO GRND]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Refrigerant pressure sensor signal
				Threshold	Circuit short to ground
				Diagnosis delay time	Less than 1 second
	15		[CIRC SHORT TO BATTERY OR OPEN]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Refrigerant pressure sensor signal
				Threshold	Circuit short to battery or open
				Diagnosis delay time	Less than 1 second

POSSIBLE CAUSE (B1A9E-11)

- Refrigerant pressure sensor signal circuit short to ground
- Refrigerant pressure sensor
- A/C auto amp.

POSSIBLE CAUSE (B1A9E-15)

- Refrigerant pressure sensor signal circuit short to battery or open
- Refrigerant pressure sensor
- A/C auto amp.

FAIL-SAFE

Inhibit compressor control

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 11 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-98, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554135

1.CHECK REFRIGERANT PRESSURE SENSOR CIRCUIT (SHORT TO GROUND)

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

Refrigerant pressure sensor		—	Continuity
Connector	Terminal		
E30	1	Ground	Not existed
	2		
	3		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK REFRIGERANT PRESSURE SENSOR CIRCUIT (SHORT TO BATTERY)

Check voltage between refrigerant pressure sensor harness connector and ground.

+		-	Voltage (Approx.)
Refrigerant pressure sensor			
Connector	Terminal		
E30	1	Ground	0 V
	2		
	3		

Is the inspection result normal?

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

3.CHECK REFRIGERANT PRESSURE SENSOR CIRCUIT (OPEN)

Check continuity between refrigerant pressure sensor harness connector and A/C auto amp. harness connector.

Refrigerant pressure sensor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
E30	1	M36	1	Existed
	2		2	
	3		8	

Is the inspection result normal?

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

4.ERASE DTC

With CONSULT

1. Connect refrigerant pressure sensor connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-98, "DTC Description".

Is DTC "B1A9E-11", "B1A9E-15" detected?

YES >> GO TO 5.
NO >> INSPECTION END

5.REPLACE REFRIGERANT PRESSURE SENSOR AND ERASE DTC

With CONSULT

1. Turn ignition switch OFF.
2. Replace refrigerant pressure sensor. Refer to HA-32, "REFRIGERANT PRESSURE SENSOR : Removal and Installation".
3. Turn ignition switch ON.

4. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
5. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-98, "DTC Description".

Is DTC "B1A9E-11", "B1A9E-15" detected?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

B210A BATTERY VOLTAGE

DTC Description

INFOID:0000000013554136

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B210A	00	Power Supply circuit (Power Supply circuit)	—	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	CAN communication system voltage
				Threshold	Less than 10 V
				Diagnosis delay time	15 seconds or more

POSSIBLE CAUSE

- Battery voltage too low
- Charging system

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 25 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-101, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554137

1.CHECK CHARGING SYSTEM

Check charging system. Refer to CHG-21, "Work Flow (With EXP-800 NI or GR8-1200 NI)" or CHG-25, "Work Flow (Without EXP-800 NI or GR8-1200 NI)".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning part.

2.CHECK BATTERY

Check battery. Refer to PG-102, "MAIN BATTERY : Work Procedure" (main battery) and PG-104, "SUB BATTERY : Work Procedure" (sub battery).

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace the malfunctioning part.

B210B BATTERY VOLTAGE

DTC Description

INFOID:0000000013554138

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B210B	00	Power Supply circuit (Power Supply circuit)	—	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	CAN communication system voltage
				Threshold	16 V or more
				Diagnosis delay time	15 seconds or more

POSSIBLE CAUSE

- Battery voltage too high
- Charging system

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 25 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-102, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554139

1.CHECK CHARGING SYSTEM

Check charging system. Refer to CHG-21, "Work Flow (With EXP-800 NI or GR8-1200 NI)" or CHG-25, "Work Flow (Without EXP-800 NI or GR8-1200 NI)".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning part.

2.CHECK BATTERY

Check battery. Refer to PG-102, "MAIN BATTERY : Work Procedure" (main battery) and PG-104, "SUB BATTERY : Work Procedure" (sub battery).

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace the malfunctioning part.

B210D A/C AUTO AMP. POWER SUPPLY

DTC Description

INFOID:0000000013554140

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B210D	00	Power supply (Power supply)	—	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	A/C auto amp. power supply
				Threshold	Less than 9 V
				Diagnosis delay time	15 seconds or more

POSSIBLE CAUSE

- A/C auto amp. power supply and ground circuit
- Charging system

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 25 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-103, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554141

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

Check A/C auto amp. power supply and ground circuit. Refer to HAC-120, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning part.

2.CHECK CHARGING SYSTEM

Check charging system. Refer to CHG-21, "Work Flow (With EXP-800 NI or GR8-1200 NI)" or CHG-25, "Work Flow (Without EXP-800 NI or GR8-1200 NI)".

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace the malfunctioning part.

B210E A/C AUTO AMP. POWER SUPPLY

DTC Description

INFOID:0000000013554142

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B210E	00	Power supply (Power supply)	—	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	A/C auto amp. power supply
				Threshold	16 V or more
				Diagnosis delay time	15 seconds or more

POSSIBLE CAUSE

- A/C auto amp. power supply and ground circuit
- Charging system

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 25 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-104, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554143

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

Check A/C auto amp. power supply and ground circuit. Refer to HAC-120, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning part.

2.CHECK CHARGING SYSTEM

Check charging system. Refer to CHG-21, "Work Flow (With EXP-800 NI or GR8-1200 NI)" or CHG-25, "Work Flow (Without EXP-800 NI or GR8-1200 NI)".

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace the malfunctioning part.

B217E DOOR MOTOR

DTC Description

INFOID:0000000013554144

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B217E	11	The power supply to the LIN bus subscribers has a malfunction (The power supply to the LIN bus subscribers has a malfunction)	[CIRC SHORT TO GRND]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Door motor power supply
				Threshold	Circuit short to ground
				Diagnosis delay time	15 seconds or more
	12		[CIRC SHORT TO BATTERY]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Door motor power supply
				Threshold	Circuit short to battery
				Diagnosis delay time	Less than 1 second

POSSIBLE CAUSE (B217E-11)

- Door motor power supply circuit short to ground
- A/C auto amp.

POSSIBLE CAUSE (B217E-12)

- Door motor power supply circuit short to battery
- A/C auto amp.

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 25 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-105, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554145

1.CHECK DOOR MOTOR POWER SUPPLY CIRCUIT (SHORT TO GROUND)

1. Turn ignition switch OFF.
2. Disconnect the following connectors.

- A/C auto amp.
- Air mix door motor LH
- Air mix door motor RH
- Mode door motor
- Intake door motor

3. Check continuity between A/C auto amp and ground.

A/C auto amp.		—	Continuity
Connector	Terminal		
M629	20	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK DOOR MOTOR POWER SUPPLY CIRCUIT (SHORT TO BATTERY)

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

+		-	Voltage (Approx.)
A/C auto amp.			
Connector	Terminal		
M629	20	Ground	0 V

Is the inspection result normal?

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

3.ERASE DTC

With CONSULT
1. Connect A/C auto amp. connector and all door motor.
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-105, "DTC Description".

Is DTC "B217E-11", "B217E-12" detected?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

B222D DOOR MOTOR

DTC Description

INFOID:0000000013554146

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B222D	00	Door motor (Door motor)	—	Diagnosis condition	Ignition switch ON
				Signal (Terminal)	—
				Threshold	Teach-in of actuator motors is not completed
				Diagnosis delay time	15 seconds or more

POSSIBLE CAUSE

Teach-in of actuator motors is not completed

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-107, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554147

1.PERFORM TEACH-IN OF ACTUATOR MOTORS

Perform teach-in of actuator motors. Refer to HAC-50, "Description".

>> INSPECTION END

B22E2 MAGNET CLUTCH

DTC Description

INFOID:0000000013554148

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
B22E2	11	Magnet clutch (Magnet clutch)	[CIRC SHORT TO GRND]	Diagnosis condition	—
				Signal (Terminal)	Compressor circuit
				Threshold	Circuit short to ground
				Diagnosis delay time	—
	13		[CIRC OPEN]	Diagnosis condition	—
				Signal (Terminal)	Compressor circuit
				Threshold	Circuit open
				Diagnosis delay time	—

POSSIBLE CAUSE (B22E2-11)

- Compressor circuit short to ground
- Compressor
- A/C auto amp.

POSSIBLE CAUSE (B22E2-13)

- Compressor circuit open
- Compressor
- A/C auto amp.

FAIL-SAFE

Inhibit compressor control

DTC CONFIRMATION PROCEDURE

—

Diagnosis Procedure

INFOID:0000000013554149

1.CHECK COMPRESSOR CIRCUIT (SHORT TO GROUND)

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

Compressor		—	Continuity
Connector	Terminal		
F523	3	Ground	Not existed
	1		
	2		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK COMPRESSOR CIRCUIT (OPEN)

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

Compressor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
F523	3	M36	6	Existed
	1		12	
	2		13	

Is the inspection result normal?

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

3. ERASE DTC

With CONSULT
1. Connect compressor connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-108, "DTC Description".

Is DTC "B22E2-11", "B22E2-13" detected?

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

4. REPLACE COMPRESSOR AND ERASE DTC

With CONSULT
1. Turn ignition switch OFF.
2. Replace compressor. Refer to HA-25, "Removal and Installation".
3. Turn ignition switch ON.
4. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
5. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-108, "DTC Description".

Is DTC "B22E2-11", "B22E2-13" detected?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

P0070 AMBIENT SENSOR

DTC Description

INFOID:0000000013554150

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
P0070	11	AMBIENT AIR TEMP SENSOR (Ambient air temperature sensor)	[CIRC SHORT TO GRND]	Diagnosis condition	Ignition switch ON
				Signal (Terminal)	Ambient sensor signal
				Threshold	The ambient sensor recognition temperature is too high [85°C (185°F) or more].
				Diagnosis delay time	2 seconds
	15		[CIRC SHORT TO BATTERY OR OPEN]	Diagnosis condition	Ignition switch ON
				Signal (Terminal)	Ambient sensor signal
				Threshold	The ambient sensor recognition temperature is too low [Less than −40°C (−40°F)].
				Diagnosis delay time	2 seconds
	84		[SIGNAL BELOW ALLOWABLE RANGE]	Diagnosis condition	Ignition switch ON
				Signal (Terminal)	Ambient sensor signal
				Threshold	The ambient sensor recognition temperature is too low [Less than −40°C (−40°F)].
				Diagnosis delay time	2 seconds
	85		[SIGNAL ABOVE ALLOWABLE RANGE]	Diagnosis condition	Ignition switch ON
				Signal (Terminal)	Ambient sensor signal
				Threshold	The ambient sensor recognition temperature is too high [85°C (185°F) or more].
				Diagnosis delay time	2 seconds

POSSIBLE CAUSE (P0070-11)

- Ambient sensor signal circuit short to ground
- Ambient sensor
- BCM

POSSIBLE CAUSE (P0070-15)

- Ambient sensor signal circuit short to battery or open
- Ambient sensor
- BCM

POSSIBLE CAUSE (P0070-84)

- Ambient sensor signal circuit short to battery or open
- Ambient sensor
- BCM

POSSIBLE CAUSE (P0070-85)

- Ambient sensor signal circuit short to ground
- Ambient sensor
- BCM

FAIL-SAFE (P0070-11)
The temperature displayed in the combination meter is 85°C.

FAIL-SAFE (P0070-15)
The temperature displayed in the combination meter is −40°C.

FAIL-SAFE (P0070-84)
Transmitted temperature on the CAN communication signal is −40°C.

FAIL-SAFE (P0070-85)
Transmitted temperature on the CAN communication signal is 85°C.

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 2 seconds.
2. Select “Self Diagnostic Result” mode of “BCM” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-111, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554151

1.CHECK AMBIENT SENSOR CIRCUIT (SHORT TO GROUND)

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

Ambient sensor		—	Continuity
Connector	Terminal		
E125	1	Ground	Not existed
	2		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK AMBIENT SENSOR CIRCUIT (SHORT TO BATTERY)

Check voltage between ambient sensor harness connector and ground.

+		-	Voltage (Approx.)
Ambient sensor			
Connector	Terminal		
E125	1	Ground	0 V
	2		

Is the inspection result normal?

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

3.CHECK AMBIENT SENSOR CIRCUIT (OPEN)

Check continuity between ambient sensor harness connector and BCM harness connector.

Ambient sensor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
E125	1	E16	161	Existed
	2		162	

Is the inspection result normal?

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

4. ERASE DTC

With CONSULT
1. Connect ambient sensor connector and BCM connector.
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “BCM” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-110, "DTC Description".

Is DTC "P0070-11", "P0070-15", "P0070-84", "P0070-85" detected?

YES >> GO TO 5.
NO >> INSPECTION END

5. REPLACE AMBIENT SENSOR AND ERASE DTC

With CONSULT
1. Turn ignition switch OFF.
2. Replace ambient sensor. Refer to HAC-122, "Removal and Installation".
3. Turn ignition switch ON.
4. Select “Self Diagnostic Result” mode of “BCM” using CONSULT.
5. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-110, "DTC Description".

Is DTC "P0070-11", "P0070-15", "P0070-84", "P0070-85" detected?

YES >> Replace BCM. Refer to BCS-248, "Removal and Installation".
NO >> INSPECTION END

P2611 COMPRESSOR

DTC Description

INFOID:0000000013554152

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
P2611	01	Regulating valve (Regulating valve)	[ELECTRICAL MALFUNCTION]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Compressor circuit
				Threshold	Circuit short to ground, short to battery or open
				Diagnosis delay time	1 second

POSSIBLE CAUSE

- Compressor circuit short to ground, short to battery or open
- Compressor
- A/C auto amp.

FAIL-SAFE

Inhibit compressor control

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 11 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-113, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554153

1.CHECK COMPRESSOR CIRCUIT (SHORT TO GROUND)

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

Compressor		—	Continuity
Connector	Terminal		
F523	3	Ground	Not existed
	1		
	2		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK COMPRESSOR CIRCUIT (OPEN)

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

Compressor		A/C auto amp.		Continuity
Connector	Terminal	Connector	Terminal	
F523	3	M36	6	Existed
	1		12	
	2		13	

Is the inspection result normal?

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

3.ERASE DTC

With CONSULT
1. Connect compressor connector and A/C auto amp. connector.
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-113, "DTC Description".

Is DTC "P2611-01" detected?

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

4.REPLACE COMPRESSOR AND ERASE DTC

With CONSULT
1. Turn ignition switch OFF.
2. Replace compressor. Refer to HA-25, "Removal and Installation".
3. Turn ignition switch ON.
4. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
5. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-113, "DTC Description".

Is DTC "P2611-01" detected?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

U0019 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000013554154

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
U0019	88	Interior CAN communication (Interior CAN communication)	[BUS OFF]	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	Body CAN communication 1
				Threshold	Not receiving
				Diagnosis delay time	5 – 5.8 seconds

POSSIBLE CAUSE

Faulty CAN bus, CAN short circuit or defective CAN subscriber

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 16 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-115, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554155

1.CHECK CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

>> INSPECTION END

U0155 LOST COMMUNICATION (COMBINATION METER)

DTC Description

INFOID:0000000013554156

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
U0155	00	COMMUNICATION ERROR (LOST) [Communication error (Lost)]	—	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	CAN communication signal with combination meter
				Threshold	Not receiving
				Diagnosis delay time	1 – 12 seconds

POSSIBLE CAUSE

- Body CAN communication 1 circuit
- Combination meter
- A/C auto amp.

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 22 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-116, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554157

1.CHECK HARNESS AND CONNECTORS FOR BODY CAN COMMUNICATION 1

1. Turn ignition switch OFF.
2. Check the harness connector for disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.
NO-1 >> Damage: Replace malfunctioning harness and connector.
NO-2 >> Disconnection or looseness: Securely lock the connector.

2.REPLACE COMBINATION METER

With CONSULT

1. Replace combination meter. Refer to MWI-155, "Removal and Installation".
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-116, "DTC Description".

Is DTC “U0155-00” detected again?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

U0203 LOST COMMUNICATION (LEFT FRONT DOOR CONTROL UNIT)

DTC Description

INFOID:0000000013554158

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
U0203	00	Communication error (Communication error)	—	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	CAN communication signal with left front door control unit
				Threshold	Not receiving
				Diagnosis delay time	5 – 5.8 seconds

POSSIBLE CAUSE

- Body CAN communication 1 circuit
- Left front door control unit
- A/C auto amp.

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 16 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-117, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554159

1.CHECK HARNESS AND CONNECTORS FOR BODY CAN COMMUNICATION 1

1. Turn ignition switch OFF.
2. Check the harness connector for disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.
NO-1 >> Damage: Replace malfunctioning harness and connector.
NO-2 >> Disconnection or looseness: Securely lock the connector.

2.REPLACE COMBINATION METER

With CONSULT
1. Replace left front door control unit. Refer to DLK-286, "Removal and Installation".
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-117, "DTC Description".

Is DTC “U0203-00” detected again?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

U0204 LOST COMMUNICATION (RIGHT FRONT DOOR CONTROL UNIT)

DTC Description

INFOID:0000000013554160

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
U0204	00	Communication error (Communication error)	—	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	CAN communication signal with right front door control unit
				Threshold	Not receiving
				Diagnosis delay time	5 – 5.8 seconds

POSSIBLE CAUSE

- Body CAN communication 1 circuit
- Right front door control unit
- A/C auto amp.

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 16 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-118, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554161

1.CHECK HARNESS AND CONNECTORS FOR BODY CAN COMMUNICATION 1

1. Turn ignition switch OFF.
2. Check the harness connector for disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.
NO-1 >> Damage: Replace malfunctioning harness and connector.
NO-2 >> Disconnection or looseness: Securely lock the connector.

2.REPLACE COMBINATION METER

With CONSULT

1. Replace right front door control unit. Refer to DLK-286, "Removal and Installation".
2. Turn ignition switch ON.
3. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.
4. Erase DTC, and then repeat “DTC CONFIRMATION PROCEDURE”. Refer to HAC-118, "DTC Description".

Is DTC “U0204-00” detected again?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO >> INSPECTION END

U1008 CONTROL UNIT (LIN)

DTC Description

INFOID:0000000013554162

DTC DETECTION LOGIC

DTC No.		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detecting condition	
U1008	00	Communication error (LIN bus 1) [Communication error (LIN bus 1)]	—	Diagnosis condition	Ignition switch ON at least 10 seconds or engine running for at least 10 seconds
				Signal (Terminal)	CAN communication signal with left front door control unit
				Threshold	Not receiving
				Diagnosis delay time	Less than 30 seconds

POSSIBLE CAUSE

- LIN communication signal circuit
- A/C auto amp.

FAIL-SAFE

Restricted function

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 40 seconds.
2. Select “Self Diagnostic Result” mode of “HVAC” using CONSULT.

Is DTC detected?

YES >> Refer to HAC-119, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000013554163

1.CHECK HARNESS AND CONNECTORS FOR LIN COMMUNICATION

1. Turn ignition switch OFF.
2. Check the harness connector for disconnection, looseness or damage.

Is the inspection result normal?

YES >> Replace A/C control (A/C auto amp.). Refer to HAC-121, "Removal and Installation".
NO-1 >> Damage: Replace malfunctioning harness and connector.
NO-2 >> Disconnection or looseness: Securely lock the connector.

POWER SUPPLY AND GROUND CIRCUIT
A/C AUTO AMP.

A/C AUTO AMP. : Diagnosis Procedure

INFOID:0000000013554164

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 7.5A fuse (No. 34, located in fuse and fusible link block 2).
   NOTE:
   Refer to PG-72, "Fuse and Fusible Link Arrangement".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

2.CHECK A/C AUTO AMP. BATTERY POWER SUPPLY

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

+		-	Voltage (Approx.)
A/C auto amp.			
Connector	Terminal		
M36	16	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair A/C auto amp. battery power supply circuit

3.CHECK A/C AUTO AMP. GROUND CIRCUIT

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

A/C auto amp.		—	Continuity
Connector	Terminal		
M36	15	Ground	Existed

Is the inspection result normal?

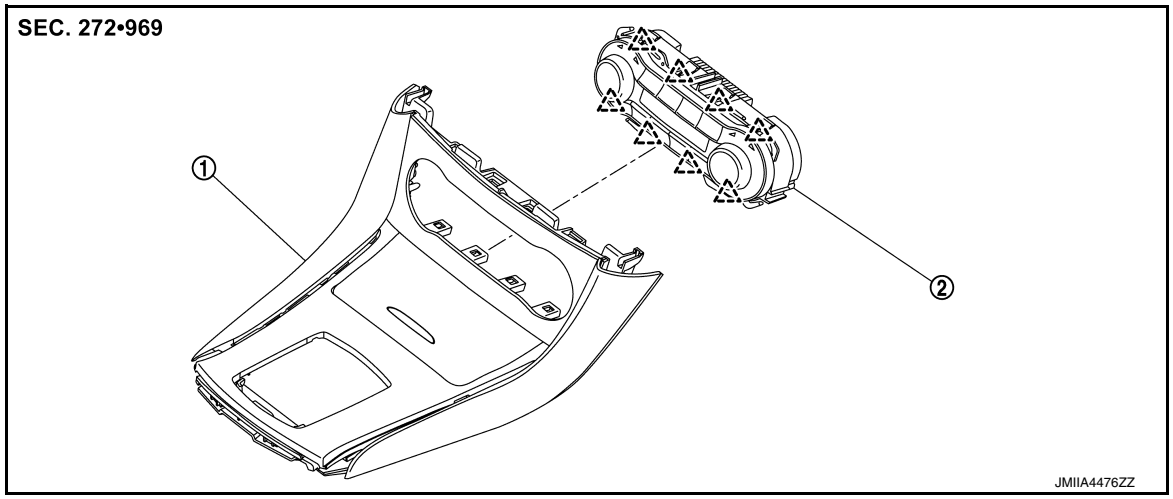
YES >> A/C auto amp. power supply and ground circuit are normal.
NO >> Repair harness or connector.

REMOVAL AND INSTALLATION

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

Exploded View

INFOID:0000000013554165



① Center console front finisher ② A/C control (A/C auto amp.)

△ : Pawl

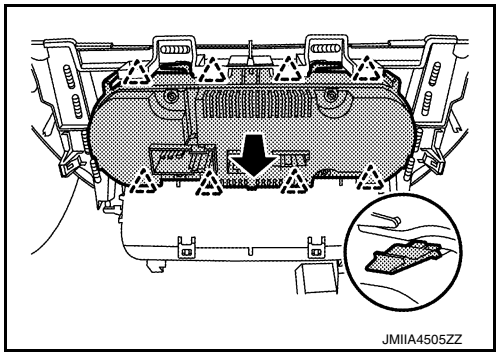
Removal and Installation

INFOID:0000000013554166

REMOVAL

1. Remove center console front finisher. Refer to IP-22, "Removal and Installation".
2. Remove fixing pawls, and then remove A/C control (A/C auto amp.).

△ : Pawl



INSTALLATION

Install in the reverse order of removal.

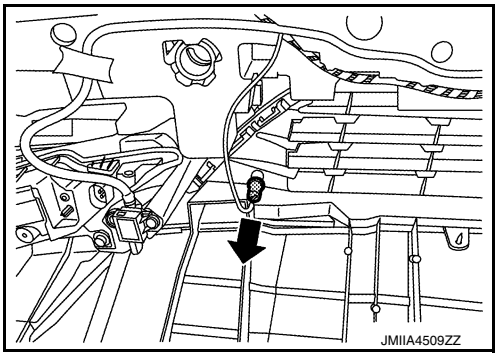
AMBIENT SENSOR

Removal and Installation

INFOID:0000000013554167

REMOVAL

1. Remove front bumper fascia. Refer to EXT-21, "Removal and Installation".
2. Disconnect harness connector, and then remove ambient sensor.



INSTALLATION

Install in the reverse order of removal.

IN-VEHICLE SENSOR

Removal and Installation

INFOID:0000000013554168

REMOVAL

1. Remove cluster lid A. Refer to IP-13, "Removal and Installation".
2. Rotate in-vehicle sensor counterclockwise, and then remove in-vehicle sensor.

INSTALLATION

Install in the reverse order of removal.

INTERIOR TEMPERATURE SENSOR WITH INTEGRATED FAN

Removal and Installation

INFOID:0000000013554169

REMOVAL

The interior temperature sensor with integrated fan is an integral part of the overhead control panel control unit. If the replacement of the interior temperature sensor with integrated fan is necessary, replace the overhead control panel control unit. Refer to INL-114, "Removal and Installation".

SUNLOAD SENSOR

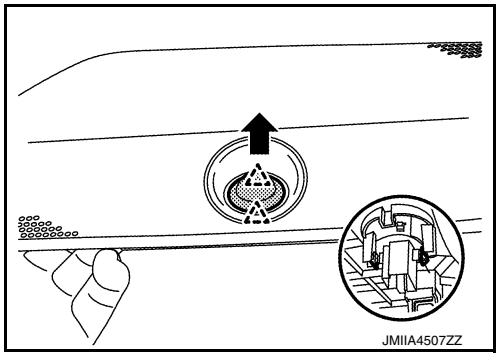
Removal and Installation

INFOID:0000000013554170

REMOVAL

1. Remove center squawker grille. Refer to IP-13, "Removal and Installation".
2. Disengage fixing pawls, and then pull up sunload sensor.

: Pawl



INSTALLATION

Install in the reverse order of removal.

INTAKE SENSOR

Exploded View

INFOID:0000000013554171

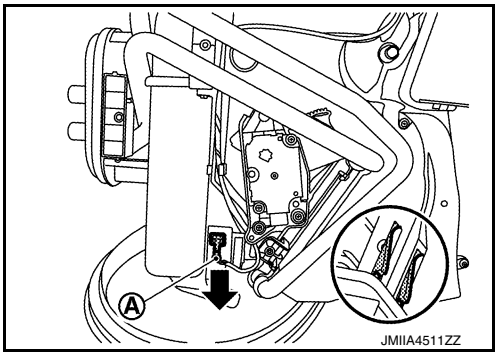
Refer to HA-36, "Exploded View".

Removal and Installation

INFOID:0000000013554172

REMOVAL

1. Remove instrument lower panel LH. Refer to IP-13, "Removal and Installation".
2. Disconnect harness connector Ⓐ, and them remove intake sensor.



INSTALLATION

Note the following items, and then install in the reverse order of removal.

CAUTION:

- **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.**
- **Never rotate the bracket insertion part when removing and installing the intake sensor.**
- **Check for leakages when recharging refrigerant. Refer to HA-15, "Leak Test".**

REFRIGERANT PRESSURE SENSOR

Exploded View

INFOID:0000000013554173

Refer to HA-27, "Exploded View".

Removal and Installation

INFOID:0000000013554174

REMOVAL

Refer to HA-32, "REFRIGERANT PRESSURE SENSOR : Removal and Installation".

INSTALLATION

Install in the reverse order of removal.

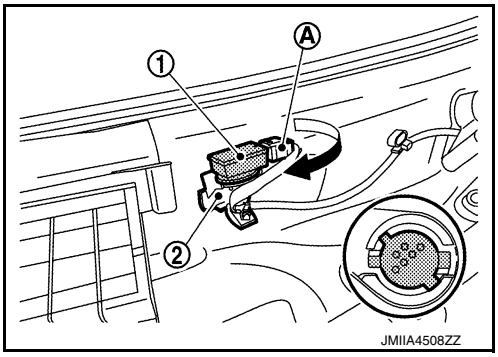
AIR QUALITY SENSOR

Removal and Installation

INFOID:0000000013554175

REMOVAL

1. Remove cowl top cover. Refer to EXT-35, "Removal and Installation".
2. Disconnect harness connector Ⓐ, and then remove air quality sensor ① from air quality sensor bracket ②.



INSTALLATION

Install in the reverse order of removal.

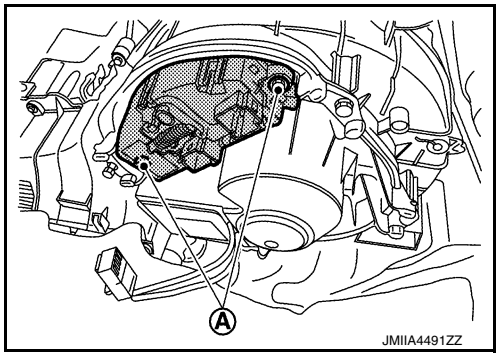
BLOWER REGULATOR

Removal and Installation

INFOID:0000000013554176

REMOVAL

1. Remove glove box assembly. Refer to IP-13, "Removal and Installation".
2. Remove fixing screws Ⓐ, and then remove blower regulator.



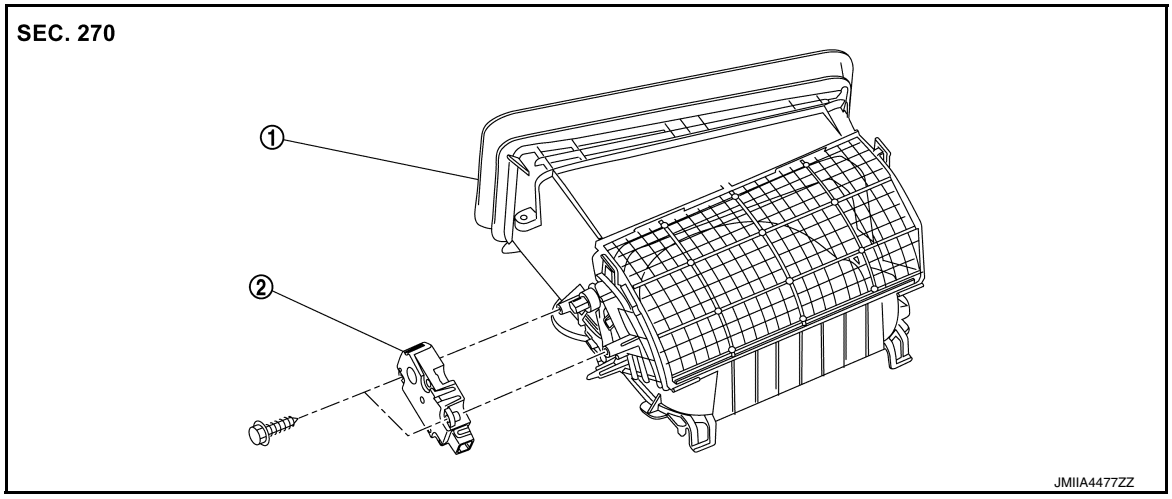
INSTALLATION

Install in the reverse order of removal.

DOOR MOTOR

Exploded View

INFOID:0000000013554177



① Intake box case ② Intake door motor

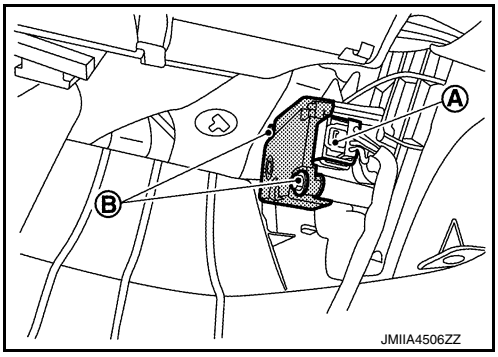
INTAKE DOOR MOTOR

INTAKE DOOR MOTOR : Removal and Installation

INFOID:0000000013554178

REMOVAL

1. Remove glove box assembly. Refer to IP-13, "Removal and Installation".
2. Disconnect intake door motor harness connector Ⓐ and remove fixing screws Ⓑ, and then remove intake door motor.



INSTALLATION

Note the following item, and then install in the reverse order of removal.

CAUTION:

Perform the following operations when replacing intake door motor. (For details, Refer to the following.)

- **Refer to HAC-50, "Description".**
- **Refer to HAC-52, "Description".**