SECTION ATC
AUTOMATIC AIR CONDITIONER

CONTENTS

APPLICATION NOTICE

PFP:00000

How to Check Vehicle Type

EJS006AJ

Confirm K9K engine type with Model written on identification plate (refer to GI-44, "IDENTIFICATION INFORMATION"), then refer to service information in ATC section.

Vehicle type	Engine type
xTKxxxxK12Vxx	Euro3 48kW
xTKxxxxK12Yxx	Euro3 60kW
xTKxxxxK12Txx	Euro4 50kW
xTKxxxxK12Uxx	Euro4 63kW

PRECAUTIONS

PFP:00001

Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

EJS004HI

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

WARNING:

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

Precautions for Working with HFC-134a (R-134a)

EJS004HJ

WARNING:

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

General Refrigerant Precautions

EJS004HK

WARNING:

- **Do not release refrigerant into the air. Use approved recovery/recycling equipment to capture the refrigerant every time an air conditioning system is discharged.**
- **Always wear eye and hand protection (goggles and gloves) when working with any refrigerant or air conditioning system.**
- **Do not store or heat refrigerant containers above 52°C (125°F).**
- **Do not heat a refrigerant container with an open flame; if container warming is required, place the bottom of the container in a warm pail of water.**
- **Do not intentionally drop, puncture, or incinerate refrigerant containers.**
- **Keep refrigerant away from open flames: poisonous gas will be produced if refrigerant burns.**
- **Refrigerant will displace oxygen, therefore be certain to work in well ventilated areas to prevent suffocation.**
- **Do not pressure test or leak test HFC-134a (R-134a) service equipment and/or vehicle air conditioning systems with compressed air during repair. Some mixtures of air and HFC-134a (R-134a)**

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

Lubricant Precautions

EJS004HL

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

Precautions for Refrigerant Connection

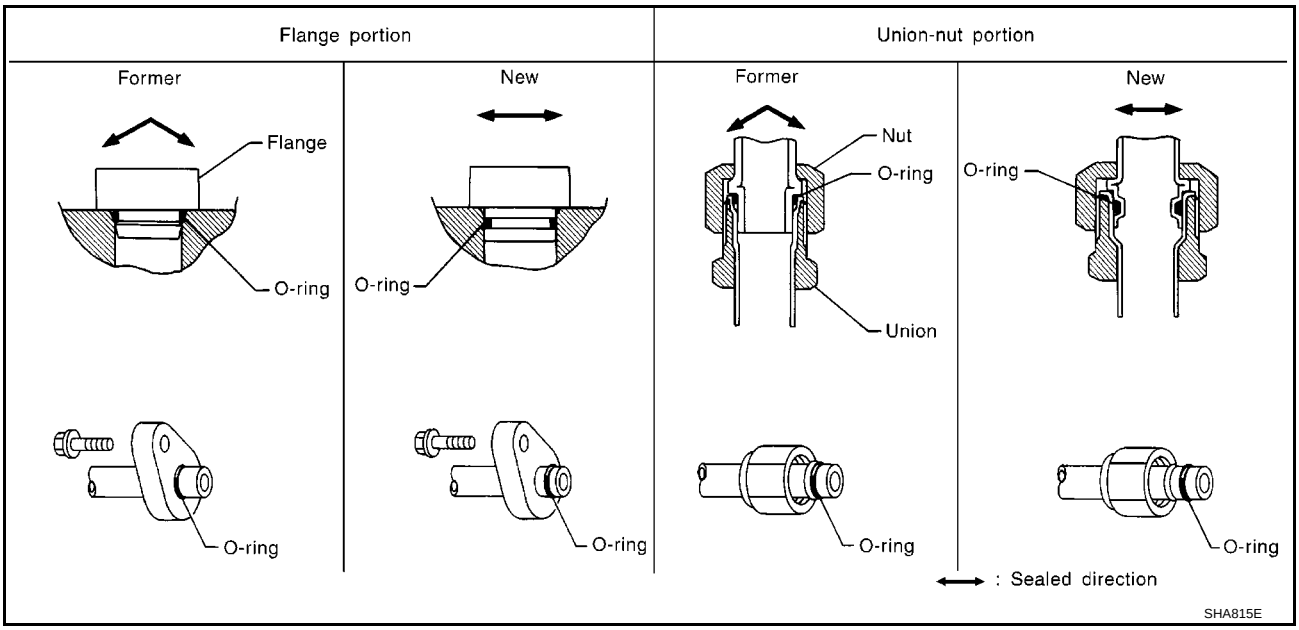
EJS004HM

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

- Expansion valve to cooling unit
- Refrigerant pressure sensor to liquid tank

FEATURES OF NEW TYPE REFRIGERANT CONNECTION

- The O-ring has been relocated. It has also been provided with a groove for proper installation. This eliminates the chance of the O-ring being caught in, or damaged by, the mating part. The sealing direction of the O-ring is now set vertically in relation to the contacting surface of the mating part to improve sealing characteristics.
- The reaction force of the O-ring will not occur in the direction that causes the joint to pull out, thereby facilitating piping connections.



O-RING AND REFRIGERANT CONNECTION

CAUTION:

The new and former refrigerant connections use different O-ring configurations. Do not confuse O-rings since they are not interchangeable. If a wrong O-ring is installed, refrigerant will leak at, or around, the connection.

O-Ring Part Numbers and Specifications (CR Engine Models)

Connection type	Piping connection point		Part number	Qty.	Remarks
New	Low-pressure flexible hose to heater & cooling unit		92473 BC700	1	
	High-pressure pipe to heater & cooling unit		92471 BC700	1	
	Condenser to high-pressure flexible hose		92472 BC700	1	
	Condenser to high-pressure pipe		92471 BC700	1	
	Compressor to low-pressure flexible hose		92474 BC700	1	
	Compressor to high-pressure flexible hose		92472 BC700	1	
	Liquid tank to condenser pipe		92471 N8210	1	
Former	Refrigerant pressure sensor		—	–	
	Expansion valve to evaporator	Inlet	92477 AX000	1	
		Outlet	92477 AX005	1	

O-Ring Part Numbers and Specifications (HR Engine Models)

Connection type	Piping connection point		Part number	Qty.	Remarks
New	Low-pressure flexible hose to heater & cooling unit		92473 BC700	1	
	High-pressure pipe to heater & cooling unit		92471 BC700	1	
	Condenser to high-pressure flexible hose		92472 BC700	1	
	Condenser to high-pressure pipe		92471 BC700	1	
	Compressor to low-pressure flexible hose		92474 N8210	1	
	Compressor to high-pressure flexible hose		92472 N8210	1	
	Liquid tank to condenser pipe		92471 N8210	1	
Former	Refrigerant pressure sensor		—	–	
	Expansion valve to evaporator	Inlet	92477 AX000	1	
		Outlet	92477 AX005	1	

O-Ring Part Numbers and Specifications (K9K Engine Models)

Connection type	Piping connection point		Part number	Qty.	Remarks
New	Low-pressure flexible hose to heater & cooling unit		92473 BC700	1	
	Low-pressure flexible hose to Low-pressure pipe		92473 BC700	1	
	High-pressure pipe to heater & cooling unit		92471 BC700	1	
	Condenser to high-pressure flexible hose		92472 BC700	1	
	Condenser to high-pressure pipe		92471 BC700	1	
	Compressor to low-pressure flexible hose		92474 BC700	1	
	Compressor to high-pressure flexible hose		92472 BC700	1	
	Liquid tank to condenser pipe		92471 N8210	1	
Former	Refrigerant pressure sensor		—	–	
	Expansion valve to evaporator	Inlet	92477 AX000	1	
		Outlet	92477 AX005	1	

WARNING:

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

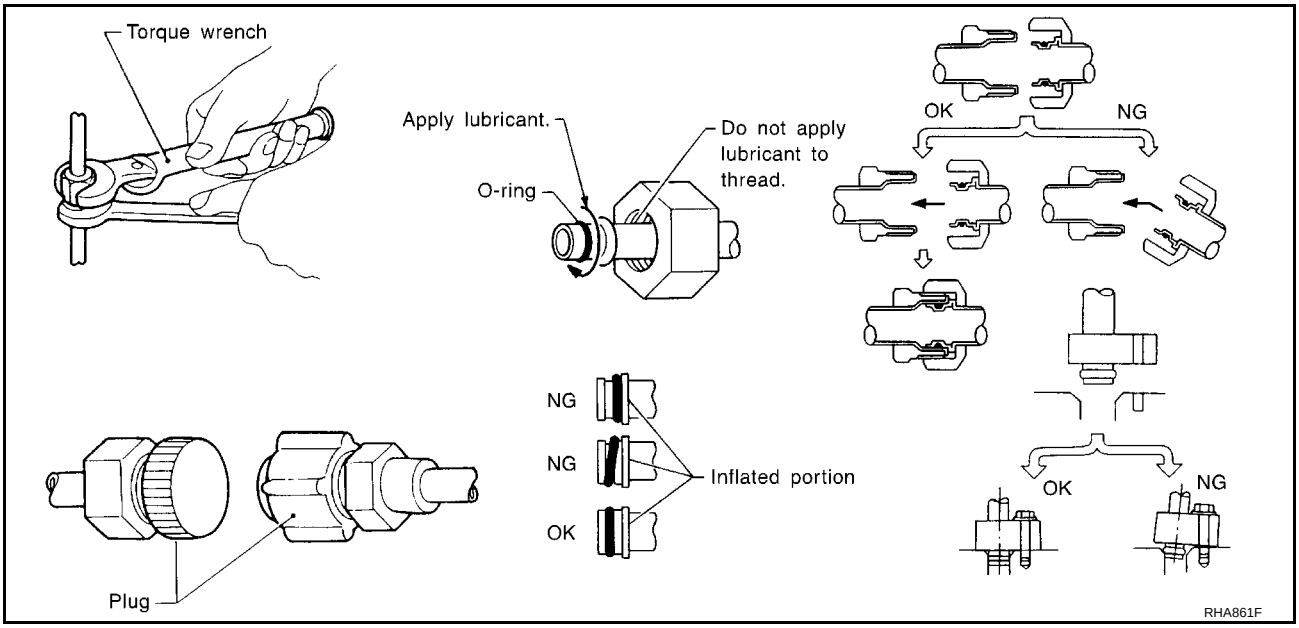
CAUTION:

When replacing or cleaning refrigerant cycle components, observe the following.

- **When the compressor is removed, store it in the same position as it is when mounted on the car. Malfunction to do so will cause lubricant to enter the low pressure chamber.**
- **When connecting tubes, always use a torque wrench and a back-up wrench.**
- **After disconnecting tubes, immediately plug all openings to prevent entry of dirt and moisture.**
- **When installing an air conditioner in the vehicle, connect the pipes as the final stage of the operation. Do not remove the seal caps of pipes and other components until just before required for connection.**
- **Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.**
- **Thoroughly remove moisture from the refrigeration system before charging the refrigerant.**
- **Always replace used O-rings.**
- **When connecting tube, apply lubricant to circle of the O-rings shown in illustration. Be careful not to apply lubricant to threaded portion.**

	KC59G Compressor
Lubricant name:	**Nissan A/C System Oil Type R**
Part number:	**KLH00-PAGR0**

- **O-ring must be closely attached to dented portion of tube.**
- **When replacing the O-ring, be careful not to damage O-ring and tube.**
- **Connect tube until you hear it click, then tighten the nut or bolt by hand until snug. Make sure that the O-ring is installed to tube correctly.**
- **After connecting line, conduct leak test and make sure that there is no leakage from connections. When the gas leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.**



Precautions for Servicing Compressor

EJS004HN

- **Plug all openings to prevent moisture and foreign matter from entering.**
- **When the compressor is removed, store it in the same position as it is when mounted on the car.**
- **When replacing or repairing compressor, follow “Maintenance of Lubricant Quantity in Compressor” exactly. Refer to ATC-15, "Adjustment of Compressor Lubricant Amount" .**
- **Keep friction surfaces between clutch and pulley clean. If the surface is contaminated, with lubricant, wipe it off by using a clean waste cloth moistened with thinner.**

- **After compressor service operation, turn the compressor shaft by hand more than five turns in both directions. This will equally distribute lubricant inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for one hour.**
- **After replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation.**

Precautions for Service Equipment

EJS004HO

RECOVERY/RECYCLING EQUIPMENT

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

ELECTRONIC LEAK DETECTOR

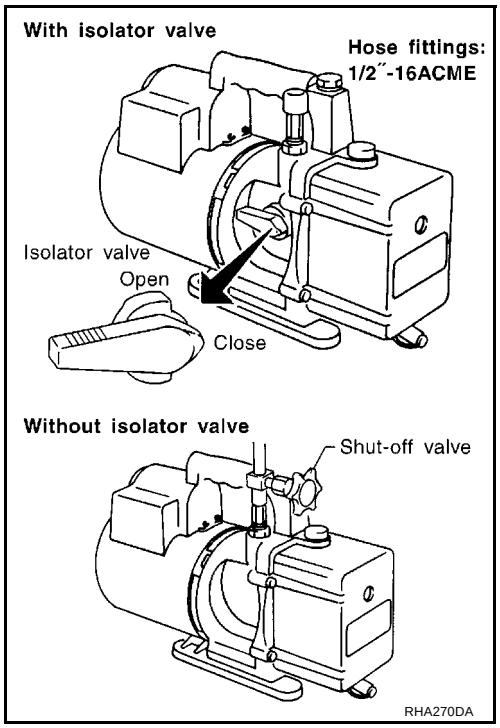
Be certain to follow the manufacturer's instructions for tester operation and tester maintenance.

VACUUM PUMP

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

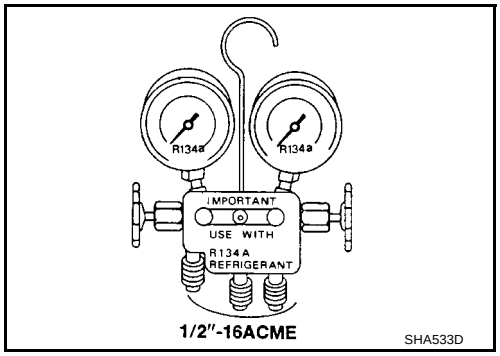
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has an automatic shut off valve, disconnect the hose from the pump. As long as the hose is connected, the valve is open and lubricating oil may migrate.

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



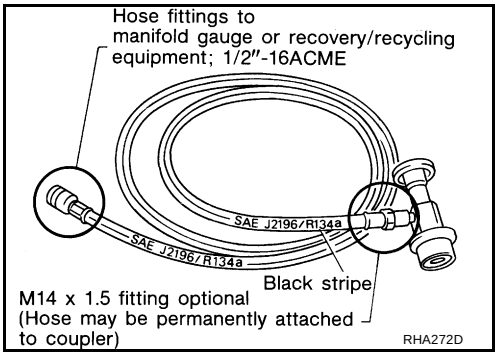
MANIFOLD GAUGE SET

Be certain that the gauge face indicates HFC-134a (R-134a) or 134a. Be sure the gauge set has 1/2″-16 ACME threaded connections for service hoses. Confirm the set has been used only with refrigerant HFC-134a (R-134a) and specified lubricants.



SERVICE HOSES

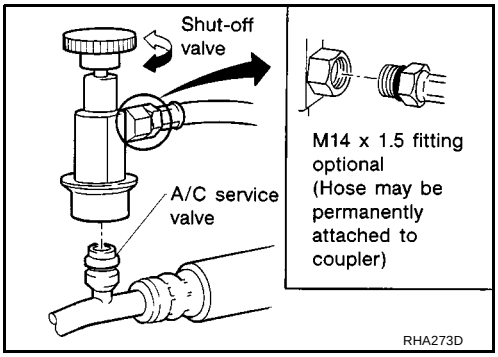
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

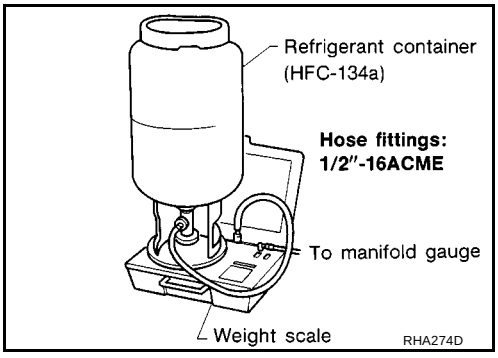
Never attempt to connect HFC-134a (R-134a) service couplers to an CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



REFRIGERANT WEIGHT SCALE

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



CALIBRATING ACR4 WEIGHT SCALE

Calibrate the scale every three months.
To calibrate the weight scale on the ACR4:

1. Press **Shift/Reset** and **Enter** at the same time.
2. Press **8787** . “**A1** ” will be displayed.
3. Remove all weight from the scale.
4. Press **0** , then press **Enter** . “**0.00** ” will be displayed and change to “**A2** ”.
5. Place a known weight (dumbbell or similar weight), between 4.5 and 8.6 kg (10 and 19 lb) on the center of the weight scale.
6. Enter the known weight using four digits. (Example 10 lb = 10.00, 10.5 lb = 10.50)
7. Press **Enter** — the display returns to the vacuum mode.
8. Press **Shift/Reset** and **Enter** at the same time.
9. Press **6** — the known weight on the scale is displayed.
10. Remove the known weight from the scale. “**0.00** ” will be displayed.
11. Press **Shift/Reset** to return the ACR4 to the program mode.

CHARGING CYLINDER

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

Precautions for Leak Detection Dye

EJS004HP

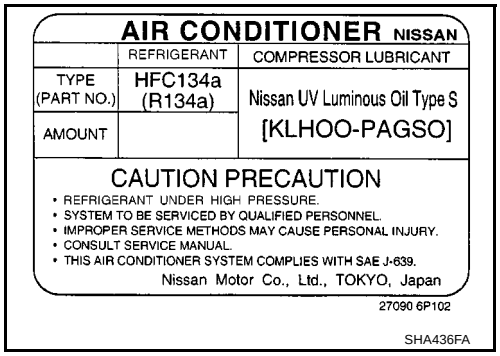
- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety goggles to protect your eyes and enhance the visibility of the fluorescent dye.
- The fluorescent dye leak detector is not a replacement for an electronic refrigerant leak detector. The fluorescent dye leak detector should be used in conjunction with an electronic refrigerant leak detector to (J-41995) pin-point refrigerant leaks.
- For your safety and your Customer's satisfaction, read and follow all manufacture's operating instructions and precautions prior to performing the work.
- A compressor shaft seal should not be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electronic refrigerant leak detector (J-41995).
- Always remove any remaining dye from the leak area after repairs are complete to avoid a misdiagnosis during a future service.
- Do not allow dye to come into contact with painted body panels or interior components. If dye is spilled, clean immediately with the approved dye cleaner. Fluorescent dye left on a surface for an extended period of time cannot be removed.
- Do not spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Do not use more than one refrigerant dye bottle (1/4 ounce / 7.4 CC) per A/C system.
- Leak detection dyes for HFC-134a (R-134a) and CFC-12 (R-12) A/C systems are different. Do not use HFC-134a (R-134a) leak detection dye in CFC-12 (R-12) A/C system or CFC-12 (R-12) leak detector dye in HFC-134a (R-134a) A/C systems or A/C system damage may result.
- The fluorescent properties of the dye will remain for over three (3) years unless a compressor malfunction occurs.

IDENTIFICATION

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

IDENTIFICATION LABEL FOR VEHICLE

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



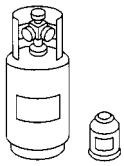
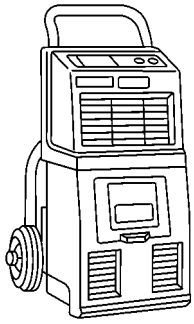
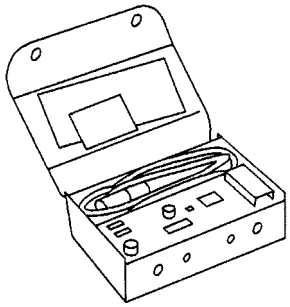
PREPARATION

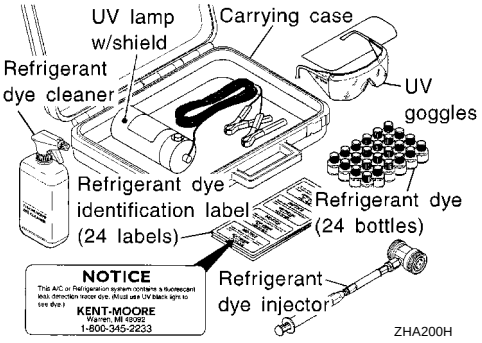
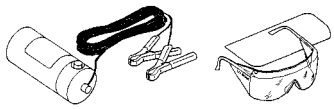
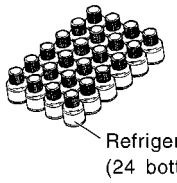
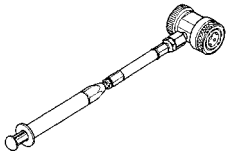
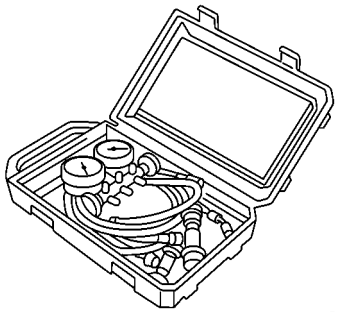
PFP:00002

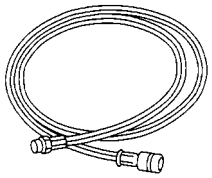
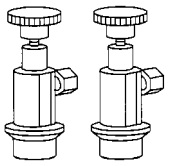
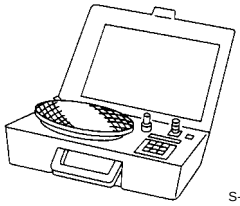
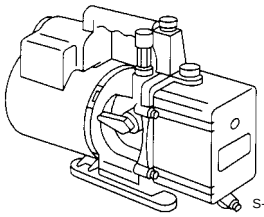
HFC-134a (R-134a) Service Tools and Equipment

EJS004HR

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

Tool number Tool name	Description	
HFC-134a (R-134a) refrigerant	 S-NT196	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size ● large container 1/2″ -16 ACME
KLH00-PAGR0 Nissan A/C System Oil Type R	 S-NT197	Type: Poly alkaline glycol oil (PAG), type R Application: HFC-134a (R-134a) vane rotary compressors (Nissan only) Lubricity: 40 m ℓ (1.4 Imp fl oz.)
Recovery/Recycling Recharging equipment (ACR4)	 RJIA0195E	Function: Refrigerant Recovery and Recycling and Recharging
Electrical leak detector	 A/C leak detector SHA705EB	Power supply: ● DC 12V (Power socket)

Tool number Tool name	Description	
(J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) HFC-134a (R-134a) Dye injector Use with J-41447, 1/4 ounce bottle (J-41447) HFC-134a (R-134a) Fluorescent leak detection dye (Box of 24, 1/4 ounce bottles) (J-43872) Refrigerant dye cleaner	 ZHA200H	Power supply: DC 12V (Battery terminal)
(J-42220) UV lamp and UV safety goggles	 SHA438F	Power supply: DC 12V (Battery terminal) For checking refrigerant leak when fluorescent dye is installed in A/C system. Includes: UV lamp and UV safety goggles
(J-41447) HFC-134a (R-134a) Fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)	 SHA439F	Application: For HFC-134a (R-134a) PAG oil Container: 1/4 ounce (7.4cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)
(J-41459) HFC-134a (R-134a) Dye injector Use with J-41447, 1/4 ounce bottle	 SHA440F	For injecting 1/4 ounce of fluorescent leak detection dye into A/C system.
(J-43872) Refrigerant dye cleaner	 SHA441F	For cleaning dye spills.
Manifold gauge set (with hoses and couplers)	 RJIA0196E	Identification: ● The gauge face indicates HFC-134a (R-134a). Fitting size: Thread size ● 1/2″ -16 ACME

Tool number Tool name	Description	
Service hoses ● High side hose ● Low side hose ● Utility hose	 S-NT201	Hose color: ● Low hose: Blue with black stripe ● High hose: Red with black stripe ● Utility hose: Yellow with black stripe or green with black stripe Hose fitting to gauge: ● 1/2″ -16 ACME
Service couplers ● High side coupler ● Low side coupler	 S-NT202	Hose fitting to service hose: ● M14 x 1.5 fitting is optional or permanently attached.
Refrigerant weight scale	 S-NT200	For measuring of refrigerant Fitting size: Thread size ● 1/2″ -16 ACME
Vacuum pump (Including the isolator valve)	 S-NT203	Capacity: ● Air displacement:4 CFM ● Micron rating:20 microns ● Oil capacity:482 g (17 oz.) Fitting size: Thread size ● 1/2″ -16 ACME

REFRIGERATION SYSTEM

PFP:KA990

Refrigerant Cycle

EJS006G2

REFRIGERANT FLOW

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

FREEZE PROTECTION

Under usual operating conditions, when the A/C is switched on, the compressor runs continuously, and the evaporator pressure, and therefore, temperature is controlled by the SD6V12 displacement compressor to prevent freeze up.

Refrigerant System Protection

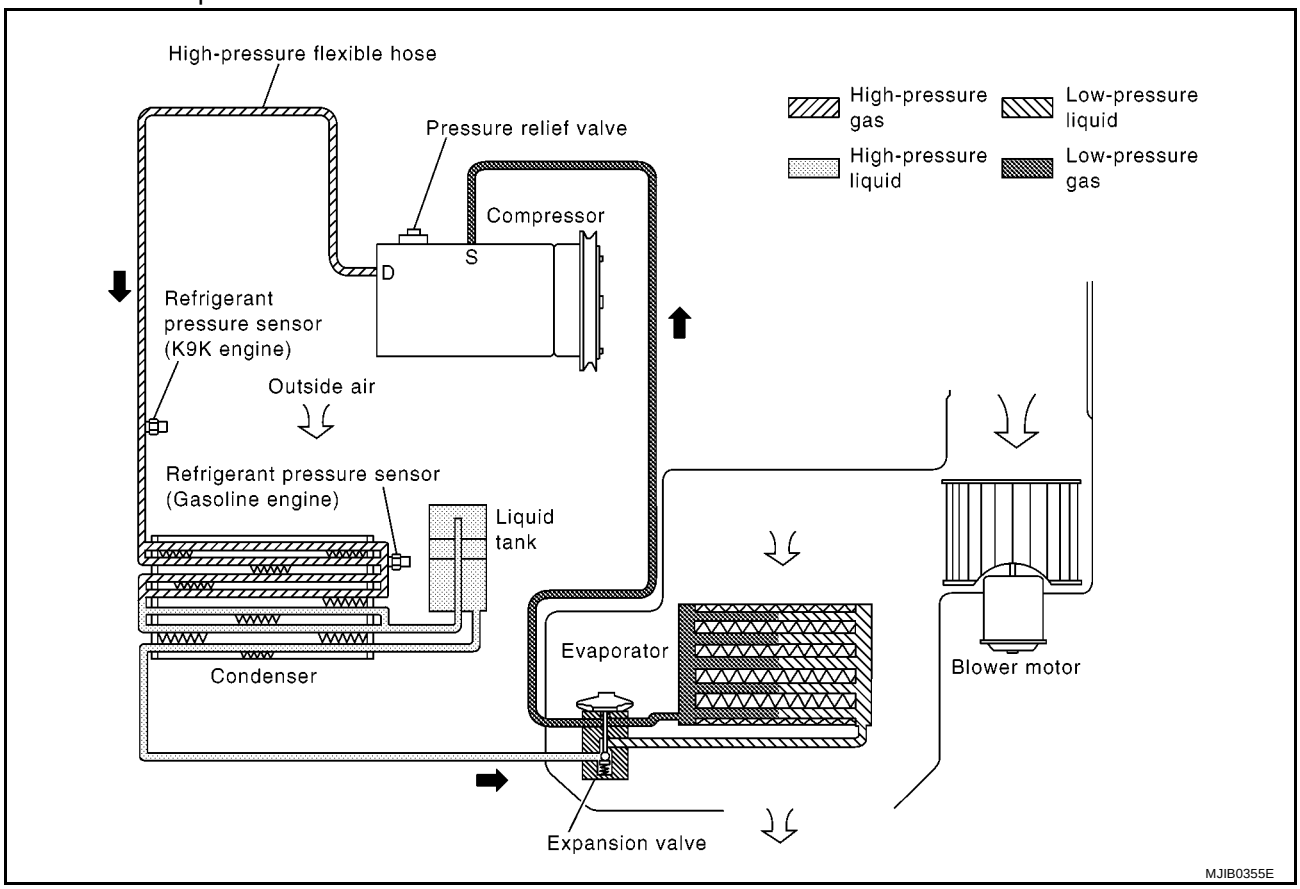
EJS006G3

REFRIGERANT PRESSURE SENSOR

The refrigerant system is protected against excessively high or low pressures by the refrigerant pressure sensor, located on the liquid tank. If the system pressure rises above, or falls below the specifications, the refrigerant pressure sensor detects the pressure inside the refrigerant line and sends the voltage signal to the ECM. ECM makes the A/C relay go OFF and stops the compressor when pressure on the high pressure side detected by refrigerant pressure sensor is over about 2,746 kPa (27.5 bar, 28 kg/cm^2 , 398 psi), or below about 134 kPa (1.37 bar, 1.4 kg/cm^2 , 20 psi).

PRESSURE RELIEF VALVE

The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. When the pressure of refrigerant in the system increases to an unusual level [more than 3,727 kPa (37.3 bar, 38 kg/cm^2 , 540 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.



LUBRICANT

PFP:KLG00

Adjustment of Compressor Lubricant Amount

EJS004HU

Compressor lubricant circulates through the system with refrigerant. When air conditioner system component is replaced or after the large refrigerant leak, lubricant needs to be added to compressor. Also it is important to maintain lubricant level properly. If lubricant level is not proper, following might happen.

- Insufficient lubricant: Compressor adherence
- Lubricant overfill: Insufficient cooling (insufficient heat exchange)

LUBRICANT

Lubricant name : Nissan A/C System Oil Type R
Part number : KLH00-PAGR0

PROCEDURES FOR LUBRICANT RETURN OPERATION

Follow the steps bellow to adjust the lubricant level.

1. CHECK A/C SYSTEM

1. Make sure A/C system operates normally.
2. Make sure a large amount of refrigerant or lubricant does not leak.

OK or NG

OK >> GO TO 2.
NG >> GO TO 3.

2. LUBRICANT RETURN OPERATION

1. Start the engine. Put it in the following state.
- Engine speed: Idling - 1,200 rpm
- A/C or AUTO switch: ON
- Fan speed: HI
- Air inlet: Recirculation
- Set temperature: FULL HOT
2. Keep running for approximately 10 minutes.
3. Stop the engine.

CAUTION:
When a large leak of refrigerant or lubricant is found, do not perform lubricant return operation.

>> GO TO 3.

3. CHECK COMPRESSOR

Is compressor replaced?

YES >> GO TO ATC-16, "LUBRICANT LEVEL ADJUSTMENT WHEN REPLACING COMPRESSOR" .
NO >> GO TO 4.

4. CHECK OTHER COMPONENTS

Is any other component to be replaced? (evaporator, condenser, liquid tank, large leak of refrigerant or lubricant)

YES >> GO TO ATC-16, "LUBRICANT LEVEL ADJUSTMENT WHEN REPLACING COMPONENTS OTHER THAN COMPRESSOR" .
NO >> GO TO ATC-65, "Insufficient Cooling" .

LUBRICANT LEVEL ADJUSTMENT WHEN REPLACING COMPONENTS OTHER THAN COMPRESSOR

Add compressor lubricant from the high-pressure port of the compressor according to the table below. α indicates lubricant amount that spouts with refrigerant when refrigerant is discharged.

Components to be replaced	Lubricant amount to be added
Evaporator	35+α cm^3
Condenser	15+α cm^3
Liquid tank	5+α cm^3

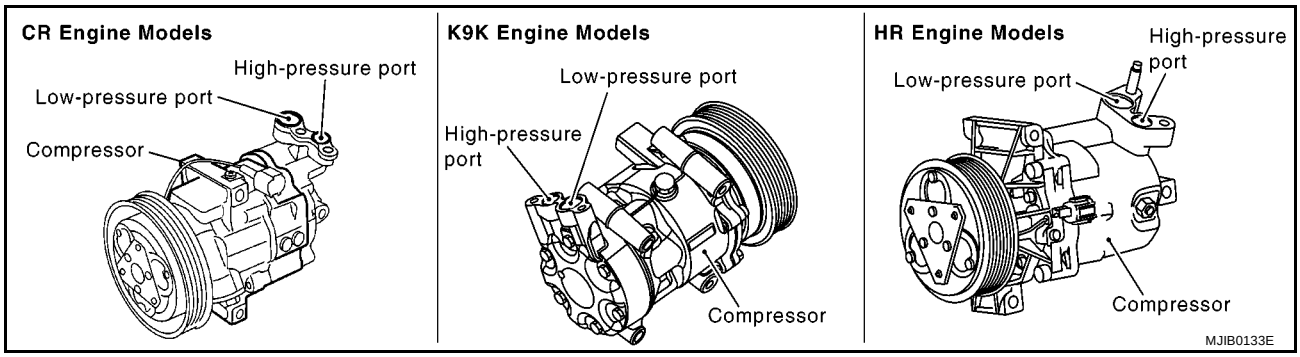
CAUTION:

When replacing 2 or more parts, do not sum up α.

Ex. Lublicant amount to be added to evaporator and liquid tank (cm^3) = 35 + 5 + α

LUBRICANT LEVEL ADJUSTMENT WHEN REPLACING COMPRESSOR

1. Drain the compressor lubricant from the removed compressor's high and low-pressure ports and measure the amount of lubricant.



2. Drain the compressor lubricant from a new compressor according to the formula below. α indicates lubricant amount that spouts with refrigerant when refrigerant is discharged.

   Lubricant amount drained from new compressor (cm^3)
   = Lubricant amount contained in the new compressor (80) - Lubricant amount discharged from the removed compressor - Lubricant amount that adheres to inside of compressor (20) - α
   = 60 - Lubricant amount discharged from the removed compressor - α

3. When adding lubricant, add the appropriate amount of compressor lubricant from the compressor's high-pressure port.

AUTO AIR CONDITIONER SYSTEM

PFP:27500

Description

EJS004HV

- The auto air conditioner detects the vehicle cabin temperature, outside air temperature, intake air temperature, and amount of malfunction sunlight using an interior air sensor, ambient air sensor, intake temperature sensor, and sunload sensor. A comparison of the detected values and temperature set by the temperature setting switch is made by the A/C auto amp (internal controller) and then the blown air temperature, vent blown air volume, vents, and air intake are adjusted to maintain the temperature set for the cabin.

TROUBLE DIAGNOSIS

PFP:00004

CONSULT-II Functions

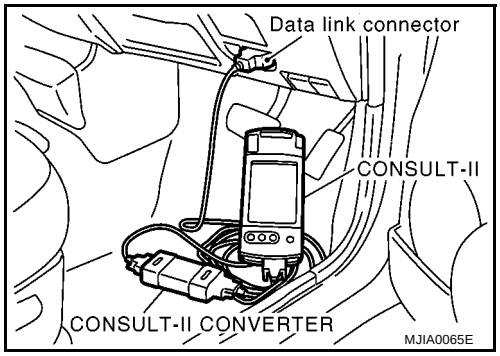
EJS004HW

The CONSULT-II has display functions for work support, self-diagnosis, data monitor, and active tests for each part by combining data reception and command transmission via communication lines from the BCM.

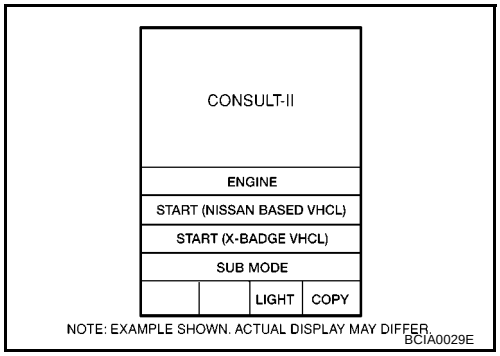
BCM trouble diagnosis item	Inspection Item, Diagnosis Mode	Description
Air conditioner system	Data monitor	Displays BCM input data in real time.

CONSULT-II BASIC OPERATION

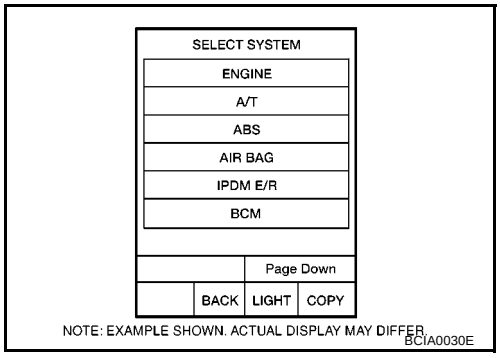
1. Turn ignition switch OFF.
2. Connect the CONSULT-II to data link connector via the CONSULT-II CONVERTER.
   For details, refer to the supplied CONSULT-II Operation Manual (Supplement-III) and CONSULT-II CONVERTER Operation Manual.
   CAUTION:
   If the CONSULT-II is connected without the CONSULT-II, CONVERTER, malfunction may be detected by self-diagnosis in control modules that use CAN communication.
3. Turn ignition switch ON.



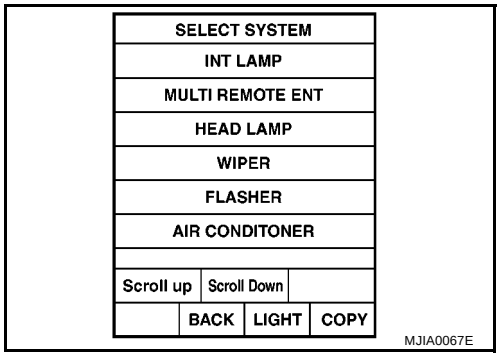
4. Touch “START (NISSAN BASED VHCL)”.



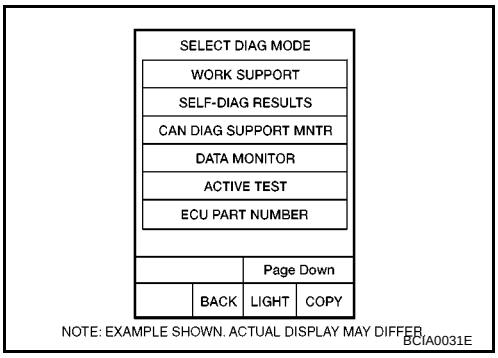
5. Touch “BCM” on the “SELECT SYSTEM” screen.
   - If “BCM” is not displayed, print the “SELECT SYSTEM” screen, and then refer to LAN-5, "PRECAUTIONS" .



6. Touch “AIR CONDITIONER” on the “SELECT TEST ITEM” screen”.



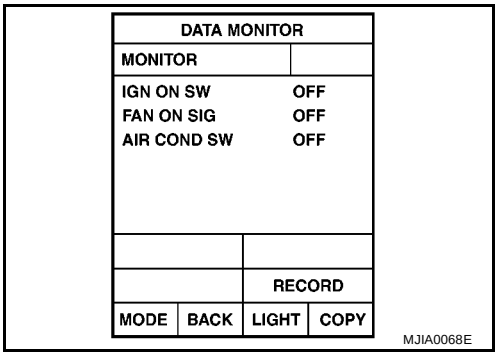
7. Touch “DATA MONITOR” on the “SELET DIAG MODE” screen. For details, refer to separate volume “CONSULT-II Operation Manual”.



DATA MONITOR

Operation Procedure

1. Touch “AIR CONDITIONER” on the “SELECT TEST ITEM” screen”.
2. Touch “DATA MONITOR” on the “SELET DIAG MODE” screen. For details, refer to separate volume “CONSULT-II Operation Manual”.
3. Touch “ALL SIGNALS” on the “DATA MONITOR” screen.
4. Touch “START”.
5. Touch “RECORD” while monitoring to record the status of the item being monitored. To stop recording, touch “STOP”.



Monitored Item

Monitor item [UNIT]		Contents
FAN ON SIG	[ON/OFF]	Displays status “Blower fan on (ON)/blower fan off (OFF)” as judged by the BCM from the input from the A/C auto amp.
AIR COND SW	[ON/OFF]	Displays status “Compressor on (ON)/compressor off (OFF)” as judged by the BCM from the input from the A/C auto amp.
IGN ON SW	[ON/OFF]	Displays the “ON/OFF, ACC (OFF)” status determined from the ignition switch signal.

Diagnosis Procedure

EJS004HX

DIAGNOSIS CHART BY SYMPTOM

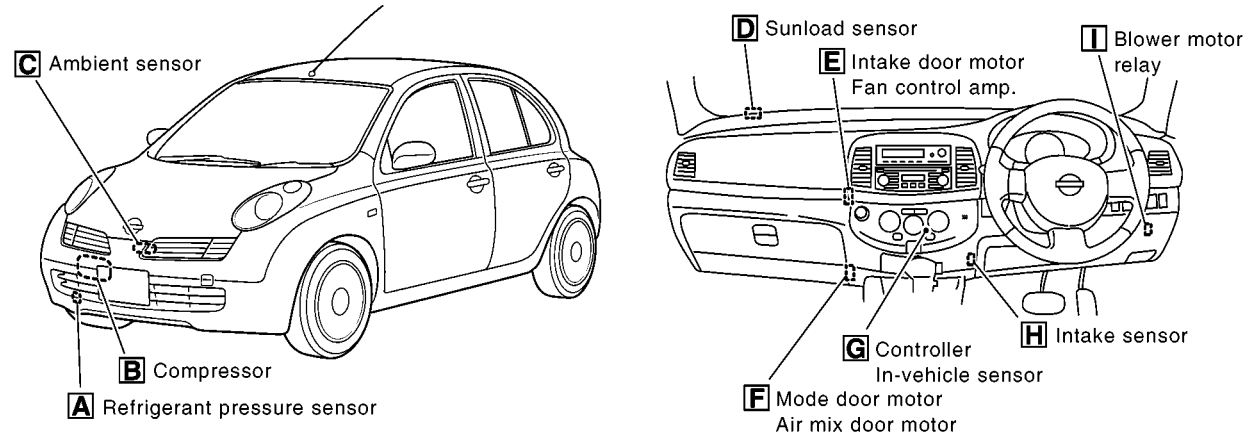
Symptom		Operation inspection	Suspect systems	Possible causes
No air comes out. Airflow volume does not change.		Check blower motor operation.	Blower motor circuit	Refer to ATC-54, "Blower Motor System" and ATC-53, "Coolant Temperature Signal System" .
		The circuit above is normal.	A/C auto amp. circuit	A/C auto amp. malfunction
Inaccurate temperature control	Common items (Check these items for any of the three malfunctions listed below.)	Check installation condition of air mix door motor.	Air mix door circuit	● Improper installation of air mix door rod or air mix door lever. ● Malfunction of air mix door system (damage, locking, etc.)
		Set temperature to 18°C and 32°C. Make sure air mix door operates for its full stroke.	Air mix door motor circuit	Refer to ATC-60, "Air Mix Door Motor System" .
		Malfunction indicated in Self-Diagnosis Step 2.	Sensor circuit	● Sensor Malfunction; Refer to ATC-51, "Intake Sensor System" , ATC-50, "Sunload Sensor System" , ATC-49, "In-Vehicle Sensor System" , ATC-47, "Ambient Sensor System" . ● Sensor harness malfunction
		After normal indication in Self-Diagnosis Step 3, reset the actuator to zero position.	Air mix door circuit	Misreading of the door position of the A/C auto amp. ATC-40, "Self-Diagnosis Function"
		Malfunction indicated in Self-Diagnosis Step 3.	Air mix door motor circuit	Refer to ATC-60, "Air Mix Door Motor System" .
	No cold air comes out. (Normal airflow amount)	With A/C switch ON, check operation of magnetic clutch.	Magnetic clutch circuit	Refer to ATC-61, "Magnetic Clutch System" , ATC-64, "Check Fan ON Signal" .
		● Check refrigerant level. ● Performance check	Air conditioner system	Refer to ATC-65, "Insufficient Cooling" in “Cooling Malfunction”.
		The circuit above is normal.	A/C auto amp. circuit	A/C auto amp. malfunction
	No warm air comes out. (Airflow volume is normal.)	After warming up engine, heater core inlet and outlet sides of the heater hose do not become warm.	Coolant circuit	● Poor engine coolant ● Blockage of heater hose or heater core
		The circuit above is normal.	A/C auto amp. circuit	A/C auto amp. malfunction
	Large difference between set temperature and interior air temperature	Blower motor speed does not change when switching fan switch.	Blower motor circuit	Refer to ATC-54, "Blower Motor System" .
		The inlet of the interior sensor does not draw in smoke when the fan switch is set to speed 4.	Aspirator circuit	● Aspirator malfunction ● Aspirator duct is loose or crushed.
		Check the difference between set temperature and control temperature.	—	Improperly set temperature difference ATC-45, "Difference Between Set Temperature and Control Temperature"
		The circuit above is normal.	A/C auto amp. circuit	A/C auto amp. malfunction

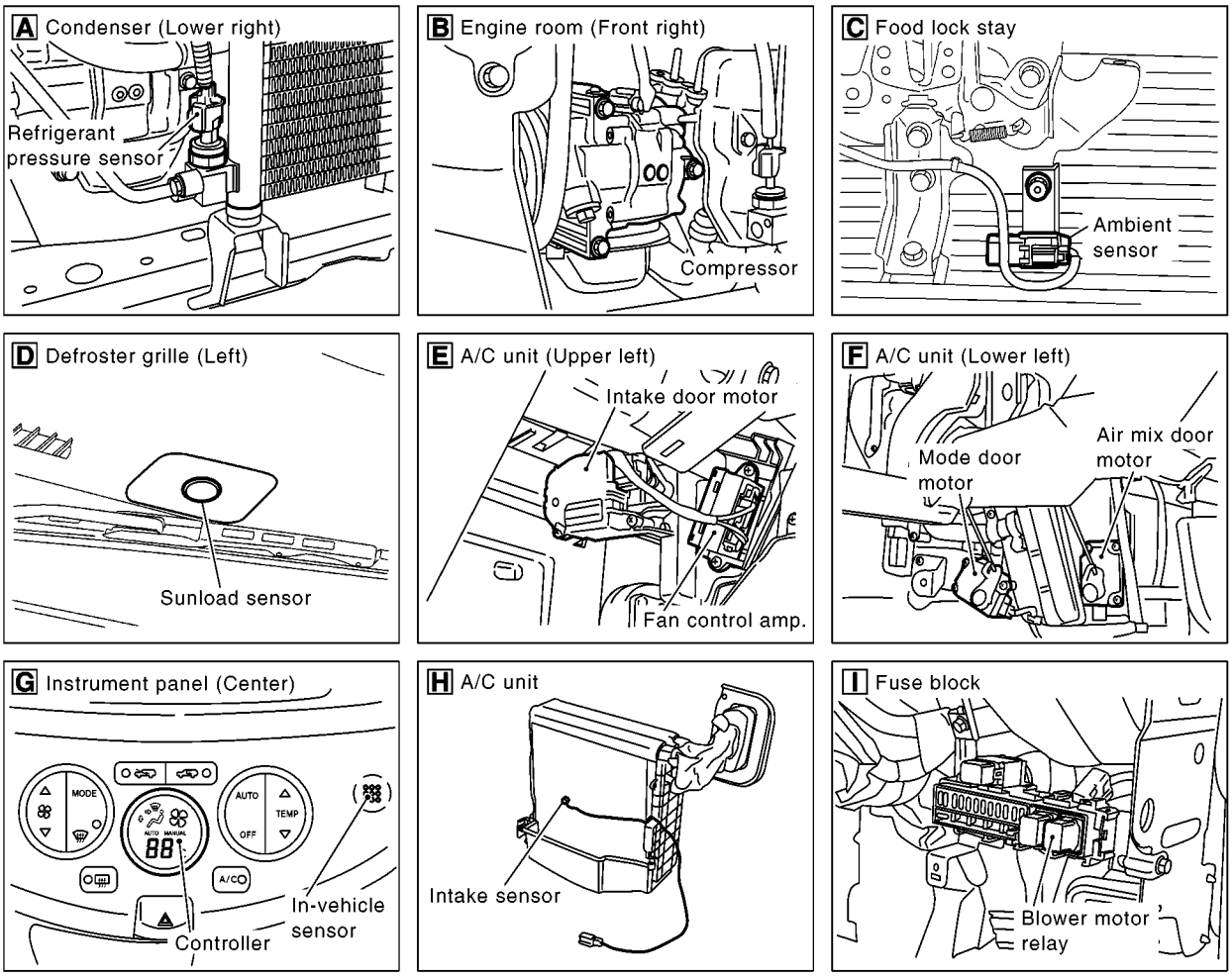
Symptom	Operation inspection	Suspect systems	Possible causes
Unable to switch air outlets to others.	Mode door operation check (manual operation)	Mode door circuit	● Improper installation of mode door rod, mode door link and mode door lever ● Mode door system malfunction (damage, locking, etc.)
	After normal indication in Self-Diagnosis Step 3, reset the actuator to zero position.	Mode door circuit	Misreading of the door position of the A/C auto amp. ATC-40, "Self-Diagnosis Function"
	Malfunction indicated in Self-Diagnosis Step 3.	Mode door motor circuit	Refer to ATC-58, "Mode Door Motor System" .
	The circuit above is normal.	A/C auto amp. circuit	A/C auto amp. malfunction
Unable to switch intake inlets to others.	Intake door operation check (manual operation)	Intake door circuit	● Improper installation of intake door lever ● Intake door system malfunction (damage, locking, etc.)
	Malfunction indicated in Self-Diagnosis Step 3.	Intake door motor circuit	Refer to ATC-58, "Intake Door Motor System" .
	The circuit above is normal.	A/C auto amp. circuit	A/C auto amp. malfunction

Component Parts Location

EJS004HY

CR ENGINE MODELS





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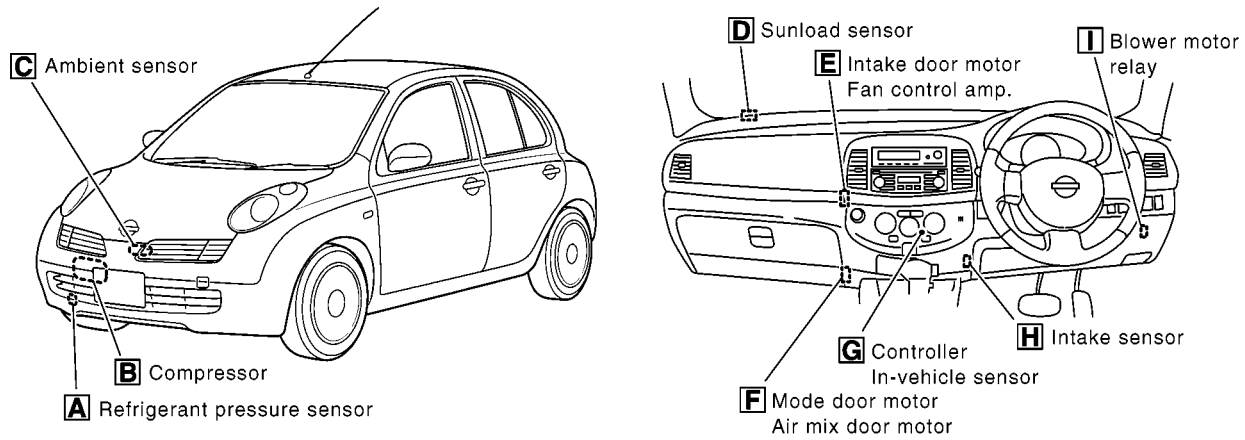
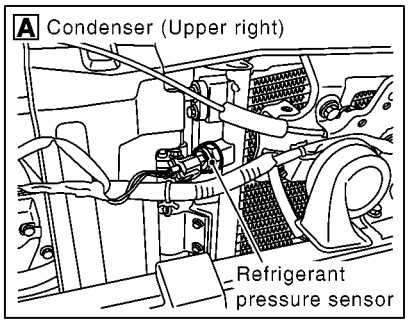
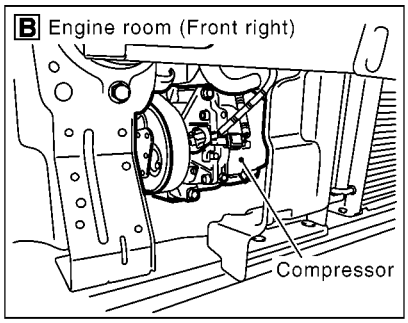
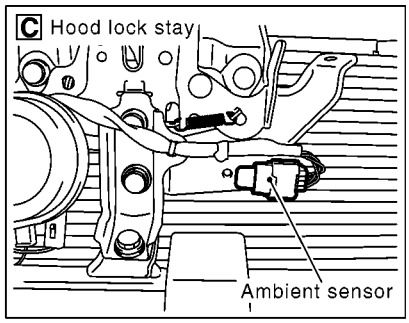
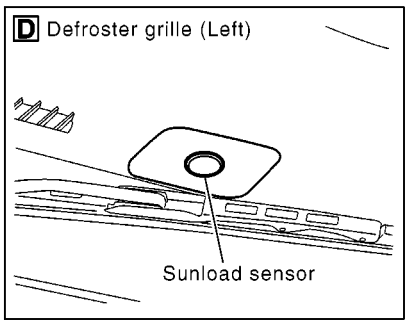
HR ENGINE MODELS

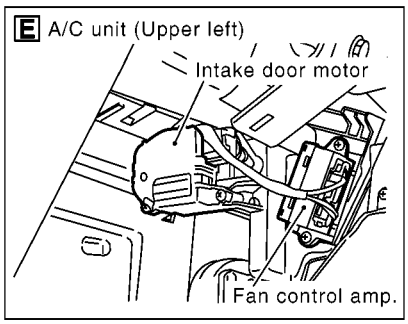


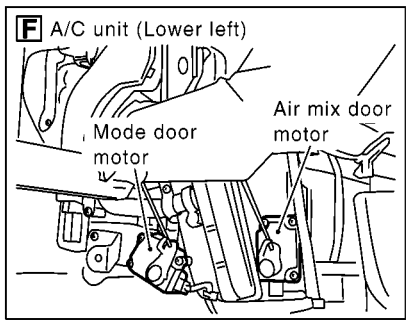


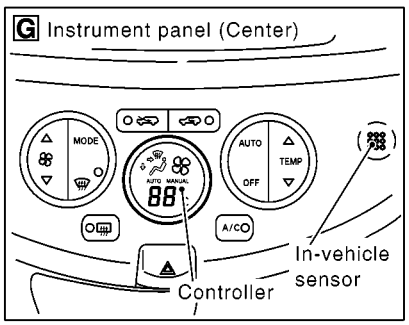


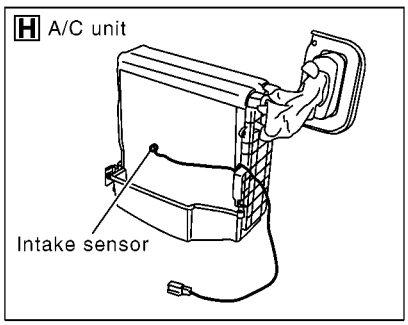


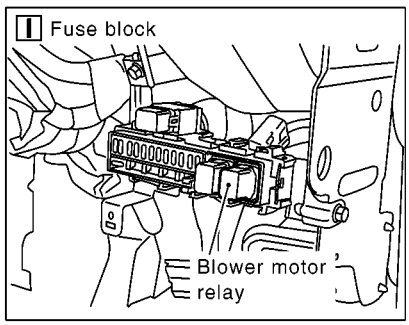












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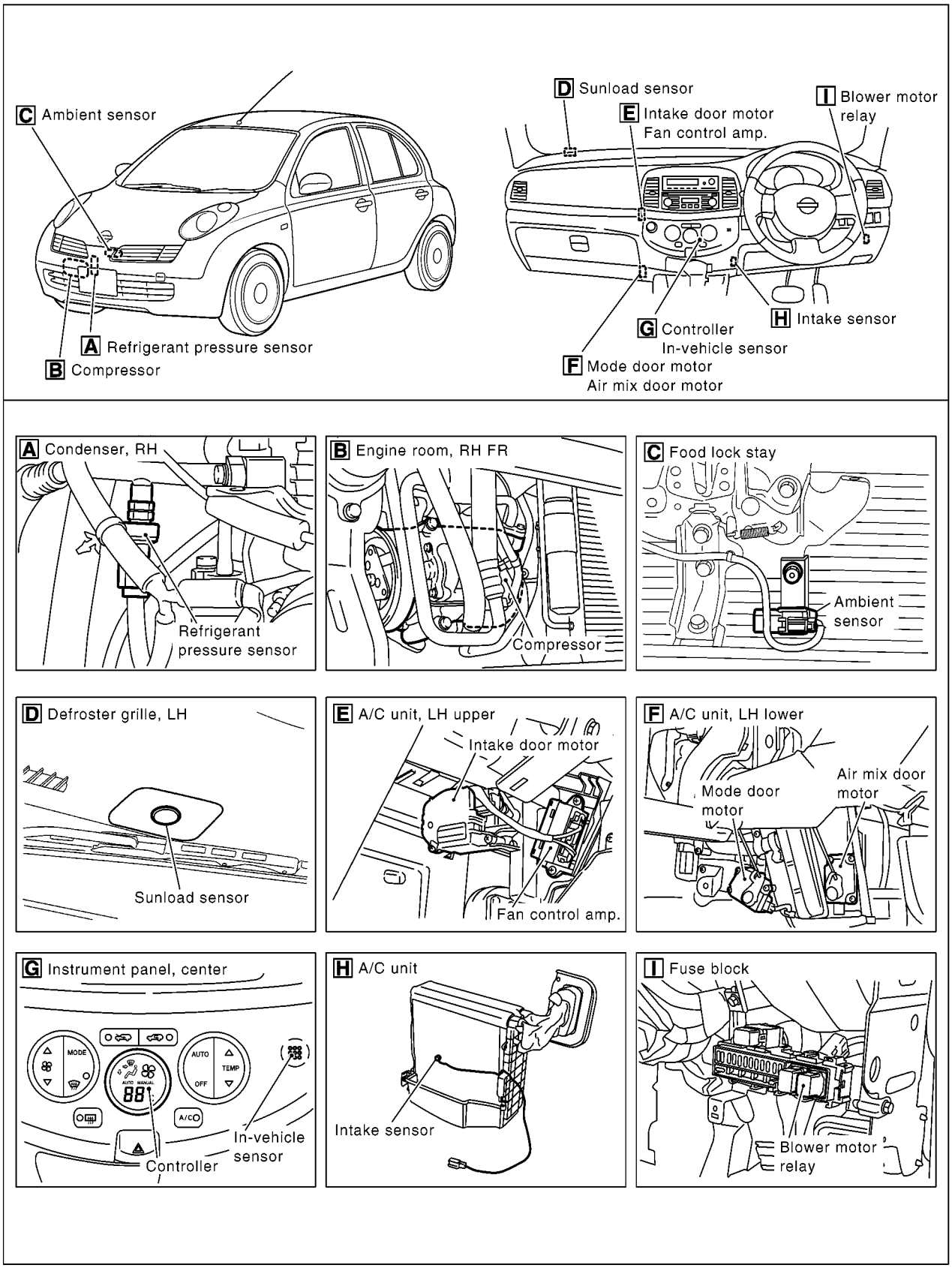
K9K ENGINE MODELS



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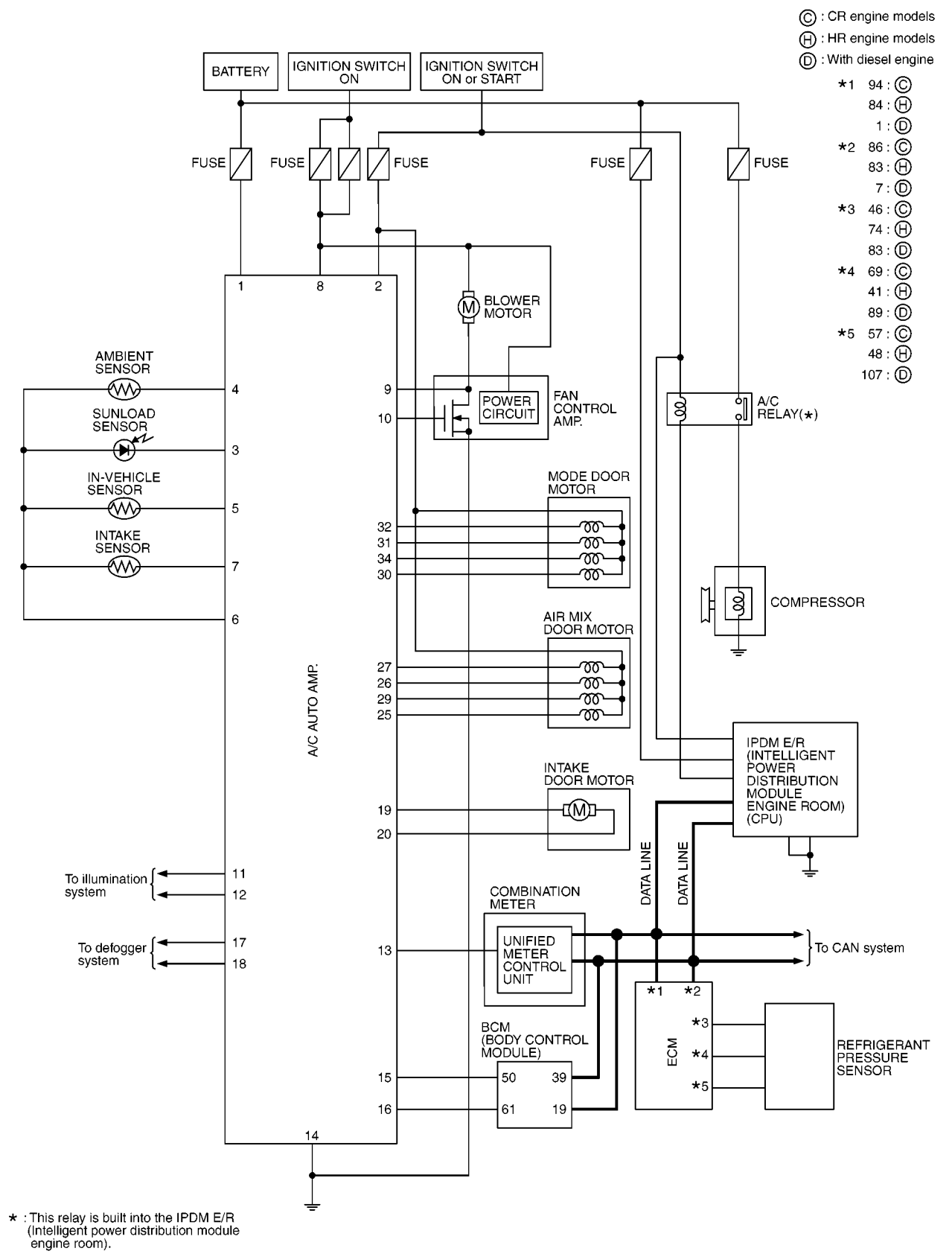
Circuit Diagram

EJS004HZ

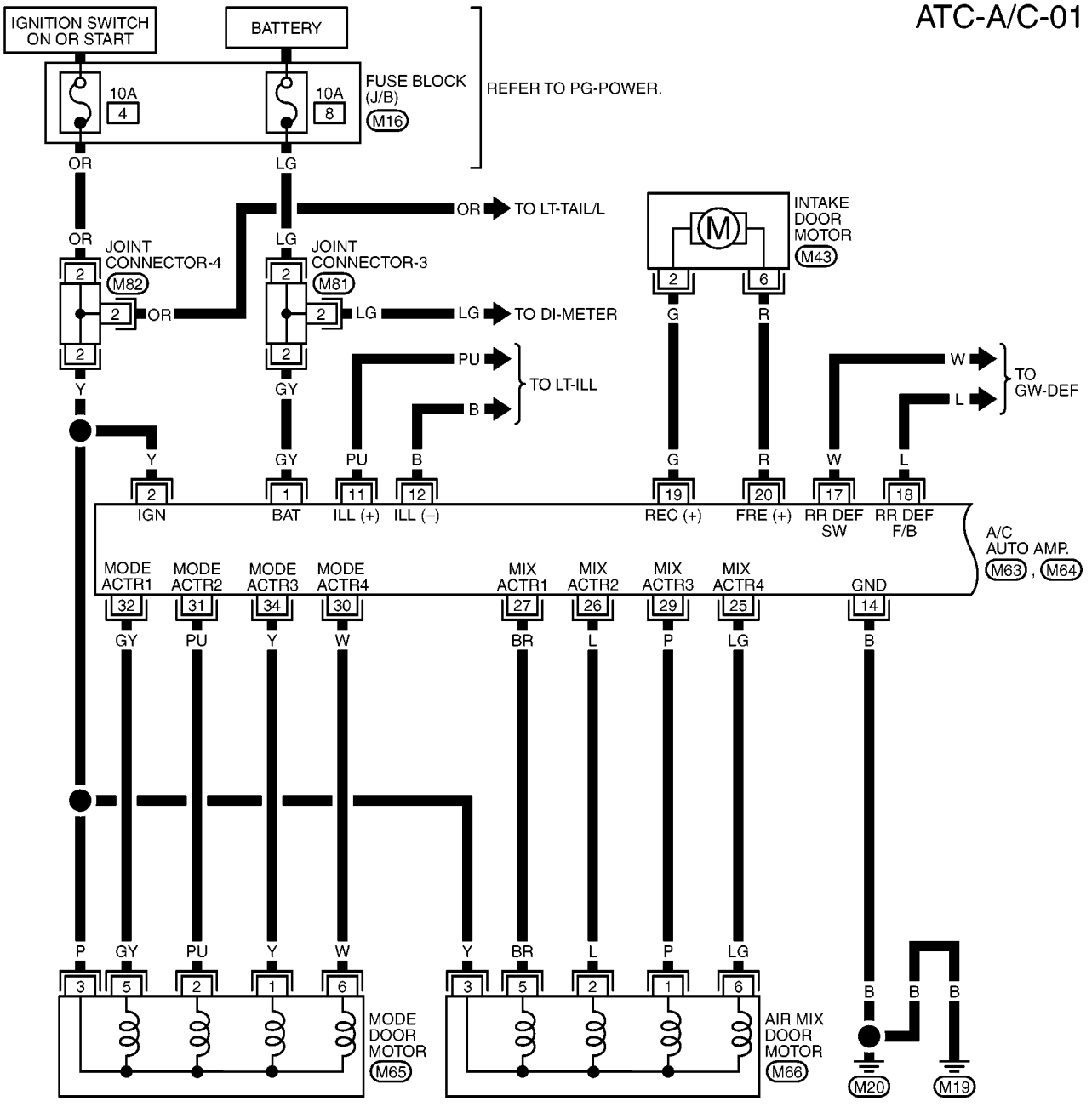


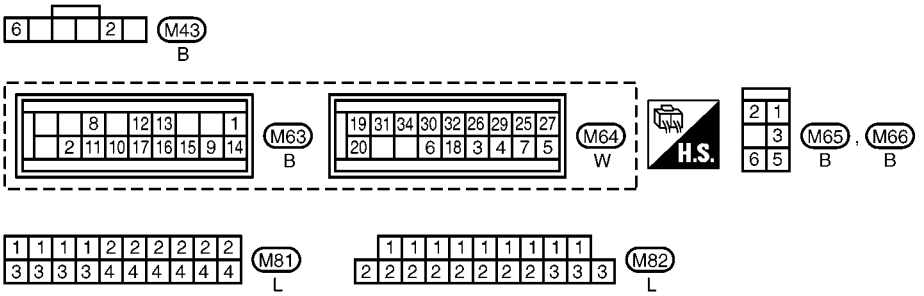
* : This relay is built into the IPDM E/R (Intelligent power distribution module engine room).

MJWA0251E

Wiring Diagram —A/C— CR Engine Models

EJS004I0

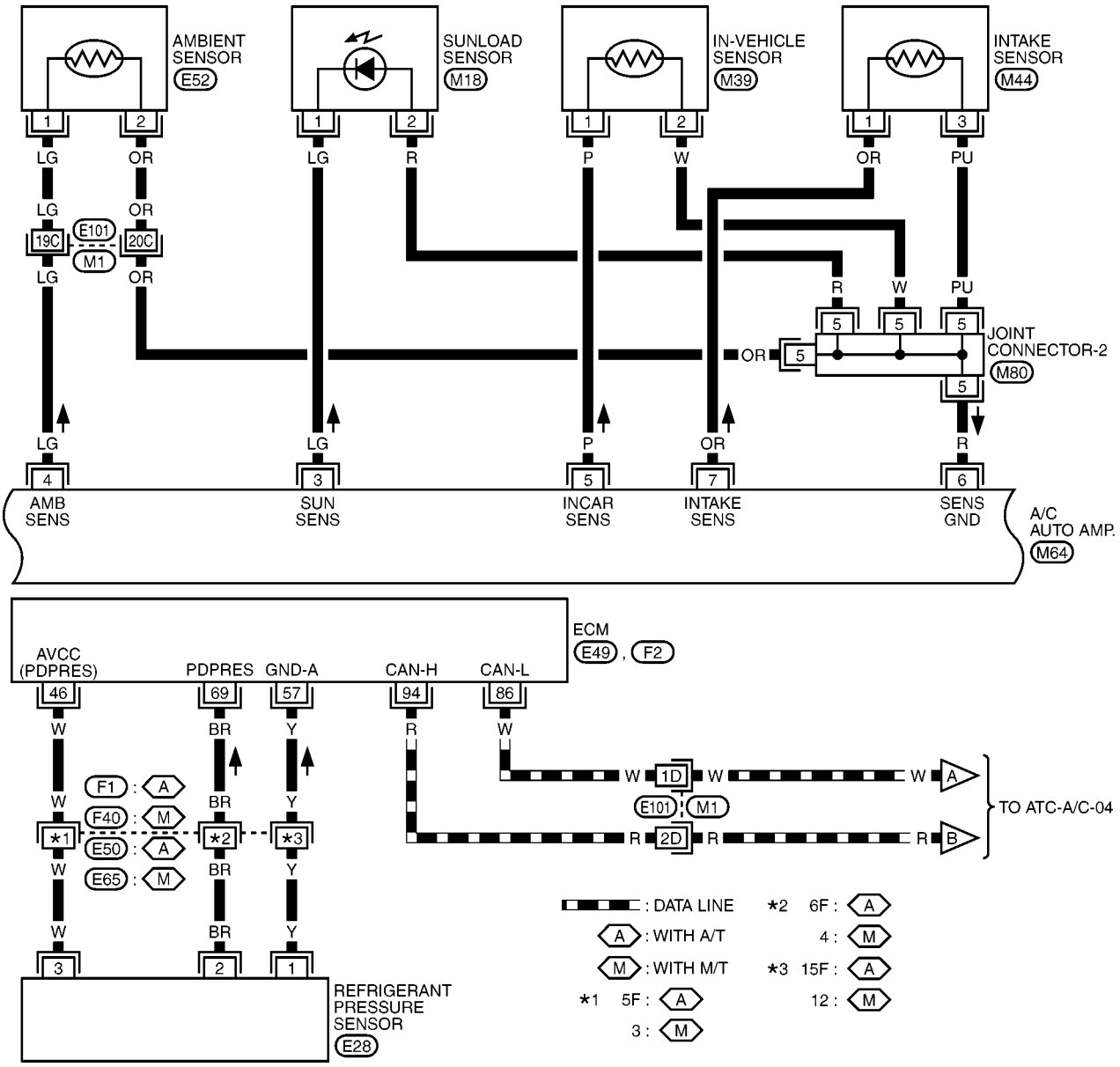


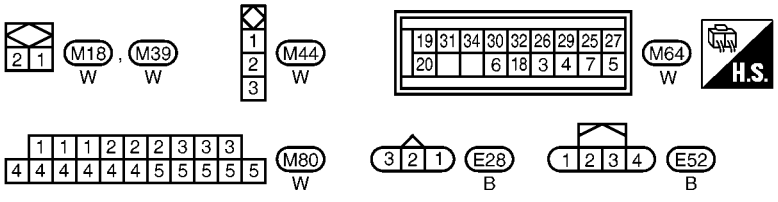


REFER TO THE FOLLOWING.
M16 - FUSE BLOCK - JUNCTION BOX (J/B)

MJWA0252E

ATC-A/C-02

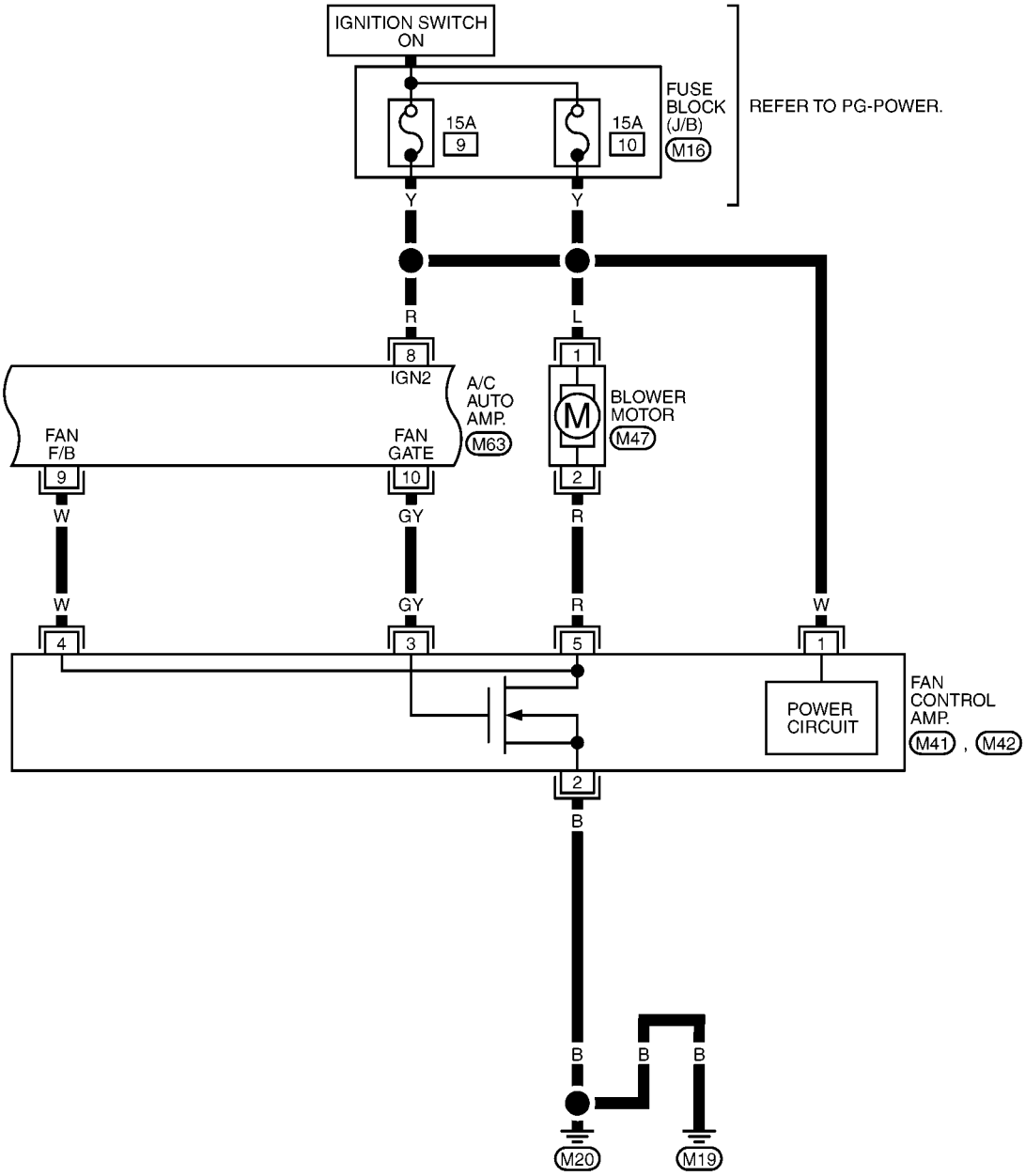


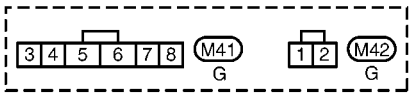


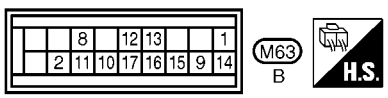
REFER TO THE FOLLOWING.
M1, F1, F40 - SUPER MULTIPLE JUNCTION (SMJ)
E49, F2 - ELECTRICAL UNITS

MJWA0253E

ATC-A/C-03

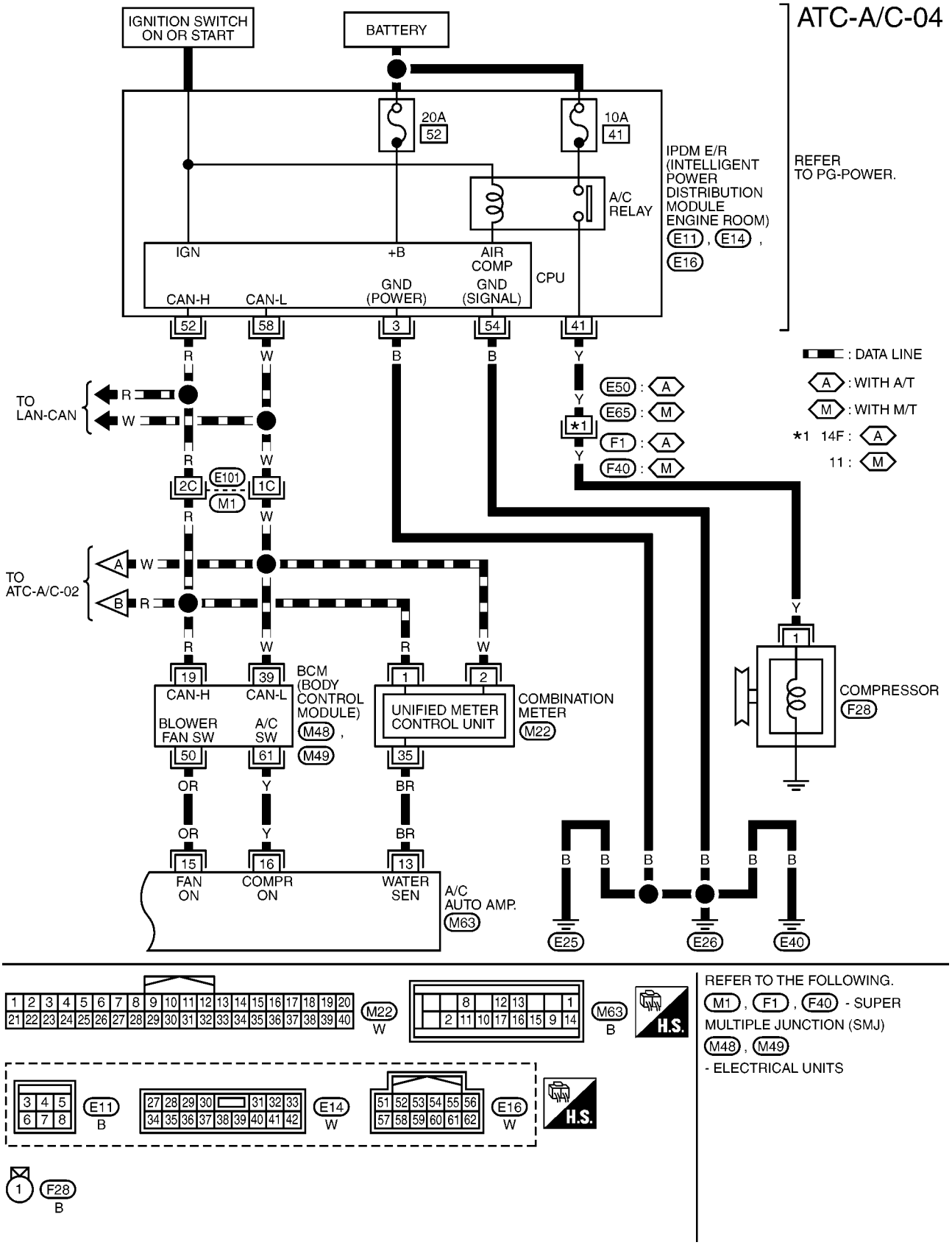






REFER TO THE FOLLOWING.
M16 -FUSE BLOCK-
JUNCTION BOX (J/B)

MJWA0170E

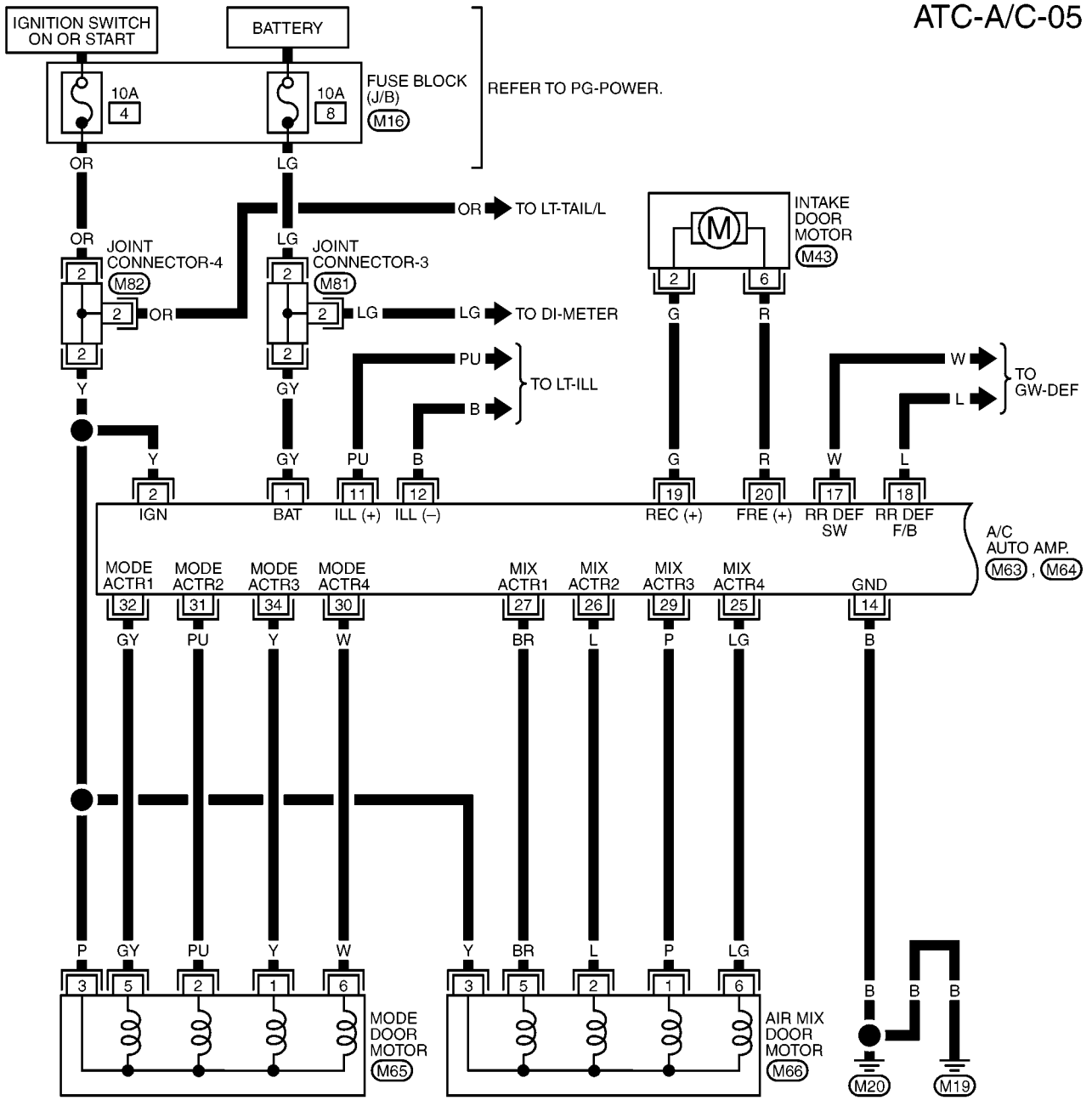

ATC-A/C-04
IGNITION SWITCH ON OR START
BATTERY
20A 52
10A 41
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E11, E14, E16
A/C RELAY
REFER TO PG-POWER.
IGN
+B
AIR COMP
GND (POWER)
GND (SIGNAL)
CPU
CAN-H
CAN-L
52
58
3
54
41
R
W
B
B
Y
: DATA LINE
A : WITH A/T
M : WITH M/T
*1 14F : A
11 : M
E50 : A
E65 : M
F1 : A
F40 : M
*1
TO LAN-CAN
E101
2C
1C
M1
TO ATC-A/C-02
A
B
19
39
1
2
CAN-H
CAN-L
BLOWER FAN SW
A/C SW
BCM (BODY CONTROL MODULE) M48, M49
UNIFIED METER CONTROL UNIT
COMBINATION METER M22
50
61
35
OR
Y
BR
15
16
13
FAN ON
COMPR ON
WATER SEN
A/C AUTO AMP. M63
COMPRESSOR F28
E25
E26
E40
REFER TO THE FOLLOWING.
M1, F1, F40 - SUPER MULTIPLE JUNCTION (SMJ)
M48, M49 - ELECTRICAL UNITS
M22 W
M63 B
E11 B
E14 W
E16 W
H.S.
F28 B

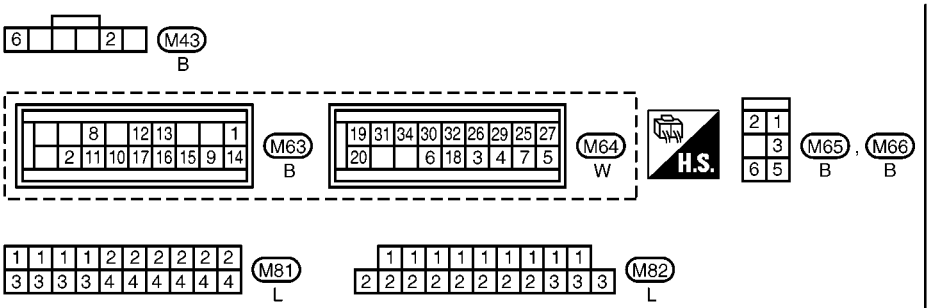
MJWA0254E

Wiring Diagram —A/C— HR Engine Models

EJS006AF

ATC-A/C-05

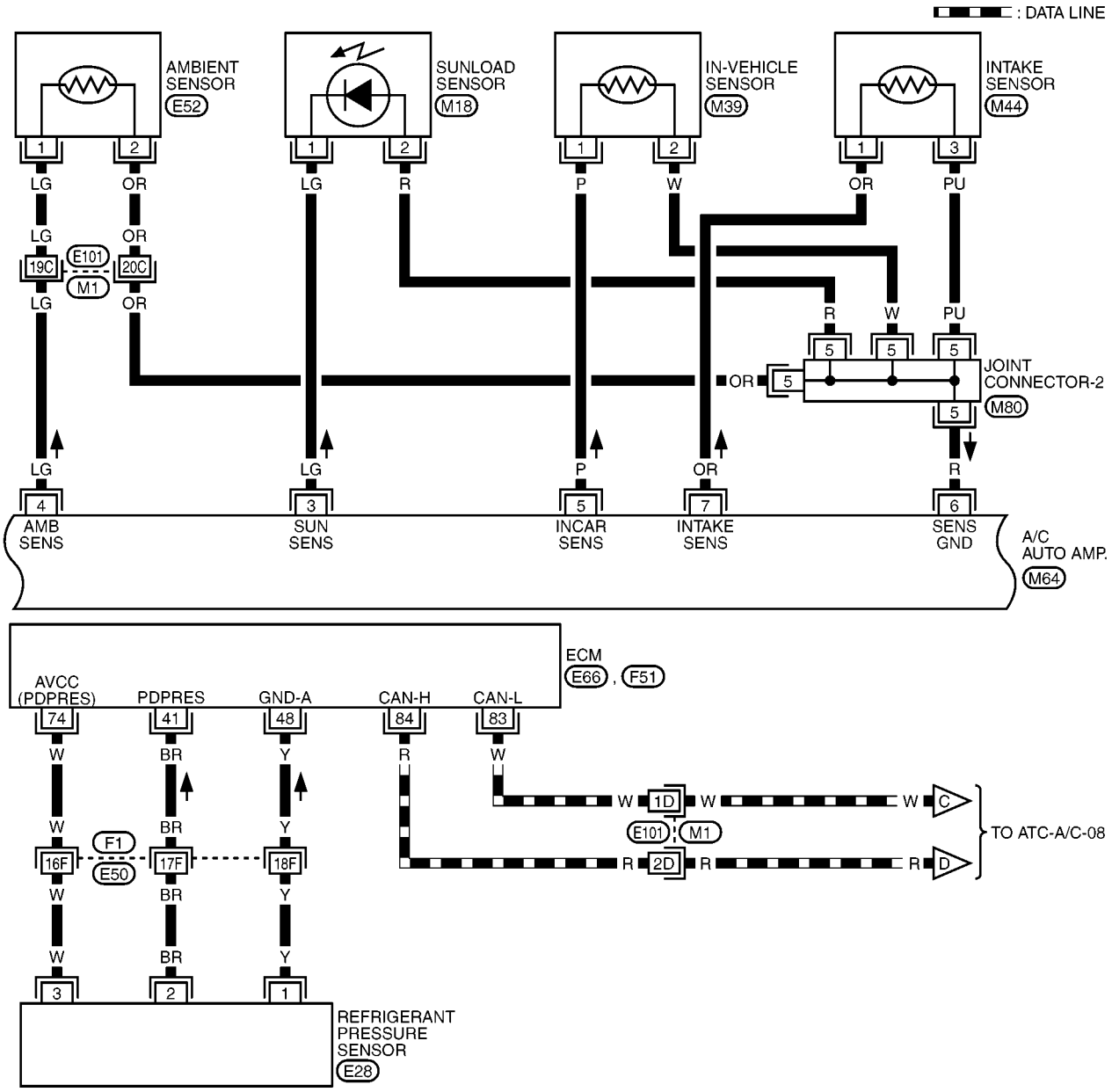


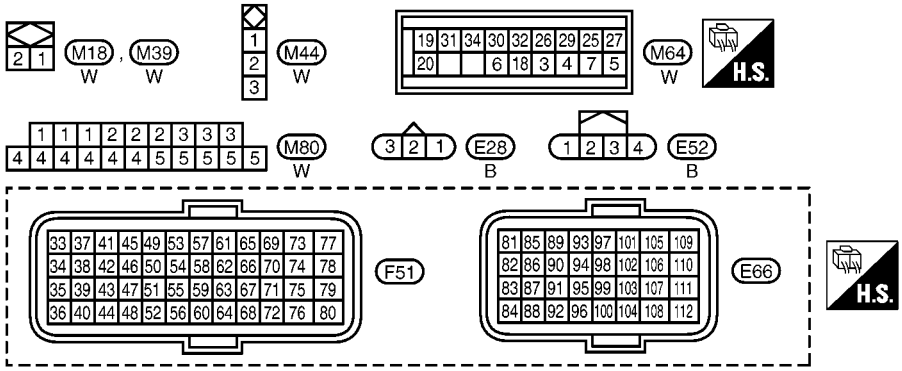


REFER TO THE FOLLOWING.
M16 - FUSE BLOCK - JUNCTION BOX (J/B)

MJWA0255E

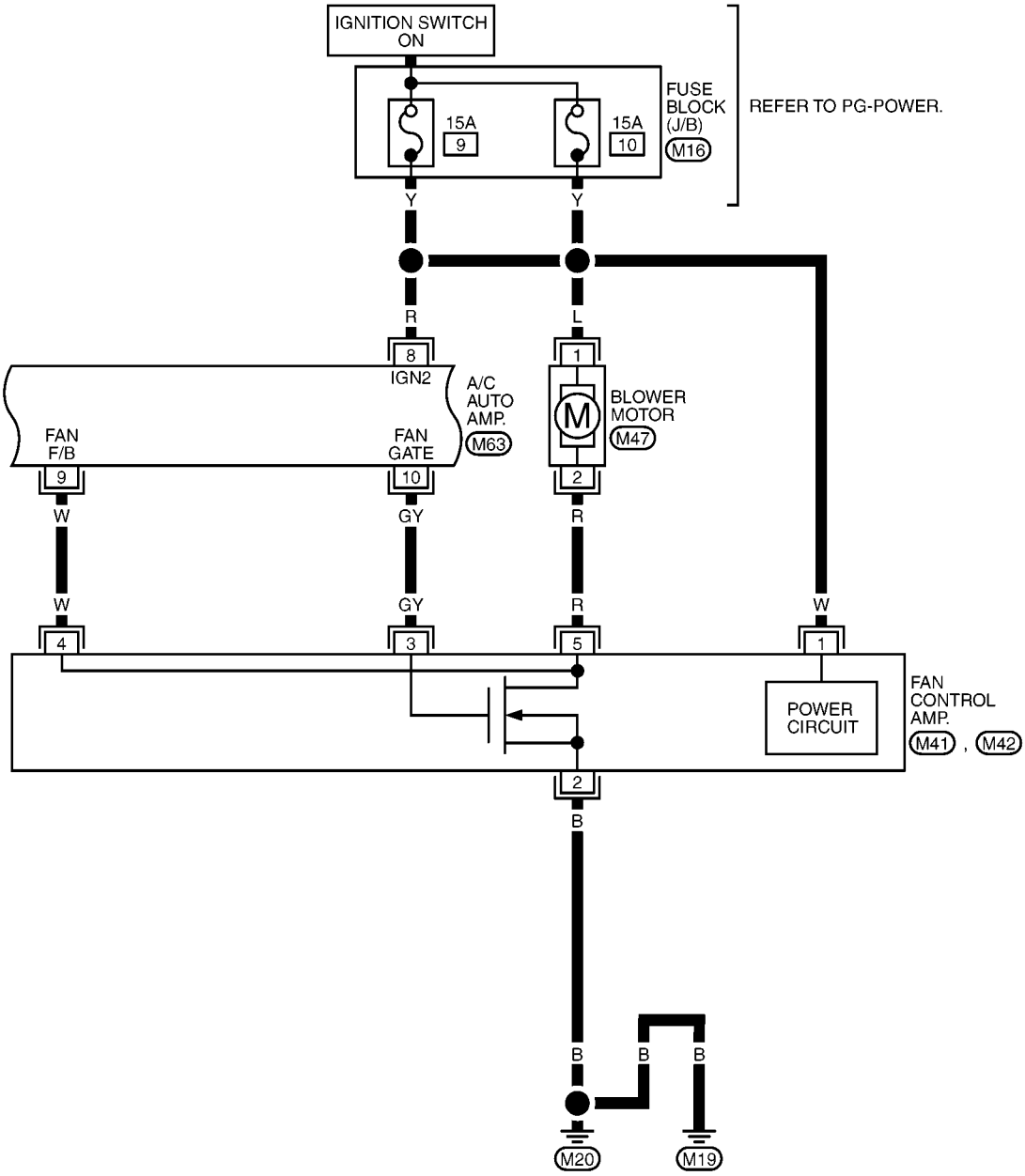
ATC-A/C-06

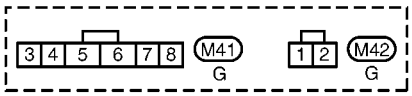


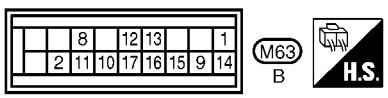


MJWA0169E

ATC-A/C-07

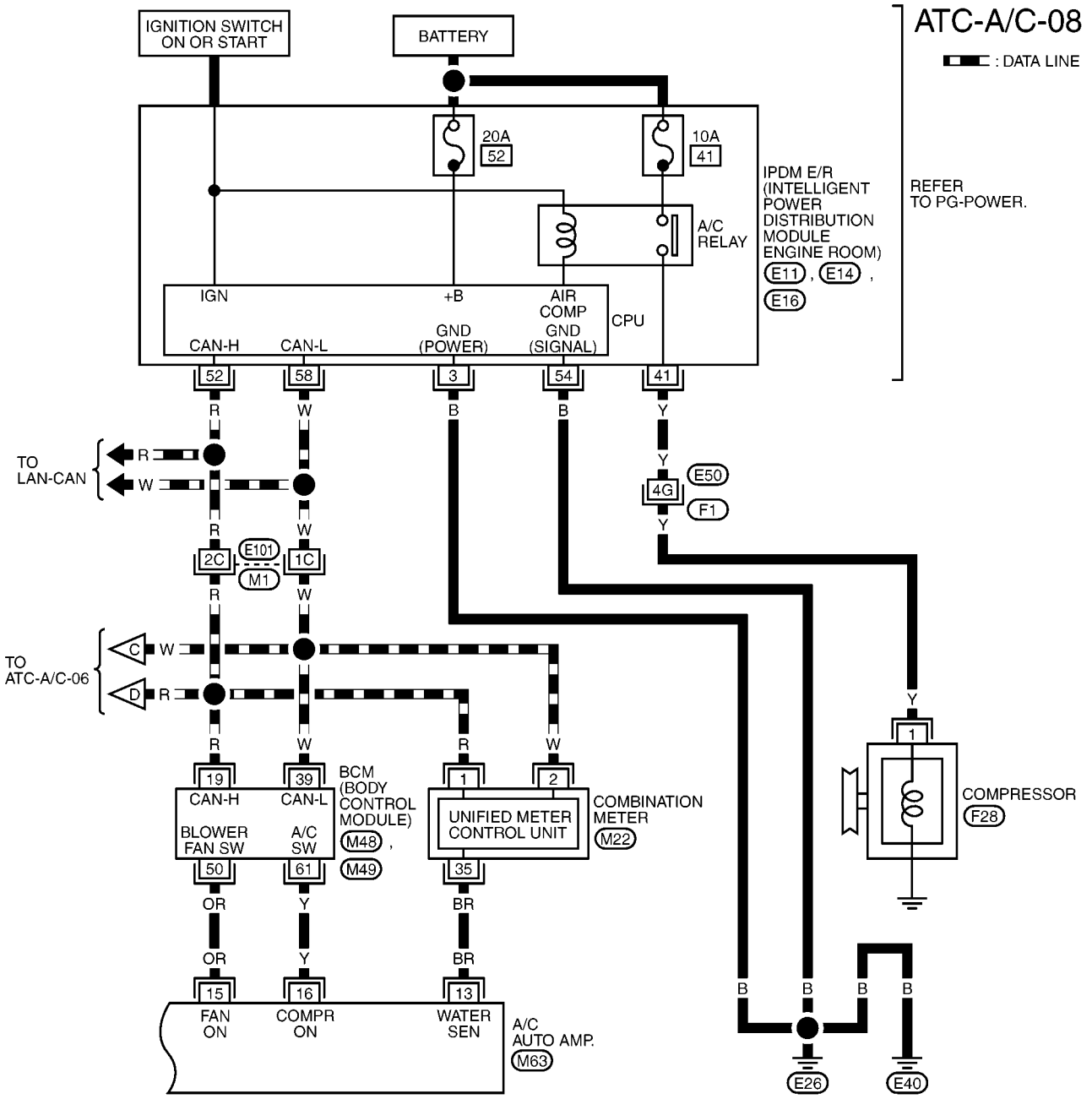






REFER TO THE FOLLOWING.
M16 -FUSE BLOCK-
JUNCTION BOX (J/B)

MJWA0225E



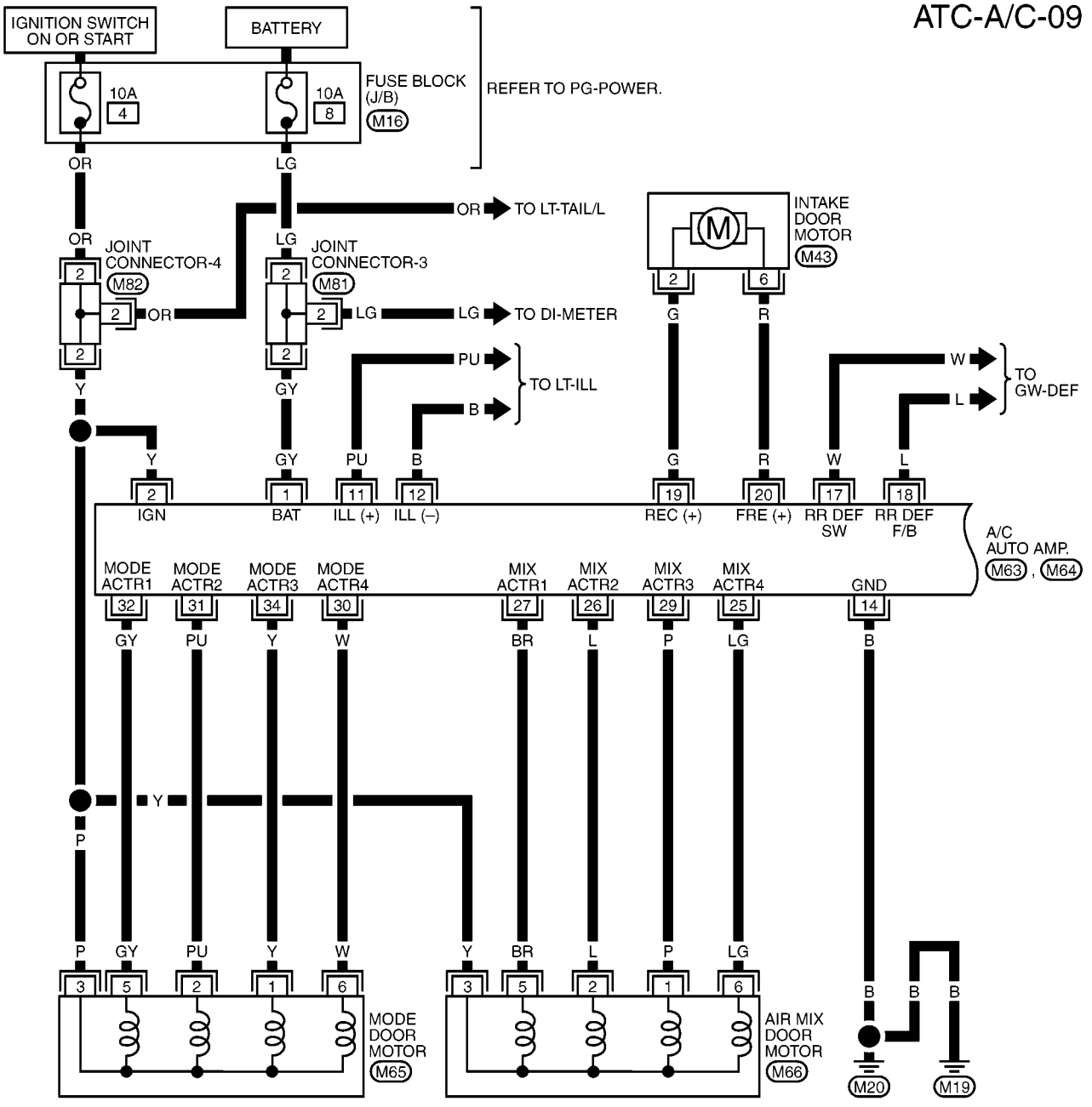
REFER TO THE FOLLOWING.
M1, F1 - SUPER MULTIPLE JUNCTION (SMJ)
M48, M49 - ELECTRICAL UNITS

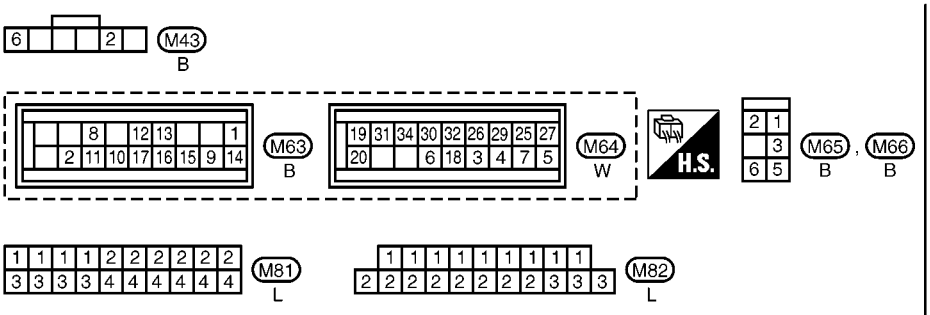
MJWA0256E

Wiring Diagram —A/C— K9K Engine Models

EJS0057O

ATC-A/C-09

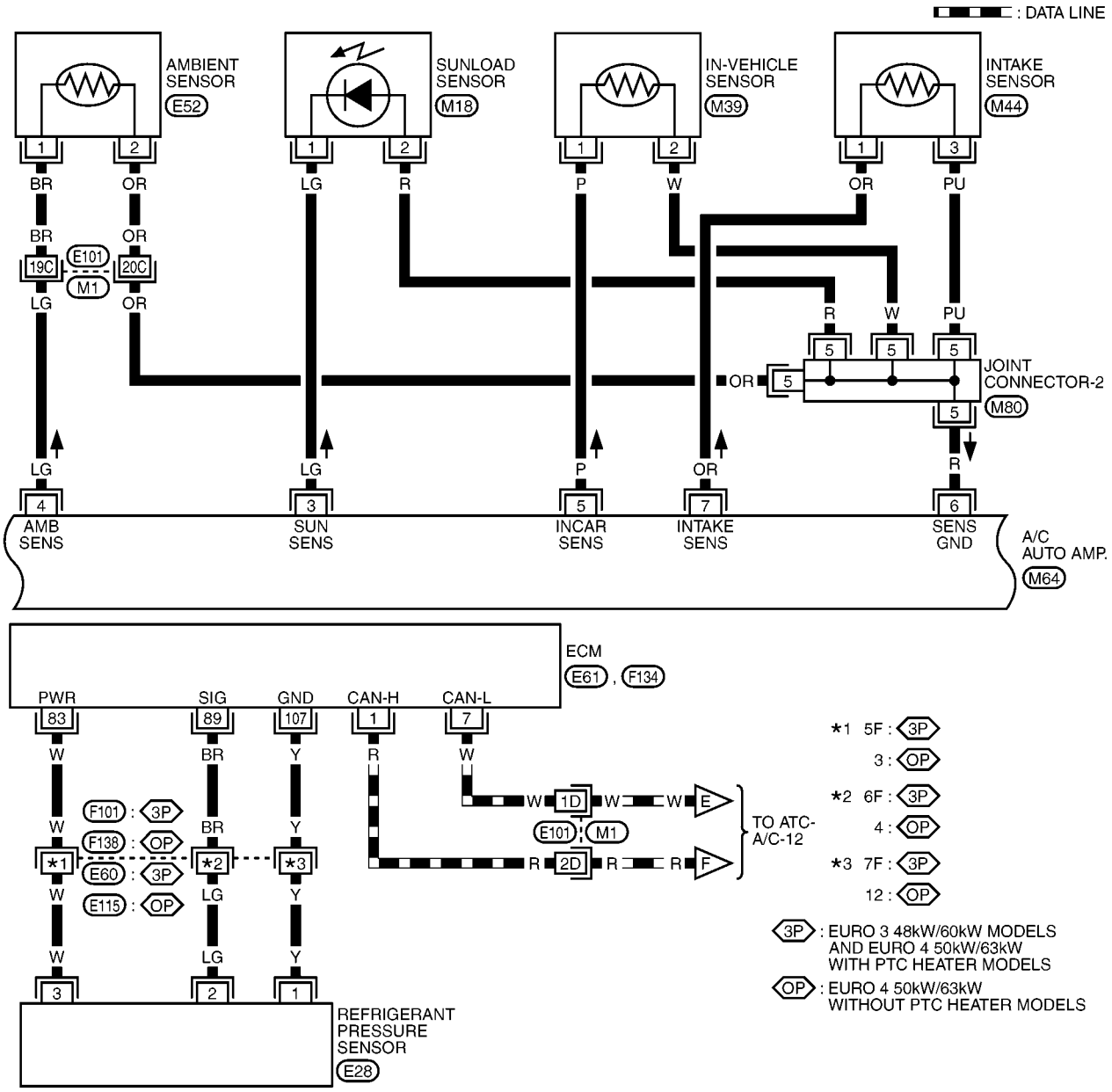


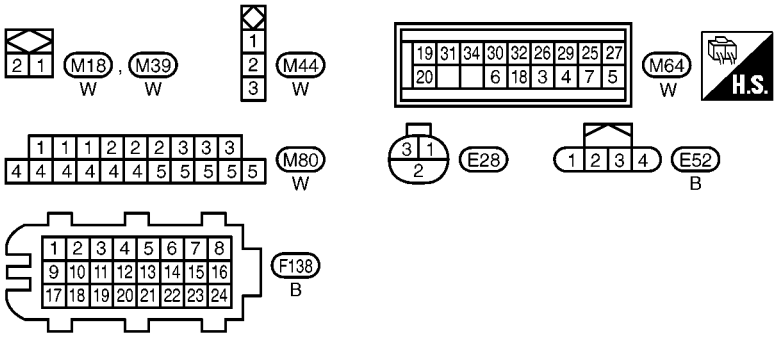


REFER TO THE FOLLOWING.
M16 - FUSE BLOCK - JUNCTION BOX (J/B)

MJWA0257E

ATC-A/C-10

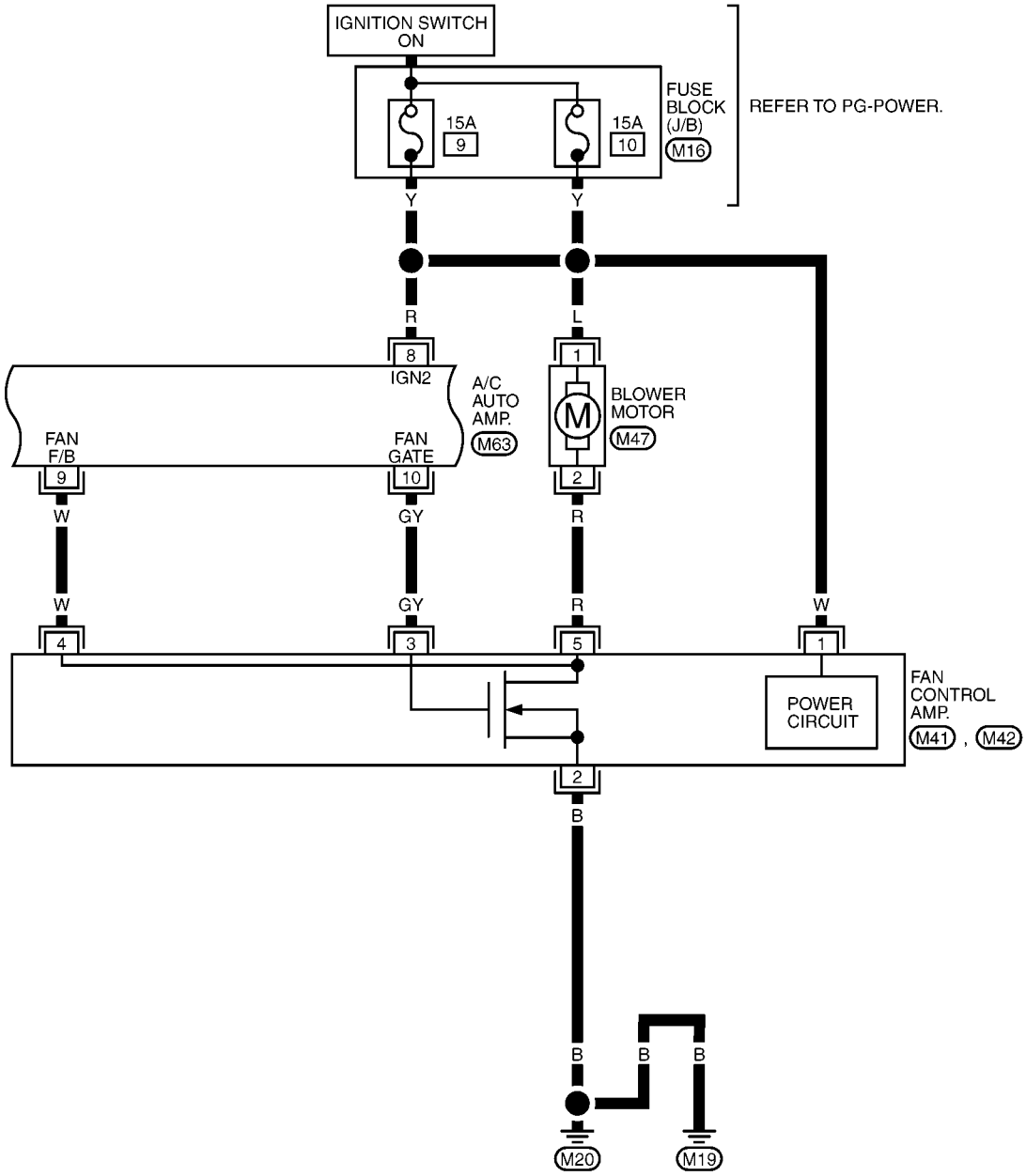


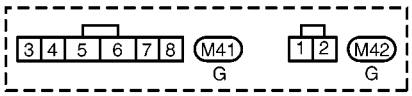


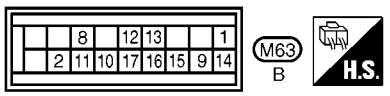
REFER TO THE FOLLOWING.
M1 , F101 -SUPER MULTIPLE JUNCTION (SMJ)
E61 , F134 -ELECTRICAL UNITS

MJWA0173E

ATC-A/C-11

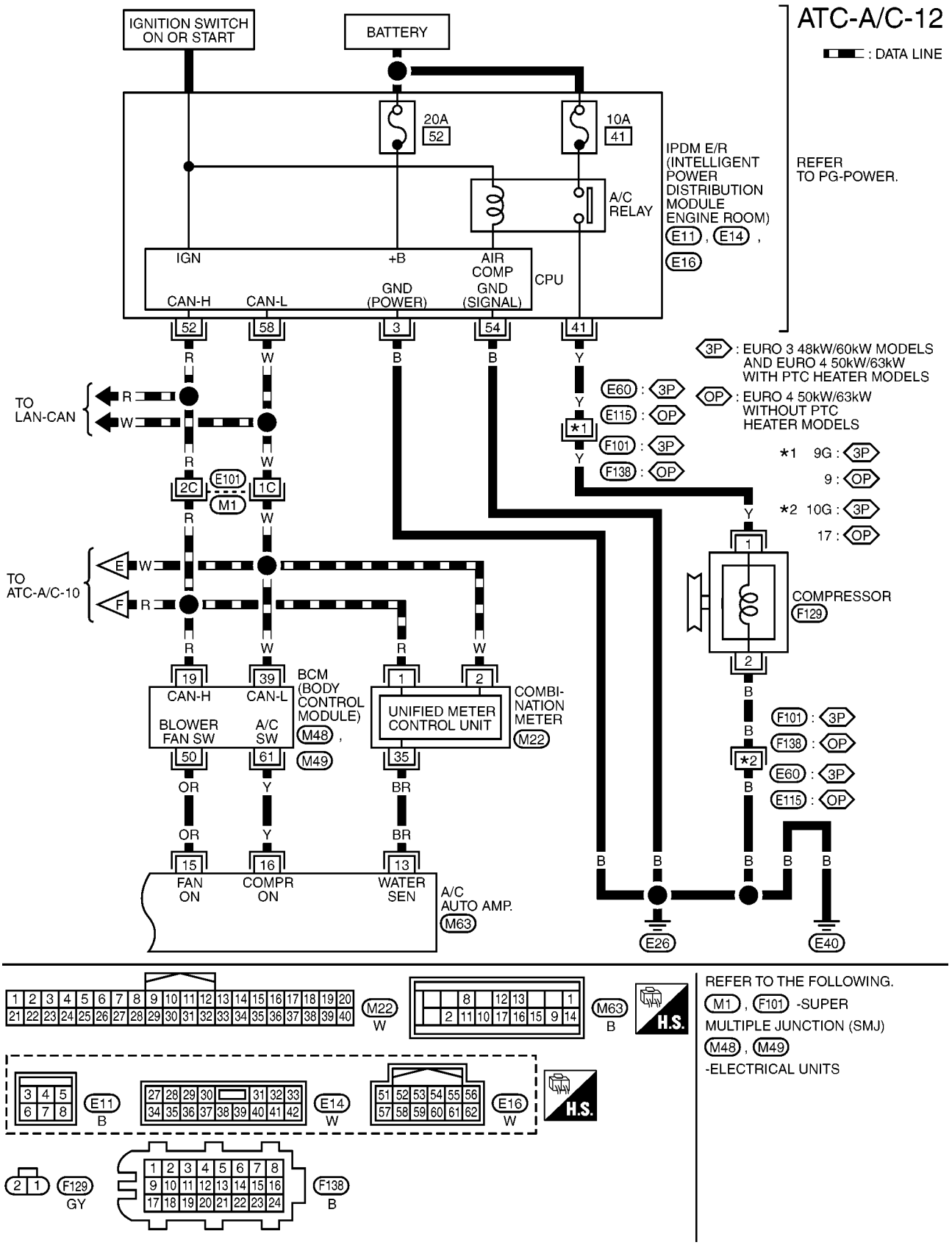






REFER TO THE FOLLOWING.
M16 -FUSE BLOCK-
JUNCTION BOX (J/B)

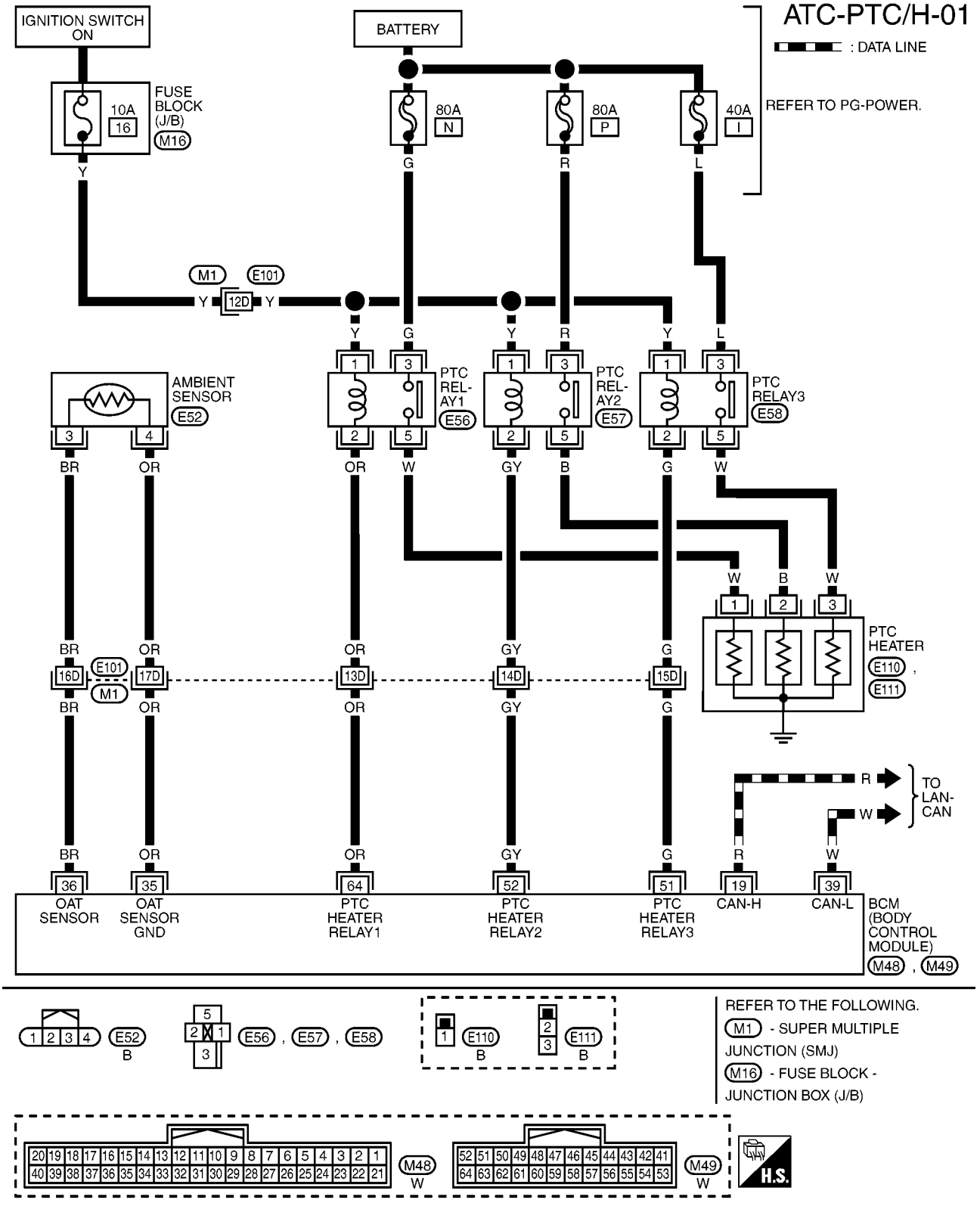
MJWA0174E


ATC-A/C-12
: DATA LINE
IGNITION SWITCH ON OR START
BATTERY
20A 52
10A 41
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E11, E14, E16
REFER TO PG-POWER.
A/C RELAY
IGN
+B
AIR COMP
CPU
CAN-H
CAN-L
GND (POWER)
GND (SIGNAL)
52
58
3
54
41
R
W
B
B
Y
3P : EURO 3 48kW/60kW MODELS AND EURO 4 50kW/63kW WITH PTC HEATER MODELS
OP : EURO 4 50kW/63kW WITHOUT PTC HEATER MODELS
E60 : 3P
E115 : OP
F101 : 3P
F138 : OP
*1
*1 9G : 3P
9 : OP
*2 10G : 3P
17 : OP
TO LAN-CAN
2C
E101
M1
1C
TO ATC-A/C-10
E
F
COMPRESSOR F129
BCM (BODY CONTROL MODULE) M48, M49
BLOWER FAN SW
A/C SW
UNIFIED METER CONTROL UNIT
COMBI-NATION METER M22
19
39
1
2
50
61
35
OR
Y
BR
15
16
13
FAN ON
COMPR ON
WATER SEN
A/C AUTO AMP. M63
*2
F101 : 3P
F138 : OP
E60 : 3P
E115 : OP
E26
E40
M22
W
M63
B
H.S.
E11
B
E14
W
E16
W
F129
GY
F138
B
REFER TO THE FOLLOWING.
M1, F101 -SUPER MULTIPLE JUNCTION (SMJ)
M48, M49
-ELECTRICAL UNITS

MJWA0175E

Wiring Diagram —PTC/H— K9K Engine LHD Models

EJS006AG

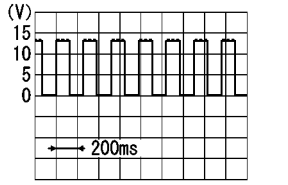
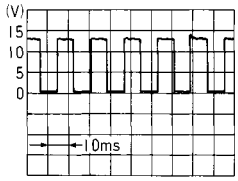


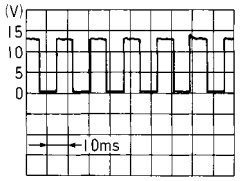
MJWA0262E

PTC heater function is intended to improve the heating performance with CTP electrical system for air heating system which is broken down into several stages controlled by relays.

A/C Auto Amp. Input/Output Signal Standard

EJS004I1

Terminal No.	Wire color	Signal Designation	Measuring condition		Voltage (V) (Approx.)
			Ignition switch	Operation (status)	
1	GY	Battery power supply	OFF	—	Battery voltage
2	Y	Ignition power supply	ON	—	Battery voltage
3	LG	Sunload sensor signal	—	—	Note 4
4	LG	Ambient sensor signal	—	—	Note 3
5	P	In-vehicle sensor signal	—	—	Note 1
6	R	Sensor ground	ON	—	0
7	OR	Intake sensor signal	—	—	Note 2
8	R	Ignition power supply	ON	—	Battery voltage
9	W	Blower fan feedback signal	ON	Fan speed: Manual speed 1	8
10	GY	Fan ON signal	ON	Blower fan: ON	Battery voltage
				Blower fan: OFF	1
11	PU	Illumination power supply	ON	Lighting switch: 1st	Battery voltage
12	B	Illumination ground	ON	—	0
13	BR	Engine coolant temperature signal	ON	At idle (after warming up, approx. 80°C) **CAUTION:** **The waveforms vary depending on the coolant temperature.**	 SKIA2224J
14	B	Ground	ON	—	0
15	OR	Ignition feedback (blower motor) signal	ON	—	Battery voltage
16	Y	Compressor ON signal	ON	Compressor ON	1
				Compressor OFF	5
17	W	Rear window defogger switch signal	ON	Rear window defogger: ON	1
				Rear window defogger: OFF	Battery voltage
18	L	Rear window defogger feedback signal	ON	Rear window defogger: ON	Battery voltage
				Rear window defogger: OFF	0
19	G	Intake door motor drive signal	ON	REC→FRE	Battery voltage
				FRE→REC	0
20	R	Intake door motor drive signal	ON	REC or FRE switch: REC→FRE	0
				REC or FRE switch: FRE→REC	Battery voltage
25	LG	Air mix door motor drive signal	ON	Immediately after temperature adjustment switch operation	 HAK0627D
26	L				
27	BR				
29	P				

Terminal No.	Wire color	Signal Designation	Measuring condition		Voltage (V) (Approx.)
			Ignition switch	Operation (status)	
30	W	Mode door motor drive signal	ON	Immediately after mode switch operation	 HAK0627D
31	PU				
32	GY				
34	Y				

Note 1: Refer to ATC-49, "In-Vehicle Sensor System" .
Note 2: Refer to ATC-51, "Intake Sensor System" .
Note 3: Refer to ATC-47, "Ambient Sensor System" .
Note 4: Refer to ATC-50, "Sunload Sensor System" .

Self-Diagnosis Function

EJS004I2

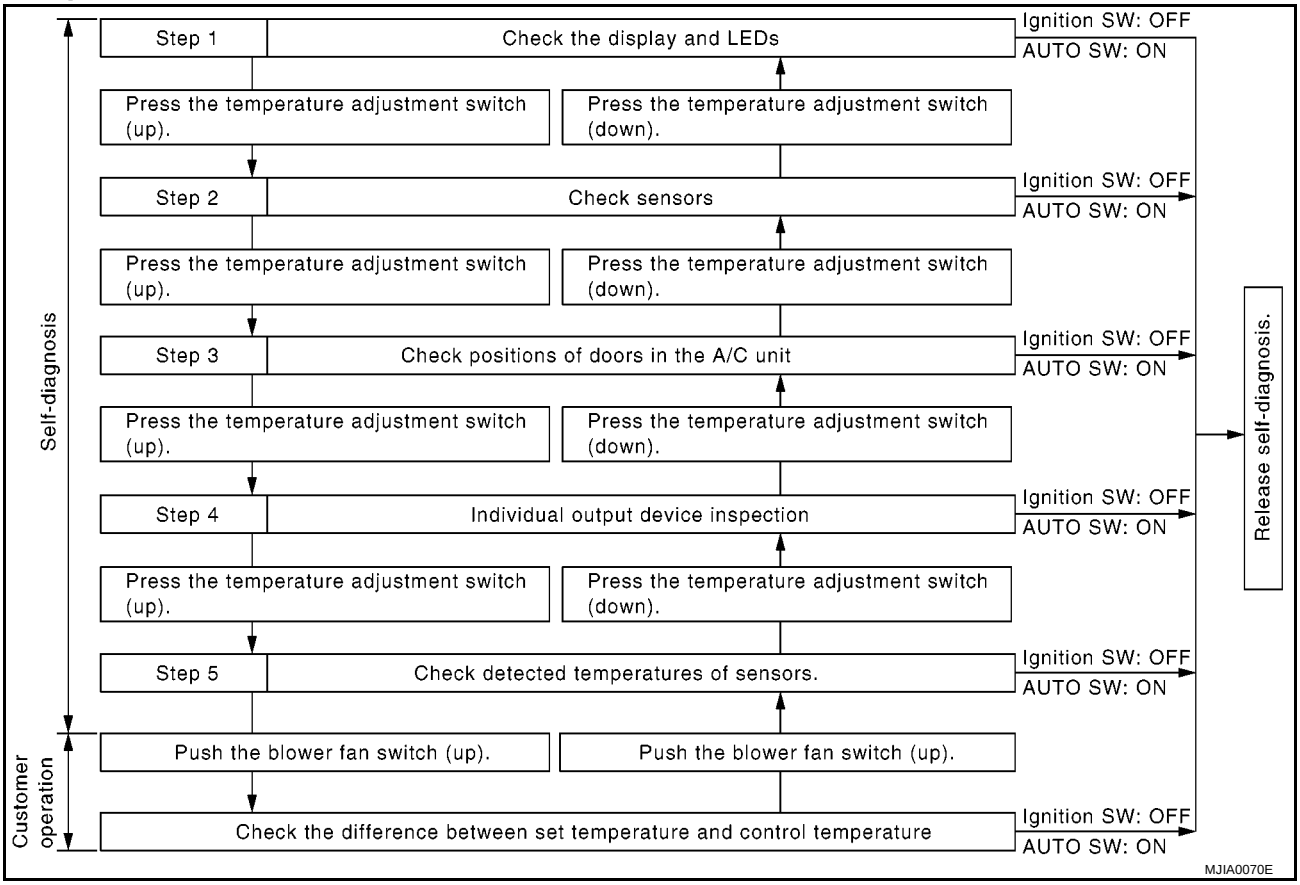
DESCRIPTION

- The self-diagnosis system consists of steps 1 to 5, and diagnosis sensor operations by checking for failures of each sensor and outputting control signals predetermined for each output device.

	Step 1	Step 2	Step 3	Step 4	Step 5
Description	Check the display and LEDs	Check sensors	Check positions of doors in the A/C unit	Individual output device inspection	● Check detected temperatures of sensors
Part to be diagnosed	● Display ● LED	● Ambient sensor ● In-vehicle sensor ● Intake sensor ● Sun-load sensor	● Mode door motor ● Air mix door motor	● Mode door motor ● Intake door motor ● Air mix door motor ● Blower motor ● Compressor ● Fan ON signal	● The following sensor – Ambient sensor – In-vehicle sensor – Intake sensor

OPERATION PROCEDURE

Description



Switching to Self-Diagnosis Mode

- Turn ignition switch OFF, then turn it to start engine. Within 10 seconds after starting the engine, press and hold the OFF switch for at least 5 seconds. Self-diagnosis (step1) should start.

CAUTION:

Diagnosis should be carried out with the engine running. If the battery voltage drops below 12V during step 3 trouble diagnosis, the actuator speeds become slower and NO results may be returned even for normal operation.

Finishing Self-Diagnosis Mode

- Turn ignition switch OFF or press AUTO switch.

Shifting the Steps

- Use the temperature adjustment switch to switch between steps 1 through 5.

Procedure

1. START SELF-DIAGNOSIS

1. Turn ignition switch from OFF position to engine start. Within 10 seconds of engine start, press and hold OFF switch for approximately 5 seconds or longer.

Is self-diagnosis mode activated?

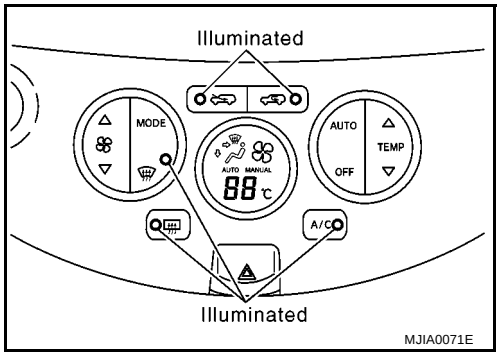
YES >> GO TO 2.
NO >> Replace A/C auto amp.

2. STEP 1 - CHECK DISPLAY AND LEDS

Check LEDs of all controller switches. Check all liquid crystal display segments.
Normal: All segments and LEDs are illuminated.
Error: LEDs and sections of malfunctioning locations are not illuminated.

Are LEDs and display normal?

YES >> GO TO 3.
NO >> Replace A/C auto amp.

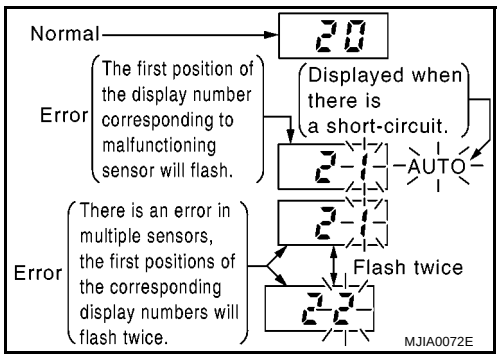


3. STEP 2 - CHECK ALL SENSORS

1. Press temperature adjustment switch (Up:▲) to change to step 2.
2. A “2” is displayed, followed by display of check results.
   Normal: “20” is displayed.
   Error: The first position of the display number corresponding to malfunctioning sensor will flash. “AUTO” is shown on the display when there is a short-circuit.

OK or NG

OK >> GO TO 5.
NG >> GO TO 4.



4. CHECK SENSOR MALFUNCTION

When an error occurs, the first position of the display number corresponding to this sensor will flash. If it is determined at this time that there is a short in the sensor circuit, “AUTO” will flash. Further, if there is an error in multiple sensors, the first positions of the corresponding display numbers will flash twice.

Displayed No.	Corresponding sensor	Error return condition		Reference page
		OPEN	SHORT	
21	Ambient sensor	Approx. -42°C or less	Approx. 100°C or more	ATC-47, "Ambient Sensor System"
22	In-vehicle sensor	Approx. -42°C or less	Approx. 100°C or more	ATC-49, "In-Vehicle Sensor System"
24	Intake sensor	Approx. -42°C or less	Approx. 100°C or more	ATC-51, "Intake Sensor System"
25	Sunload sensor	33 W/m^2 (28.4 Kcal/m^2 ·h) or less	1677 W/m^2 (1422 Kcal/m^2 ·h) or more	ATC-50, "Sunload Sensor System"

Example: If there is an open circuit in the ambient sensor, the A/C auto amp. registers extreme cold (-42°C or less) and adjusts the temperature control warmer.

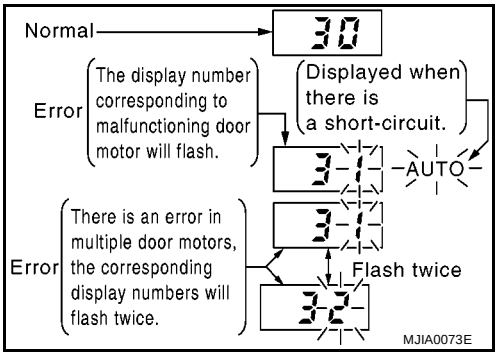
CAUTION:
Sun-load sensor may register malfunction when indoors, at dusk, or at other times when light is insufficient.

OK or NG

OK >> End of self-diagnosis
NG >> Malfunction in corresponding sensor system

5. STEP 3 - CHECK AIR MIX DOOR AND MODE DOOR MOTOR

1. Press temperature adjustment switch (Up: ▲) to change to step 3.
2. A “3” is displayed, followed by a display of check results.
   Send output signals to the air mix door motor and mode door motor and inspect both motors.
   Normal: “30” is displayed.
   Error: The indicator lamp for the door position where the error occurred flashes. At this time, if it is judged that there is a short in the door motor circuit, “AUTO” will be displayed. If there is an error in multiple door motors, the corresponding display numbers will flash in ascending order.



door motors corresponding to the DTC

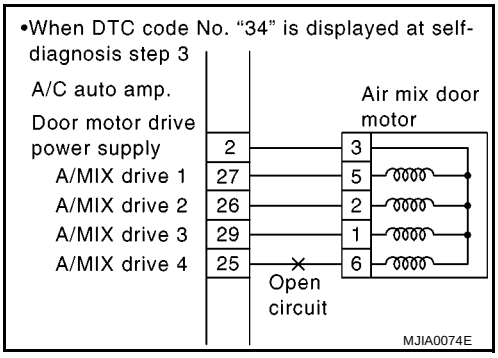
Displayed No.	31, 32, 33, 34	35, 36, 37, 38
Corresponding door motor	Air mix door	Mode door

DTC for an inoperative harness

Corresponding door motor	Air mix door motor				Mode door motor			
Corresponding terminal (Door motor side)	5	2	1	6	5	2	1	6
Corresponding terminal (A/C auto amp. side)	27	26	29	25	32	31	34	30
Displayed number for short circuit	AUTO 31	AUTO 32	AUTO 33	AUTO 34	AUTO 35	AUTO 36	AUTO 37	AUTO 38
Displayed number for open circuit	31	32	33	34	35	36	37	38

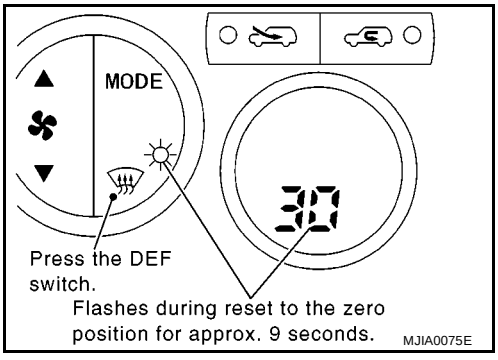
NOTE:

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



Door Motor Zero Position Reset

- Pressing the DEF switch during step 3 will send a reset signal to air mix door and mode door motor to reset them to the zero position.
  During reset: The 30 and DEF switch indicator lamps will flash. (For approx. 9 seconds)



OK or NG

OK >> GO TO 6.
NG >> Refer to ATC-58, "Mode Door Motor System" or ATC-60, "Air Mix Door Motor System" .

6. STEP 4 - CHECK EACH OUTPUT DEVICE

1. Press temperature adjustment switch (Up: ▲) to change to step 4.
2. Each time the DEF switch is pressed, the display will change to 41→42 → 43 → 44 → 45→ 46 → 41.
3. Follow table below and check outlet, inlet, airflow temperature, blower motor applied voltage, magnetic clutch operation, and air mix ratio. Each operating condition should be checked visually, by listening for noise, by touching air outlets with your hand, and so on.

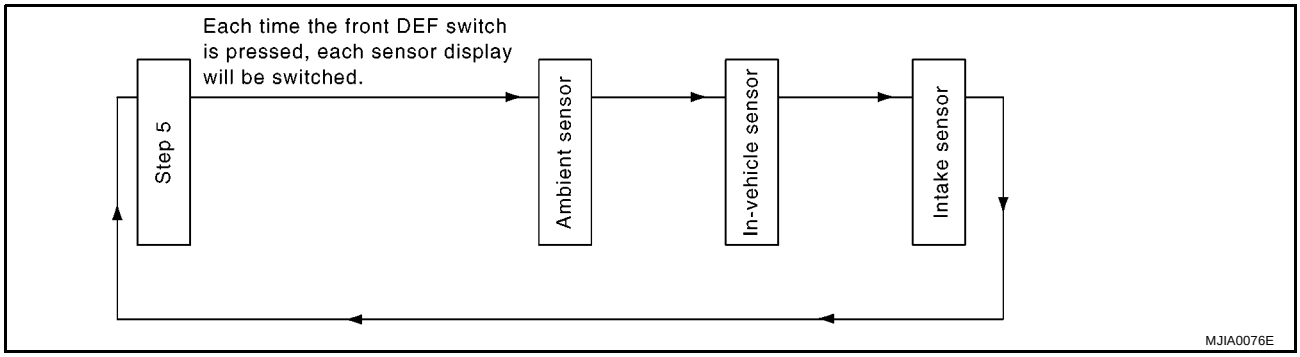
Displayed No.	41	42	43	44	45	46
Mode door	VENT	B/L	B/L	FOOT	D/F	DEF
Intake door	Recirculation	Recirculation	Fresh air	Fresh air	Fresh air	Fresh air
Air mix door position	Full Cold	Full Cold	Halfway (50%)	Halfway (50%)	Full Hot	Full Hot
Blower motor Applied voltage	5V	10.5V	8.5V	8.5V	8.5V	Battery voltage
Magnetic clutch	ON	ON	ON	OFF	OFF	ON
Fan ON signal	12V	12V	12V	1V	1V	12V

OK or NG

OK >> GO TO 7.
NG >>
- Outlet does not change: Refer to ATC-58, "Mode Door Motor System" .
- Inlet does not change: Refer to ATC-51, "Intake Sensor System" .
- Airflow temperature does not change: Refer to ATC-60, "Air Mix Door Motor System" .
- Blower motor malfunction: Refer to ATC-54, "Blower Motor System" .
- Magnetic clutch does not engage or operate: Refer to ATC-61, "Magnetic Clutch System" .

7. STEP 5 - DISPLAY OF TEMPERATURE DETECTED AT EACH SENSOR

1. Press temperature adjustment switch (Up: ▲) to change to step 5.
2. Pressing DEF switch once cycles from 5→detected temperature at ambient sensor → detected temperature at in-vehicle sensor → detected temperature at intake sensor →5.



OK or NG

OK >> End of self-diagnosis
NG >>
- Ambient sensor malfunction: Refer to ATC-47, "Ambient Sensor System" .
- Inside air temperature malfunction: Refer to ATC-49, "In-Vehicle Sensor System" .
- Intake sensor malfunction: Refer to ATC-51, "Intake Sensor System" .

Difference Between Set Temperature and Control Temperature

EJS004I3

DESCRIPTION

- If the temperature felt by the customer is different than the airflow temperature controlled by the set temperature, A/C auto amp. control temperature can be adjusted to compensate for the set temperature (displayed temperature).

HOW TO SET

1. Change to self-diagnosis mode. Refer to ATC-41, "Switching to Self-Diagnosis Mode" .
2. In self-diagnosis step 5, press the fan switch (Up: ▲).
3. A “0” is shown in the display.
4. Pressing the temperature adjustment switch increases or decreases the display temperature throughout a range of +3°C through -3°C (in increments of 1°C).At this time, if the setting difference is negative, ″AUTO″ is displayed.

NOTE:
When the set temperature (display temperature) is set to 25°C and -3°C, the temperature controlled by A/C auto amp. is 25°C - 3°C = 22°C and the temperature becomes lower than set temperature.

CAUTION:
When the battery is disconnected or the battery voltage becomes 9V or less, the difference between the set temperature (display) and control temperature is cancelled.

Function Inspection

EJS004I4

1. CHECK FAN SPEED

Operate fan switch to make sure fan speed changes. Confirm operation for all fan speeds.

OK or NG

OK >> Switch fan speed to “4” and GO TO 2.
NG >> Blower motor system malfunction: Refer to ATC-54, "Blower Motor System" .

2. CHECK AIR OUTLET

1. Operate mode switch and DEF switch.
2. Confirm air outlets change according to each indicated air outlet.

OK or NG

OK >> GO TO 3.
NG >> Mode door system malfunction: Refer to ATC-58, "Mode Door Motor System" .

3. CHECK AIR INLET

1. Press REC switch to change recirculation.
2. Listen to intake sound and confirm air inlets change.
3. Press FRE switch to change to fresh air intake.
4. Listen to intake sound and confirm air inlets change.

OK or NG

OK >> GO TO 4.
NG >> Intake door system malfunction: Refer to ATC-58, "Intake Door Motor System" .

4. CHECK WITH TEMPERATURE SETTING LOWERED

1. Turn compressor ON.
2. Press temperature adjustment switch (Down: ▼) and lower temperature setting to 18°C.
3. Confirm cool air blows from outlets.

OK or NG

OK >> GO TO 5.
NG >> Air mix door system malfunction: Refer to ATC-60, "Air Mix Door Motor System" .

5. CHECK WITH TEMPERATURE SETTING RAISED

1. Warm up the engine.
2. Press temperature adjustment switch (Up: ▲) and raise temperature setting to 32°C.
3. Confirm warm air blows from outlets.

OK or NG

OK >> GO TO 6.
NG >> Air mix door system malfunction: Refer to ATC-60, "Air Mix Door Motor System" .

6. CHECK AUTO MODE

1. Press AUTO switch and confirm that ″AUTO″ is displayed.
2. Make sure display and indicator lamp turns on by pressing A/C switch. Listen to make sure compressor is operating. (Temperature of air blowing from outlets and fan speed vary depending on ambient temperature.)

OK or NG

OK >> GO TO 7.
NG >> Refer to ATC-20, "DIAGNOSIS CHART BY SYMPTOM" .

7. CHECK A/C SWITCH

1. Press A/C switch and make sure compressor turns off.
2. Press A/C switch again and make sure compressor turns on.

OK or NG

OK >> If all function checks are normal (no phenomena reoccurrence), refer to ATC-20, "DIAGNOSIS CHART BY SYMPTOM" .
NG >> Refer to ATC-20, "DIAGNOSIS CHART BY SYMPTOM" .

Air Conditioning System

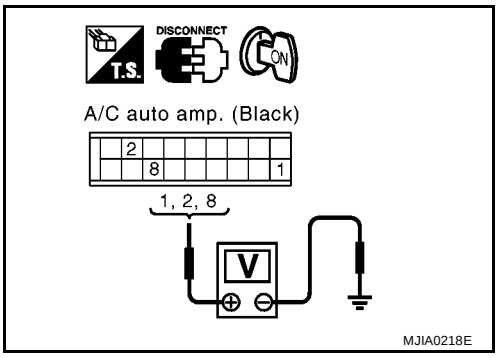
EJS004I5

Symptom: Air conditioner does not operate.

1. CHECK POWER SUPPLY CIRCUIT OF A/C AUTO AMP.

1. Turn ignition switch OFF.
2. Disconnect the A/C auto amp. connector.
3. Turn ignition switch ON.
4. Check voltage between A/C auto amp. connector M63 terminal 1, 2, 8 and ground.

1 (GY) - Ground : Battery voltage
2 (Y) - Ground : Battery voltage
8 (R) - Ground : Battery voltage



OK or NG

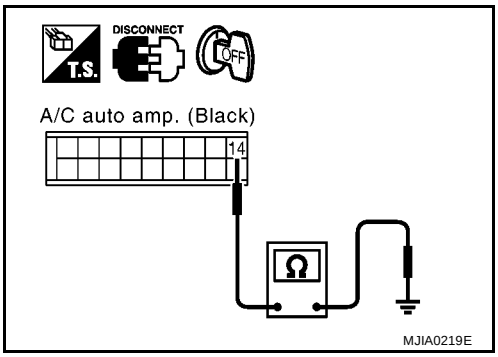
OK >> GO TO 2.
NG >> Check power supply circuit, 10A fuses [No. 4 and 8, located in the fuse block (J/B)] and 15A fuses [No. 9 and 10, located in the fuse block (J/B)]. Refer to PG-5, "POWER SUPPLY ROUTING" .

- If fuse is OK, check for open circuit in wiring harness. Repair or replace as necessary.
- If NG, replace fuse and check wiring harness for short circuit. Repair or replace as necessary.

2. CHECK GROUND CIRCUIT OF A/C AUTO AMP.

Check continuity between A/C auto amp. connector M63 terminal 14 and ground.

14 (B) - Ground : Continuity should exist.



OK or NG

OK >> Replace A/C auto amp.
NG >> Repair harness or connector.

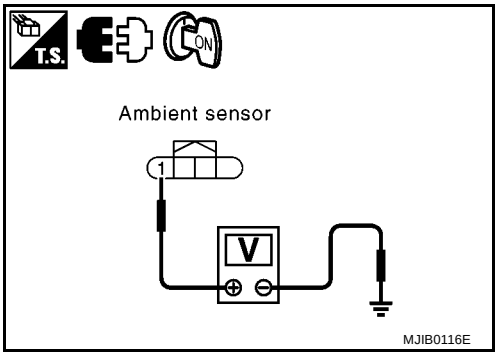
Ambient Sensor System

EJS004I6

1. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ambient sensor connector.
3. Turn ignition switch ON.
4. Check voltage between ambient sensor connector E52 terminal 1 and ground.

1 (LG) - Ground : Approx. 5V



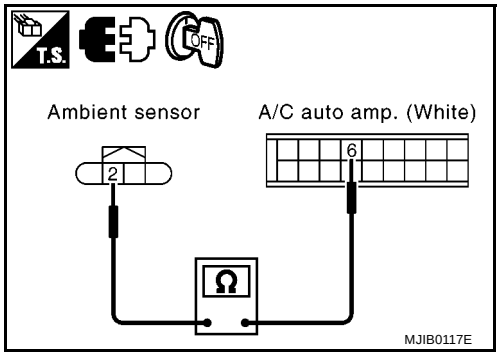
OK or NG

OK >> GO TO 2.
NG >> GO TO 4.

2. CHECK CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect the A/C auto amp. connector.
3. Check continuity between ambient sensor connector E52 terminal 2 and A/C auto amp. connector M64 terminal 6.

2 (OR) - 6 (OR) : Continuity should exist.

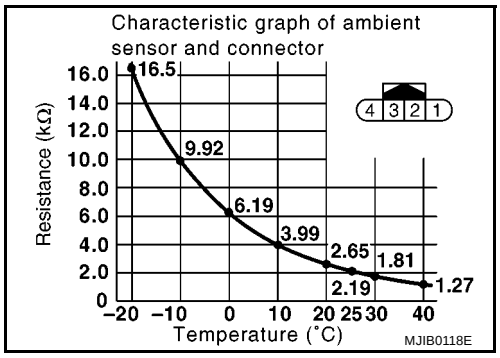


OK or NG

OK >> GO TO 3.
NG >> Repair harness or connector.

3. CHECK AMBIENT SENSOR

Check resistance between terminals 1 and 2 on ambient sensor.



OK or NG

OK >> 1. Replace A/C auto amp.
2. Perform self-diagnosis step 2. Make sure result is normal. Refer to ATC-40, "Self-Diagnosis Function" .

NG >> 1. Replace ambient sensor.
2. Perform self-diagnosis step 2. Make sure result is normal. Refer to ATC-40, "Self-Diagnosis Function" .

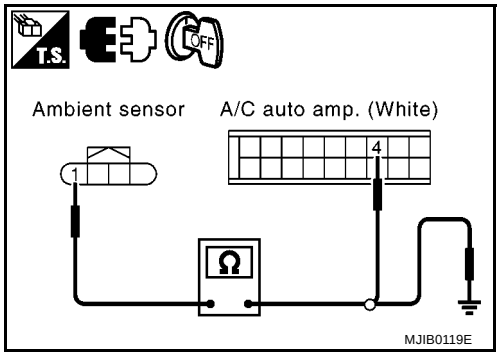
4. CHECK CIRCUIT CONTINUITY

1. Disconnect the A/C auto amp. connector.
2. Check continuity between ambient sensor connector E52 terminal 1 and A/C auto amp. connector M64 terminal 4.

1 (LG) - 4 (LG) : Continuity should exist.

3. Check continuity between ambient sensor connector E52 terminal 1 and ground.

1 (LG) - Ground : Continuity should not exist.



OK or NG

OK >> 1. Replace A/C auto amp.
2. Perform self-diagnosis step 2. Make sure result is normal. Refer to ATC-40, "Self-Diagnosis Function" .

NG >> Repair harness or connector.

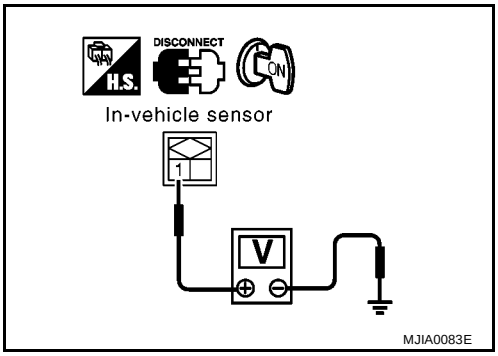
In-Vehicle Sensor System

EJS004I7

1. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect in-vehicle sensor connector.
3. Turn ignition switch ON.
4. Check voltage between in-vehicle sensor connector M39 terminal 1 and ground.

1 (LG) - Ground : Approx. 5V



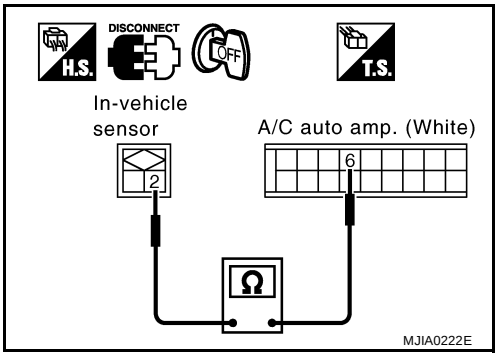
OK or NG

OK >> GO TO 2.
NG >> GO TO 4.

2. CHECK CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect the A/C auto amp. connector.
3. Check continuity between in-vehicle sensor connector M39 terminal 2 and A/C auto amp. connector M64 terminal 6.

2 (R) - 6 (R) : Continuity should exist.

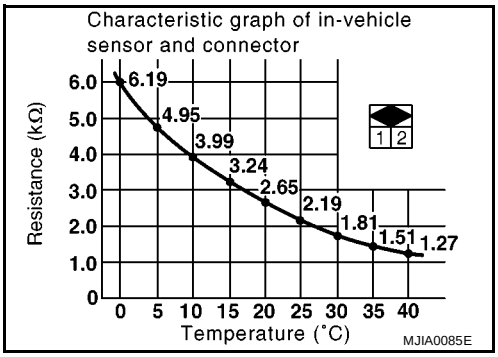


OK or NG

OK >> GO TO 3.
NG >> Repair harness or connector.

3. CHECK IN-VEHICLE SENSOR

Check the resistance between in-vehicle sensor terminals 1 and 2.



OK or NG

OK >> 1. Replace A/C auto amp.
2. Perform self-diagnosis step 2. Make sure result is normal. Refer to ATC-40, "Self-Diagnosis Function" .

NG >> 1. Replace in-vehicle sensor.
2. Perform self-diagnosis step 2. Make sure result is normal. Refer to ATC-40, "Self-Diagnosis Function" .

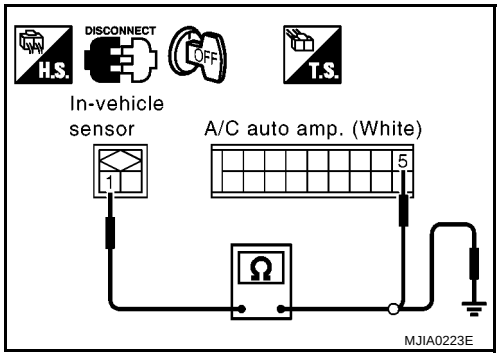
4. CHECK CIRCUIT CONTINUITY

1. Disconnect the A/C auto amp. connector.
2. Check continuity between in-vehicle sensor connector M18 terminal 1 and A/C auto amp. connector m64 terminal 5.

1 (P) - 5 (P) : Continuity should exist.

3. Check continuity between in-vehicle sensor connector M18 terminal 1 and ground.

1 (P) - Ground : Continuity should not exist.



OK or NG

OK >> 1. Replace A/C auto amp.
2. Perform self-diagnosis step 2. Make sure result is normal. Refer to ATC-40, "Self-Diagnosis Function" .

NG >> Repair harness or connector.

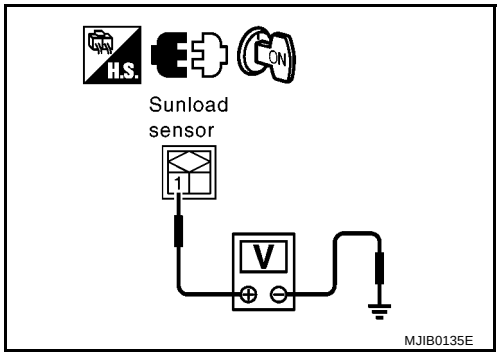
Sunload Sensor System

EJS004I8

1. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect sunload sensor connector.
3. Turn ignition switch ON.
4. Check voltage between sunload sensor connector M18 terminal 1 and ground

1 (LG) - Ground : Approx. 5V



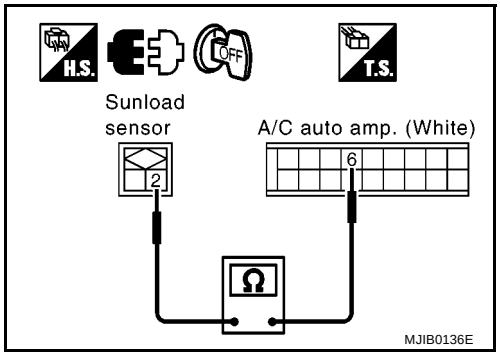
OK or NG

OK >> GO TO 2.
NG >> GO TO 4.

2. CHECK CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect the A/C auto amp. connector.
3. Check continuity between sunload sensor connector M18 terminal 2 and A/C auto amp. connector M64 terminal 6.

2 (R) - 6 (R) : Continuity should exist.



OK or NG

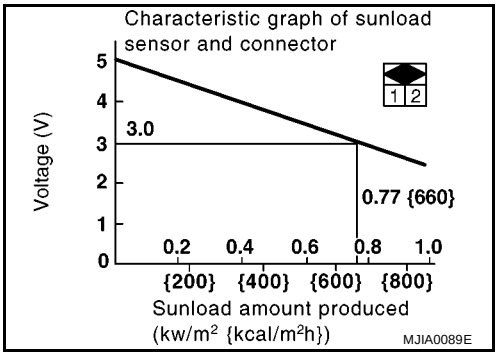
OK >> GO TO 3.
NG >> Repair harness or connector.

3. CHECK SUNLOAD SENSOR

1. Connect the sunload sensor and A/C auto amp. connectors.
2. Check voltage between sunload sensor terminal 1 and ground.

NOTE:

- When checking indoors, use a lamp of approximately 60W. Move the lamp towards and away from the sensor to check.
- Sunload amount produced by direct sunshine in fair weather is equivalent to approximately 0.77 W/m^2 (660 kcal/m^2 ·h).



OK or NG

OK >> 1. Replace A/C auto amp.
2. Perform self-diagnosis step 2. Make sure result is normal. Refer to ATC-40, "Self-Diagnosis Function" .

NG >> 1. Replace sunload sensor.
2. Perform self-diagnosis step 2. Make sure result is normal. Refer to ATC-40, "Self-Diagnosis Function" .

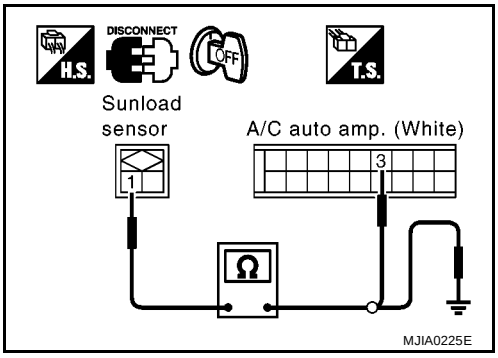
4. CHECK CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect the A/C auto amp. connector.
3. Check continuity between sunload sensor connector M18 terminal 1 and A/C auto amp. connector M64 terminal 3.

1 (LG) - 3 (LG) : Continuity should exist.

4. Check continuity between sunload sensor connector M18 terminal 1 and ground.

1 (LG) - Ground : Continuity should not exist.



OK or NG

OK >> 1. Replace A/C auto amp.
2. Perform self-diagnosis step 2. Make sure result is normal. Refer to ATC-40, "Self-Diagnosis Function" .

NG >> Repair harness or connector.

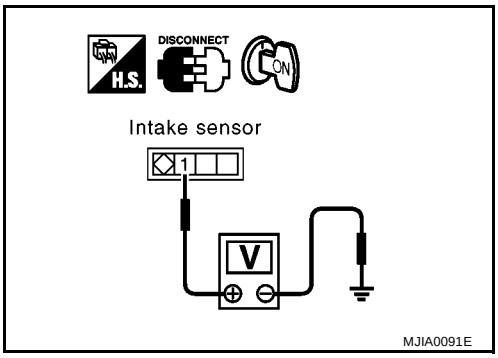
Intake Sensor System

EJS004I9

1. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect intake sensor connector.
3. Turn ignition switch ON.
4. Check voltage between intake sensor connector M44 terminal 1 and ground.

1 (OR) - Ground : Approx. 5V



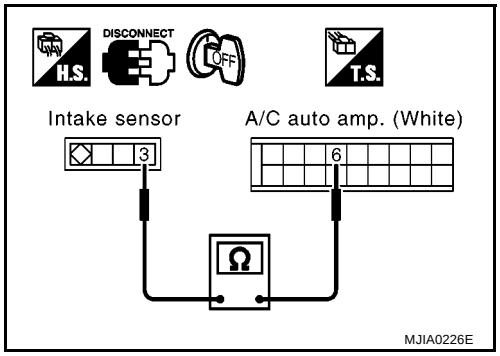
OK or NG

OK >> GO TO 2.
NG >> GO TO 4.

2. CHECK CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect the A/C auto amp. connector.
3. Check continuity between intake sensor connector M44 terminal 3 and A/C auto amp. connector M64 terminal 6.

3 (PU) - 6 (R) : Continuity should exist.

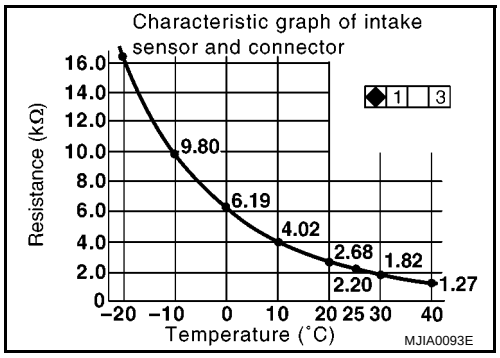


OK or NG

OK >> GO TO 3.
NG >> Repair harness or connector.

3. CHECK INTAKE SENSOR

Disconnect intake sensor connector and check the resistance between terminals 1 to 3.



OK or NG

OK >> 1. Replace A/C auto amp.
2. Perform self-diagnosis step 2. Make sure result is normal. Refer to ATC-40, "Self-Diagnosis Function" .

NG >> 1. Replace the intake sensor.
2. Perform self-diagnosis step 2. Make sure result is normal. Refer to ATC-40, "Self-Diagnosis Function" .

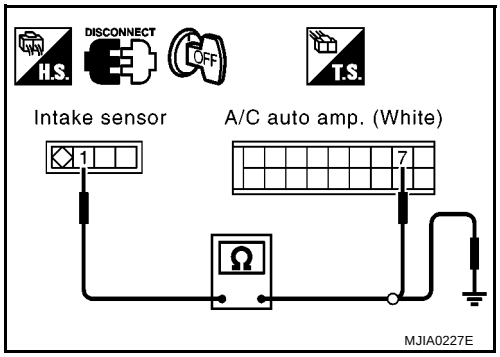
4. CHECK CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect the A/C auto amp. connector.
3. Check continuity between intake sensor connector M44 terminal 1 and A/C auto amp. connector M64 terminal 7.

1 (OR) - 7 (OR) : Continuity should exist.

4. Check continuity between intake sensor connector M44 terminal 1 and ground.

1 (OR) - Ground : Continuity should not exist.



OK or NG

OK >> 1. Replace A/C auto amp.
2. Perform self-diagnosis step 2. Make sure result is normal. Refer to ATC-40, "Self-Diagnosis Function" .

NG >> Repair harness or connector.

Coolant Temperature Signal System

EJS004IA

Phenomenon: The low coolant temperature startup airflow volume control does not cancel or the lower coolant temperature startup airflow volume is not controlled.

Inspection Procedure

1. CHECK FUNCTION OF COMBINATION METER

Does the engine coolant temperature gauge operate normally?

OK or NG

OK >> GO TO 2.
NG >> GO TO DI-35, "Inspection/Water Temperature Warning/indicator Lamp" .

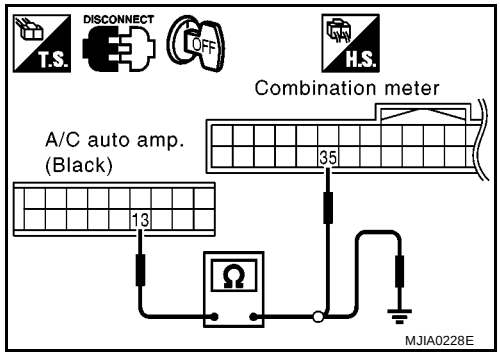
2. CHECK HARNESS

1. Turn ignition switch OFF.
2. Disconnect the A/C auto amp. and combination meter connector.
3. Check continuity between A/C auto amp. connector M63 terminal 13 and combination meter connector M22 terminal 35.

13 (BR) - 35 (BR) : Continuity should exist.

4. Check continuity between A/C auto amp. connector M63 terminal 13 and ground.

13 (BR) - Ground : Continuity should not exist.



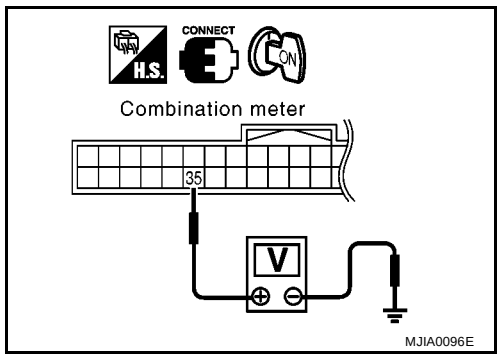
OK or NG

OK >> GO TO 3.
NG >> Repair the harness and connector.

3. CHECK 1: ENGINE COOLANT SIGNAL

1. Connect the A/C auto amp. and combination meter connector.
2. Turn ignition switch ON.
3. Check voltage between combination meter connector M22 terminal 35 and ground.

35 (BR) - Ground : Battery voltage



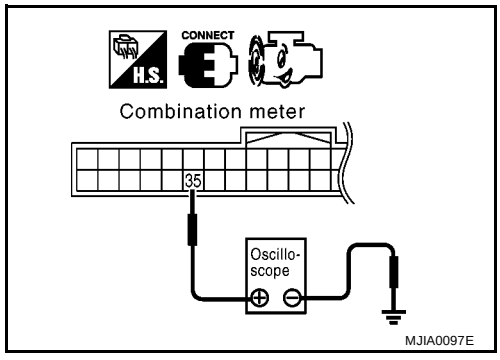
OK or NG

OK >> GO TO 4.
NG >> Replace A/C auto amp.

4. CHECK 2: ENGINE COOLANT TEMPERATURE

1. After the engine warms up.
2. Check voltage waveform between combination meter terminal 35 and ground.

35 (BR) - Ground : Refer to ATC-39, "A/C Auto Amp. Input/Output Signal Standard" .



OK or NG

OK >> Replace A/C auto amp.
NG >> Replace the combination meter.

Blower Motor System

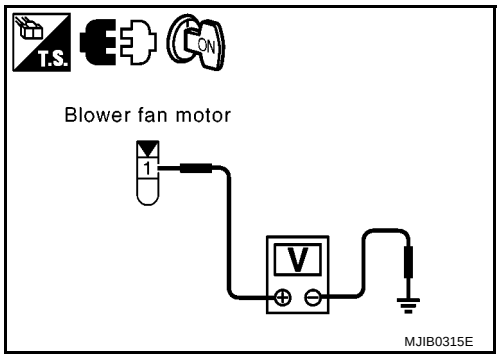
EJS004IB

Symptom: Operation malfunction of blower motor

1. CHECK POWER SUPPLY CIRCUIT (BLOWER MOTOR)

1. Turn ignition switch ON.
2. Check voltage between blower motor connector M47 terminal 1 and ground.

1 (L) - Ground : Battery voltage



OK or NG

OK >> GO TO 2.

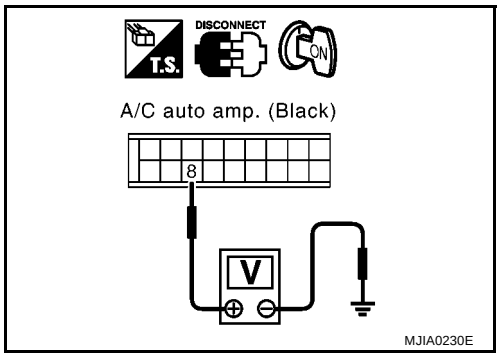
NG >> Check power supply circuit and 15A fuses [Nos. 9 and 10, located in the fuse block (J/B)]. Refer to PG-5, "POWER SUPPLY ROUTING" .

- If OK, check for open circuit in wiring harness. Repair or replace as necessary.
- If NG, replace fuse and check wiring harness for short circuit. Repair or replace as necessary.

2. CHECK POWER SUPPLY CIRCUIT (A/C AUTO AMP.)

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Turn ignition switch ON.
4. Check voltage between A/C auto amp. connector M63 terminal 8 and ground.

8 (R) - Ground : Battery voltage



OK or NG

OK >> GO TO 3.

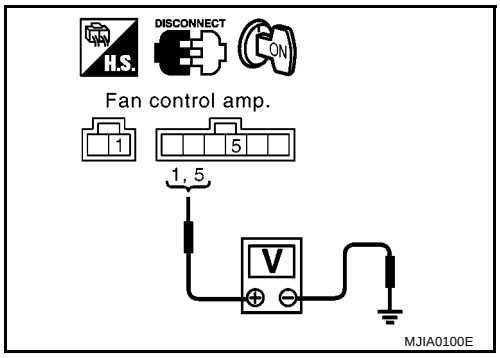
NG >> Repair harness or connector.

3. CHECK POWER SUPPLY CIRCUIT (FAN CONTROL AMP.)

1. Turn ignition switch OFF.
2. Disconnect the fan control amp. connector.
3. Turn ignition switch ON.
4. Check voltage between fan control amp. connector M41, 42 terminal 1, 5 and ground.

1 (W) - Ground : Battery voltage

5 (R) - Ground : Battery voltage



OK or NG

OK >> GO TO 4.

NG >>
- Between terminal 1 and ground: Repair the harness or connector.
- Between terminal 5 and ground: GO TO 7.

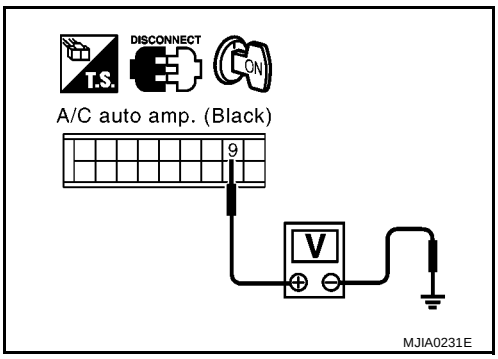
4. CHECK BLOWER MOTOR FEEDBACK SIGNAL

1. Turn ignition switch ON.
2. Check voltage between A/C auto amp. connector M63 terminal 9 and ground.

9 (W) - Ground : Battery voltage

OK or NG

OK >> GO TO 5.
NG >> GO TO 9.



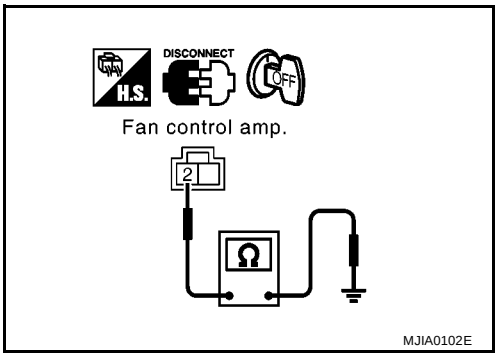
5. CHECK GROUND CIRCUIT

Check continuity between fan control amp. connector M42 terminal 2 and ground.

2 (B) - Ground : Continuity should exist.

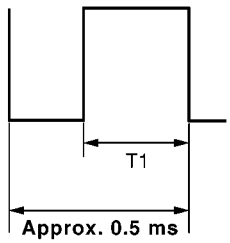
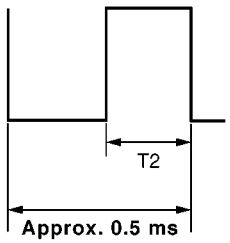
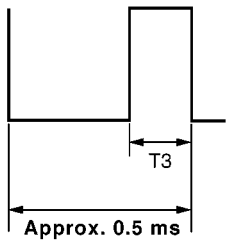
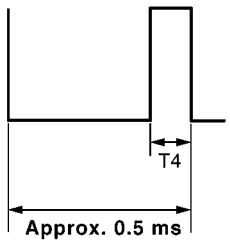
OK or NG

OK >> GO TO 6.
NG >> Repair harness or connector.



6. CHECK 1: FAN CONTROL AMP. CONTROL SIGNAL

Check waveform between fan control amp. terminal 3 and ground.

Fan speed	First	Second	Third	Fourth
Terminal 3 (Oscilloscope)				
	T1: Approx. 0.37 ms Duty ratio: Approx. 27%	T2: Approx. 0.29 ms Duty ratio: Approx. 42%	T3: Approx. 0.19 ms Duty ratio: Approx. 62%	T4: Approx. 0.04 ms Duty ratio: Approx. 92%

NOTE: Duty ratio = $\frac{\text{Approx. 0.5 ms} - Tx}{\text{Approx. 0.5 ms}} \times 100\ (\%)$

MJIA0103E

OK or NG

OK >> Replace the fan control amp.
NG >>
- Fan speed is stuck at speed 4: GO TO 11.
- Fan speed is stuck at speed 1: GO TO 12.

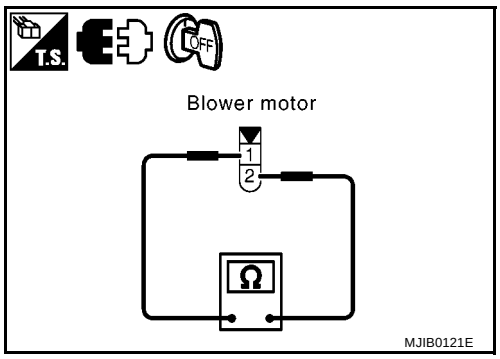
7. CHECK BLOWER MOTOR

1. Remove the blower motor.
2. Check continuity between blower motor terminal 1 and terminal 2.

1 - 2 : Continuity should exist.

OK or NG

OK >> GO TO 8.
NG >> Replace the blower motor.



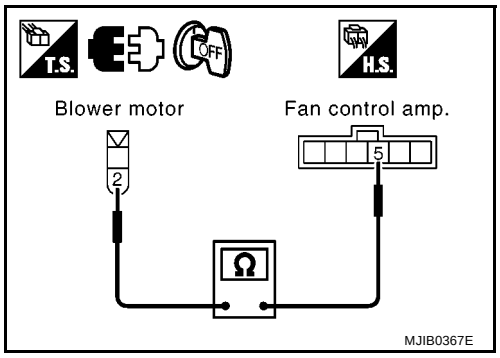
8. CHECK CIRCUIT CONTINUITY

1. Disconnect the blower motor and fan control amp. connectors.
2. Check continuity between the blower motor connector M47 terminal 2 and fan control amp. connector M41 terminal 5.

2 (R) - 5 (R) : Continuity should exist.

OK or NG

OK >> End of trouble diagnosis
NG >> Repair harness or connector.



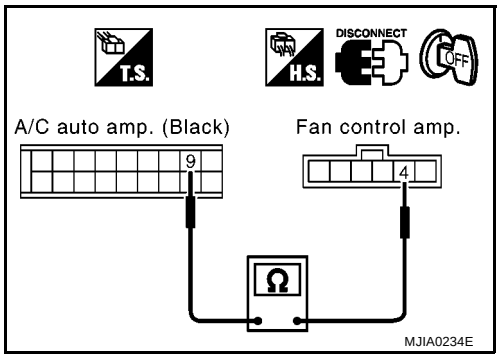
9. CHECK CIRCUIT CONTINUITY

Check continuity between fan control amp. connector M41 terminal 4 and A/C auto amp. connector M63 terminal 9.

4 (W) - 9 (W) : Continuity should exist.

OK or NG

OK >> GO TO 10.
NG >> Repair harness or connector.



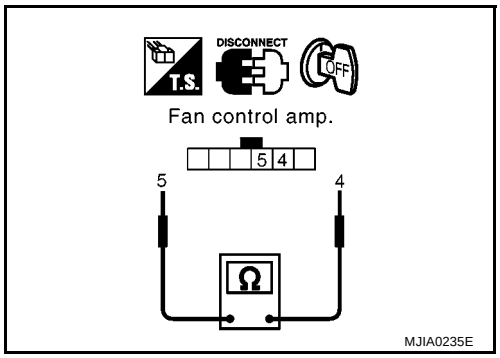
10. CHECK FAN CONTROL AMP.

Check continuity between fan control amp. terminal 4 and 5.

4 - 5 : Continuity should exist.

OK or NG

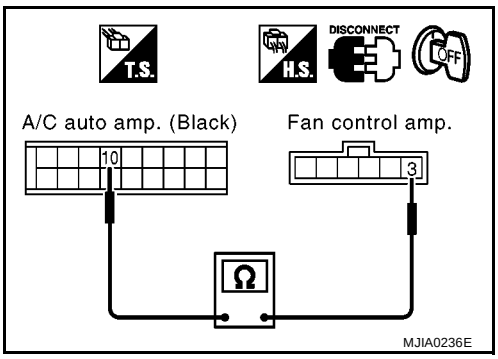
OK >> End of trouble diagnosis
NG >> Replace the fan control amp.



11. CHECK CIRCUIT CONTINUITY

1. Disconnect the fan control amp. and A/C auto amp. connectors.
2. Check continuity between fan control amp. connector M41 terminal 3 and A/C auto amp. connector M63 terminal 10.

3 (GY) - 10 (GY) : Continuity should exist.



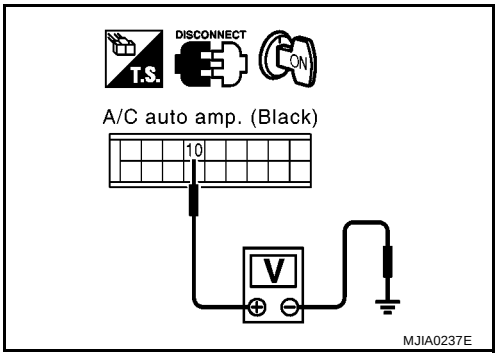
OK or NG

OK >> Replace the fan control amp.
NG >> Repair harness or connector.

12. CHECK 2: FAN CONTROL AMP. CONTROL SIGNAL

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

Connector	Terminal (Wire color)		Condition	Voltage (V) (Approx.)
	(+)	(-)		
M63	10 (GY)	Ground	Fan speed: Speed 1 though speed 3	Battery voltage



OK or NG

OK >> Replace A/C auto amp.
NG >> Replace the fan control amp.

Intake Door Motor System

EJS004IC

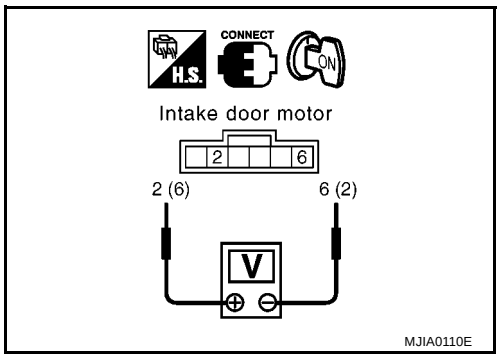
Symptom

- Unable to change the intake door.
- Intake door motor does not operate normally.

1. CHECK INTAKE DOOR MOTOR DRIVE POWER

1. Turn ignition switch ON.
2. Check voltage between intake door motor connector terminal 2 and 6.

Connector	Terminal (Wire color)		Condition	Voltage (V) (Approx.)
	(+)	(-)		
M43	2 (G)	6 (R)	FRE→REC	Battery voltage
	6 (R)	2 (G)	REC→FRE	



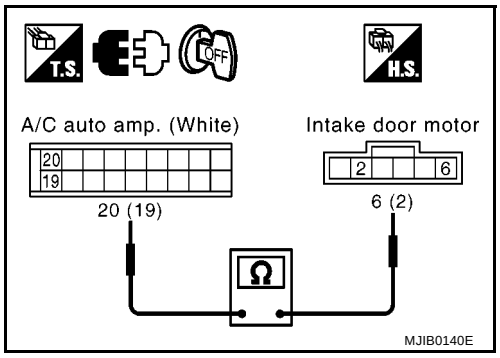
OK or NG

OK >> Replace intake door motor.
NG >> GO TO 2.

2. CHECK CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect A/C amp. and intake door motor connector.
3. Check continuity between A/C auto amp. connector M64 terminal 19, 20 and intake door motor connector M43 terminal 2, 6.

19 (G) - 2 (G) : Continuity should exist.
20 (R) - 6 (R) : Continuity should exist.



OK or NG

OK >> Replace A/C auto amp.
NG >> Repair the harness or connector.

Mode Door Motor System

EJS004ID

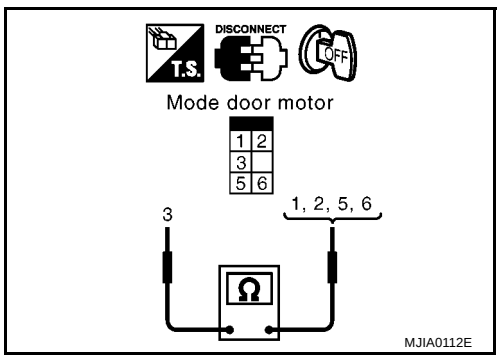
Symptom

- Unable to change air outlets to others.
- Mode door motor does not operate normally.

1. CHECK MODE DOOR MOTOR

1. Turn ignition switch OFF.
2. Disconnect the mode door motor connector.
3. Check continuity between mode door motor terminal 1, 2, 5, 6 and 3.

1 - 3 : Continuity should exist.
2 - 3 : Continuity should exist.
5 - 3 : Continuity should exist.
6 - 3 : Continuity should exist.



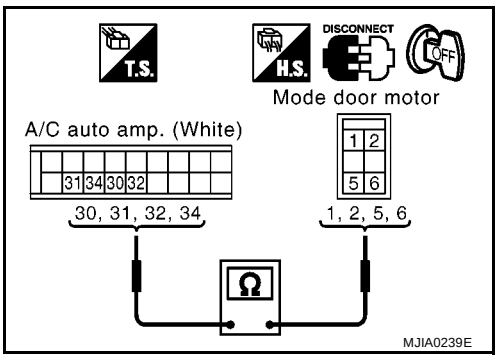
OK or NG

OK >> GO TO 2.
NG >> Replace the mode door motor.

2. CHECK 1: CIRCUIT CONTINUITY

1. Disconnect A/C auto amp. connector.
2. Check continuity among the A/C auto amp. connector M64 terminal 30, 31, 32, 34 and mode door motor connector M65 terminal 1, 2, 5, 6.

30 (W) - 6 (W) : Continuity should exist.
31 (PU - 2 (PU) : Continuity should exist.
32 (GY) - 5 (GY) : Continuity should exist.
34 (Y) - 1 (Y) : Continuity should exist.



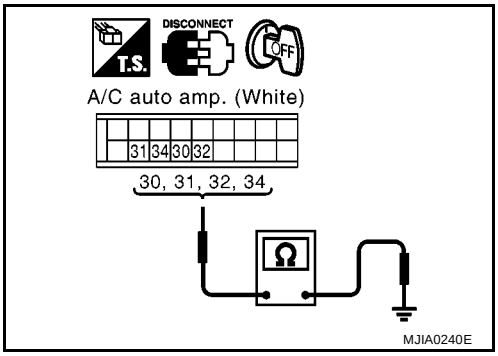
OK or NG

OK >> GO TO 3.
NG >> Repair harness or connector.

3. CHECK 2: CIRCUIT CONTINUITY

Check continuity between A/C auto amp. connector M64 terminal 30, 31, 32, 34 and ground.

30 (W) - Ground : Continuity should not exist.
31 (PU) - Ground : Continuity should not exist.
32 (GY) - Ground : Continuity should not exist.
34 (Y) - Ground : Continuity should not exist.



OK or NG

OK >> Replace A/C auto amp.
NG >> Repair the harness and connector.

Air Mix Door Motor System

EJS004IE

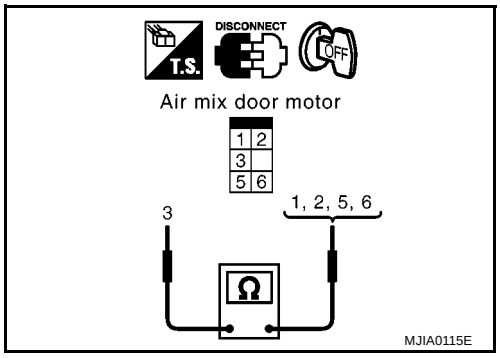
Symptom:

- Temperature of blowing air does not change.
- Air mix door motor does not operate.

1. CHECK AIR MIX DOOR MOTOR

1. Turn ignition switch OFF.
2. Disconnect the air mix door motor connector.
3. Check continuity between air mix door motor terminal 1, 2, 5, 6 and 3.

1 - 3 : Continuity should exist.
2 - 3 : Continuity should exist.
5 - 3 : Continuity should exist.
6 - 3 : Continuity should exist.



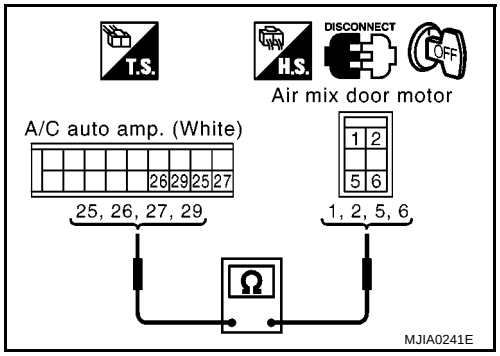
Ok or NG

OK >> GO TO 2.
NG >> Replace the air mix door motor.

2. CHECK 1: CIRCUIT CONTINUITY

1. Disconnect the A/C auto amp. connector.
2. Check continuity between A/C auto amp. connector M64 terminal 25, 26, 27, 29, and air mix door motor connector M66 terminals 1, 2, 5, 6.

25 (LG) - 6 (LG) : Continuity should exist.
26 (L) - 2 (L) : Continuity should exist.
27 (BR) - 5 (BR) : Continuity should exist.
29 (P) - 1 (P) : Continuity should exist.



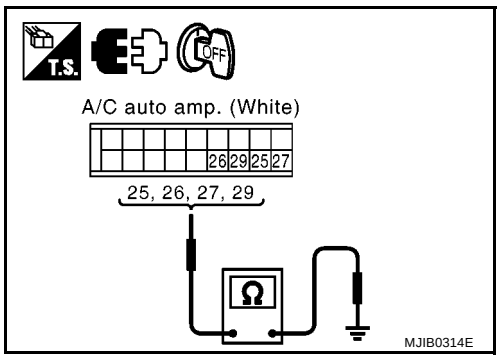
Does continuity exist?

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

3. CHECK 2: CIRCUIT CONTINUITY

Check continuity between A/C auto amp. connector M64 terminal 25, 26, 27, 29 and ground.

25 (LG) - Ground : Continuity should not exist.
26 (L) - Ground : Continuity should not exist.
27 (BR) - Ground : Continuity should not exist.
29 (P) - Ground : Continuity should not exist.



OK or NG

OK >> Replace A/C auto amp.
NG >> Repair the harness and connector.

Magnetic Clutch System

EJS004IF

Symptom:

- The magnetic clutch does not operate when the A/C switch is turned to ON when the blower motor is operating.
- The magnetic clutch does not stop. Refer to PG-52, "Diagnosis of IPDM E/R Integrated Relay" .

1. CHECK INTAKE AIR TEMPERATURE SENSOR

Inspect the intake sensor using a self-diagnosis. Refer to ATC-40, "Self-Diagnosis Function" .

OK or NG

OK >> GO TO 2.
NG >> Repair or replace parts according to the inspection results.

2. CHECK WITH AUTO ACTIVE TEST MODE

Perform auto active test to make sure magnetic clutch operates. Refer to PG-43, "Auto Active Test" .

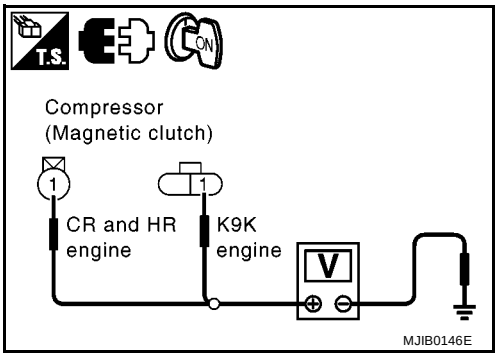
OK or NG

OK >> GO TO 8.
NG >> GO TO 3.

3. CHECK MAGNETIC CLUTCH VOLTAGE

1. Turn ignition switch OFF.
2. Disconnect compressor connector.
3. Turn ignition switch ON.
4. Check voltage between compressor connector F28 terminal 1 and ground.

1 (Y) - Ground : Battery voltage



OK or NG

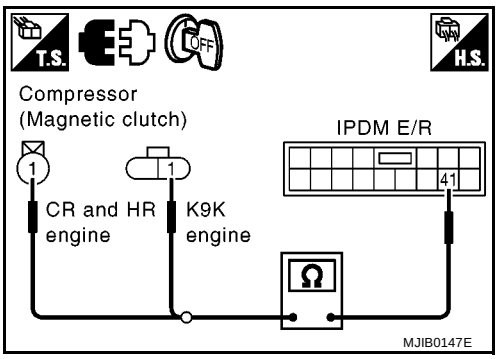
OK >>
- GO TO 5. (CR and HR engine models)
- GO TO 6. (K9K engine models)

NG >> After Inspecting the Fuse (#41), GO TO 4. For Information Regarding the Fuse Block Layout, Refer to PG-5, "POWER SUPPLY ROUTING" .
- If fuse is OK, check for open circuit in harness.
- If a fuse is NG, determine the possible cause, repair circuit and replace blown fuse.

4. CHECK CIRCUIT CONTINUITY

1. Disconnect the IPDM E/R and compressor connectors.
2. Check continuity between IPDM E/R connector E14 terminal 41 and compressor connector F28 terminal 1.

41 (Y) - 1 (Y) : Continuity should exist.



OK or NG

OK >>
- GO TO 5. (CR and HR engine models)
- GO TO 6. (K9K engine models)

NG >> Repair harness or connector.

5. CHECK MAGNETIC CLUTCH

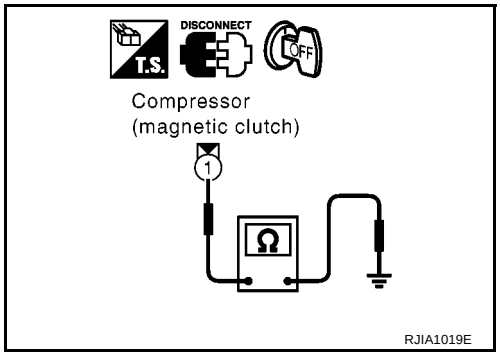
Check continuity between compressor terminal 1 and ground.

1 - Ground : Continuity should exist.

OK or NG

OK >> Apply battery voltage to magnetic clutch directly and check operation sound.
1. If inspection results are NG, replace magnetic clutch.
2. If magnetic clutch is normal, replace IPDM E/R.

NG >> Replace magnetic clutch.



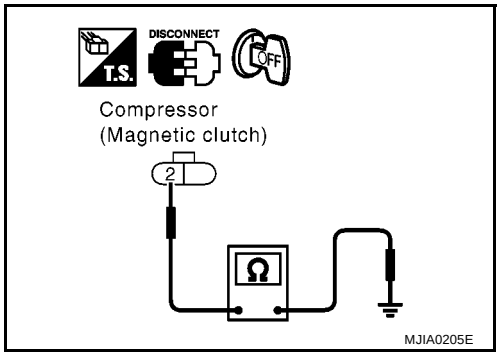
6. CHECK GROUND CIRCUIT

Check continuity between compressor connector F129 terminal 2 and ground.

2 (B) - Ground : Continuity should exist.

OK or NG

OK >> GO TO 7.
NG >> Repair harness or connector.



7. CHECK MAGNETIC CLUTCH

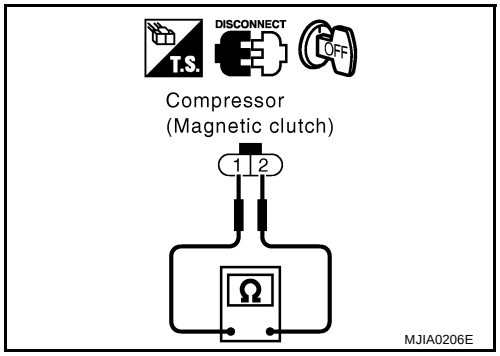
Check continuity between magnetic clutch terminal 1 and 2.

1 - 2 : Continuity should exist.

OK or NG

OK >> Apply battery voltage to magnetic clutch directly and check operation sound.
1. If inspection results are NG, replace magnetic clutch.
2. If magnetic clutch is normal, replace IPDM E/R.

NG >> Replace magnetic clutch.



8. CHECK BCM INPUT SIGNAL

With CONSULT-II

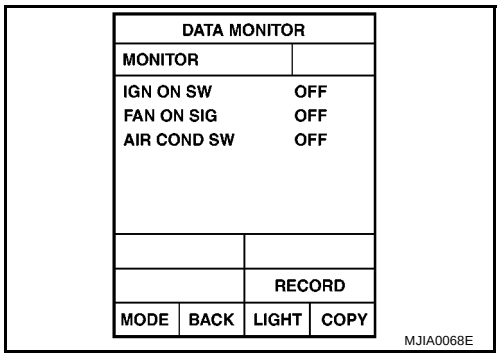
- Touch “BCM” → “AIR CONDITIONER” → “DATA MONITOR” → “ALL SIGNALS” and then check ON and OFF operation of compressor. Refer to BCS-21, "CONSULT-II Function (BCM)" .

Without CONSULT-II

- GO TO 10.

OK or NG

OK >> GO TO 12.
NG >> GO TO 9.



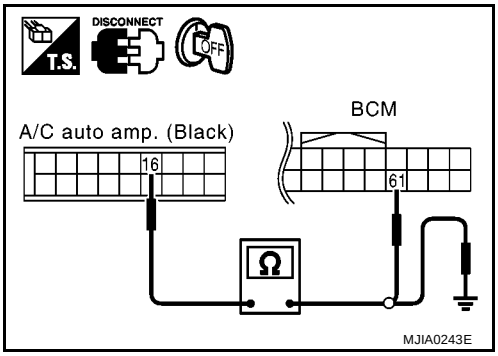
9. CHECK CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. and BCM connector.
3. Check continuity between A/C auto amp. connector M63 terminal 16 and BCM connector M49 terminal 61.

16 (Y) - 61 (Y) : Continuity should exist.

4. Check continuity between A/C auto amp. connector M63 terminal 16 and ground.

16 (Y) - Ground. : Continuity should not exist.



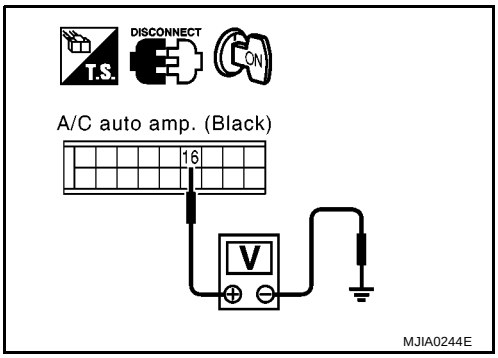
OK or NG

OK >> GO TO 10.
NG >> Repair harness or connector.

10. CHECK COMPRESSOR ON SIGNAL

1. Connect BCM connector.
2. Turn ignition switch ON.
3. Check voltage between A/C auto amp. connector M63 terminal 16 and ground.

16 (Y) - Ground : Approx. 5V



OK or NG

OK >> GO TO 11.
NG >> Replace BCM.

11. CHECK REFRIGERANT PRESSURE SENSOR SIGNAL

With CONSULT-II

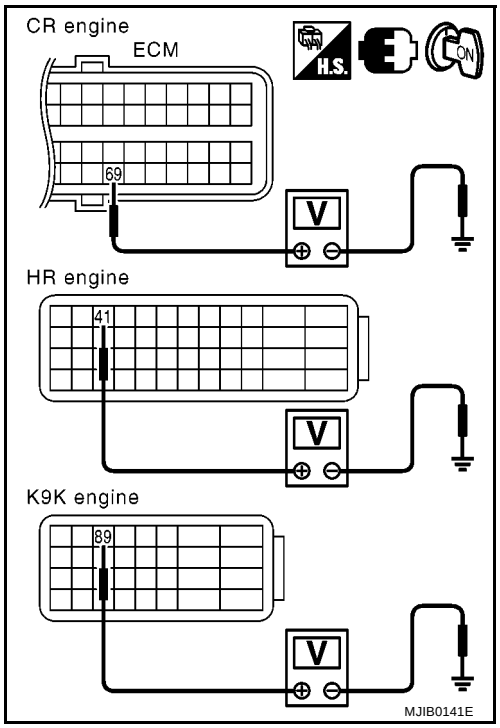
- Check refrigerant pressure sensor (touch “ENGINE” → “DATA MONITOR” → “SELECTION FROM MENU” → “AC PRESS SEN”) input voltage with data monitor.

AC PRESS SEN : Approx. 0.36 - 3.88V

Without CONSULT-II

- Check voltage between ECM connector and ground.

Connector	Terminal (Wire color)		Voltage (V) (Approx.)
	(+)	(-)	
F2 (CR)	69 (BR)	Ground	Approx. 0.36 - 3.88V
F51 (HR)	41 (BR)		
F134 (K9K)	89 (BR)		



OK or NG

OK >> GO TO 12.

NG >> GO TO EC-436, "REFRIGERANT PRESSURE SENSOR" (CR engine with EURO–OBD) or EC-788, "REFRIGERANT PRESSURE SENSOR" (CR engine without EURO–OBD) or EC-1231, "REFRIGERANT PRESSURE SENSOR" (HR engine with EURO–OBD) or EC-1592, "REFRIGERANT PRESSURE SENSOR" (HR engine without EURO–OBD) or EC-K9K-473, “Wiring Diagram — Refrigerant Pressure Sensor” (K9K engine models).

12. CHECK CAN COMMUNICATION CIRCUIT

Check the CAN communication between the BCM and ECM, and ECM and IPDM E/R. Refer to BCS-30, "CAN Communication Inspection With CONSULT-II (Self-Diagnosis)" , PG-49, "Inspection With CONSULT-II (Self-Diagnosis)" .

OK or NG

OK >> Replace ECM.

NG >> Repair or replace parts based on the diagnosis results.

Check Fan ON Signal

EJS004IG

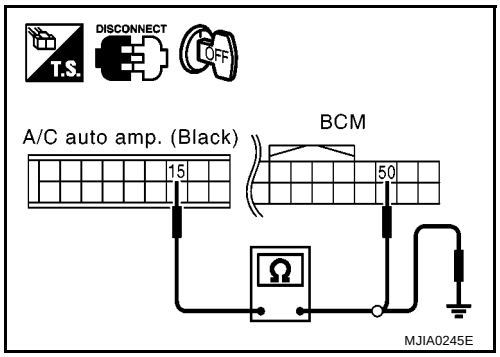
1. CHECK CIRCUIT CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. and BCM connector.
3. Check continuity between A/C auto amp. connector M63 terminal 15 and BCM connector M49 terminal 50.

15 (OR) - 50 (OR) : Continuity should exist.

4. Check continuity between A/C auto amp. connector M63 terminal 15 and ground.

15 (OR) - Ground : Continuity should not exist.



OK or NG

OK >> GO TO 2.

NG >> Repair harness or connector.

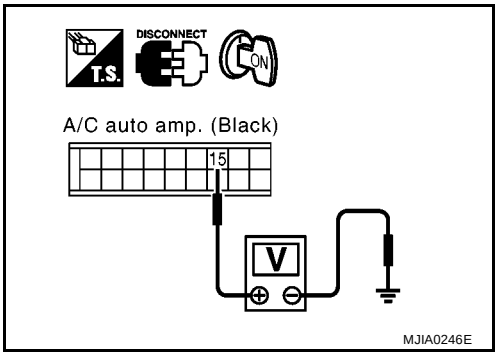
2. CHECK FAN ON SIGNAL

1. Disconnect BCM connector.
2. Turn ignition switch ON.
3. Check voltage between A/C auto amp. connector M63 terminal 15 and ground.

15 (OR) - Ground : Continuity should exist.

OK or NG

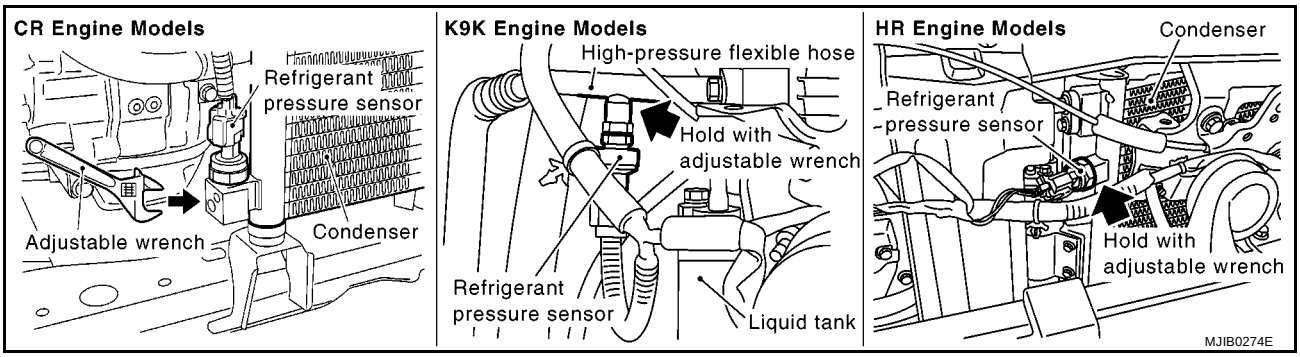
OK >> Replace A/C auto amp.
NG >> Replace BCM.



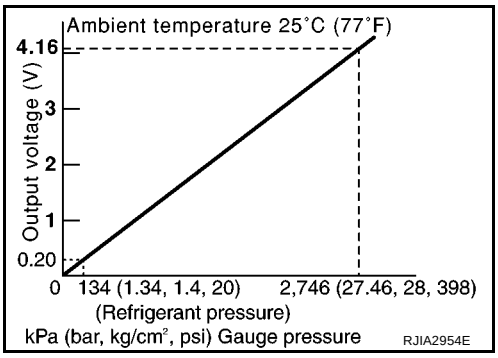
Component Inspection

EJS006AH

REFRIGERANT PRESSURE SENSOR



The refrigerant pressure sensor is attached to the liquid tank.
Make sure that the A/C refrigerant pressure and the sensor output voltage are within the specified range as shown in the A/C operating condition figure.



Refer to EC-436, "REFRIGERANT PRESSURE SENSOR" . CR (with EURO-OBD).
Refer to EC-788, "REFRIGERANT PRESSURE SENSOR" . CR (without EURO-OBD).
Refer to EC-1231, "REFRIGERANT PRESSURE SENSOR" . HR (with EURO-OBD).
Refer to EC-1592, "REFRIGERANT PRESSURE SENSOR" . HR (without EURO-OBD).
Refer to EC-K9K-473.

Insufficient Cooling

EJS004IH

CHECK FUNCTION (FOR GASOLINE ENGINE)

Inspection Procedure

1. Connect manifold gauge to service valve of air conditioner system.
2. Attach a psychrometer to blower unit air inlet (under glove box). Attach a dry-bulb thermometer to right-center of ventilator grille.
3. Start and warm up the engine.
4. After warming-up engine, make sure engine speed is the specified idle speed.

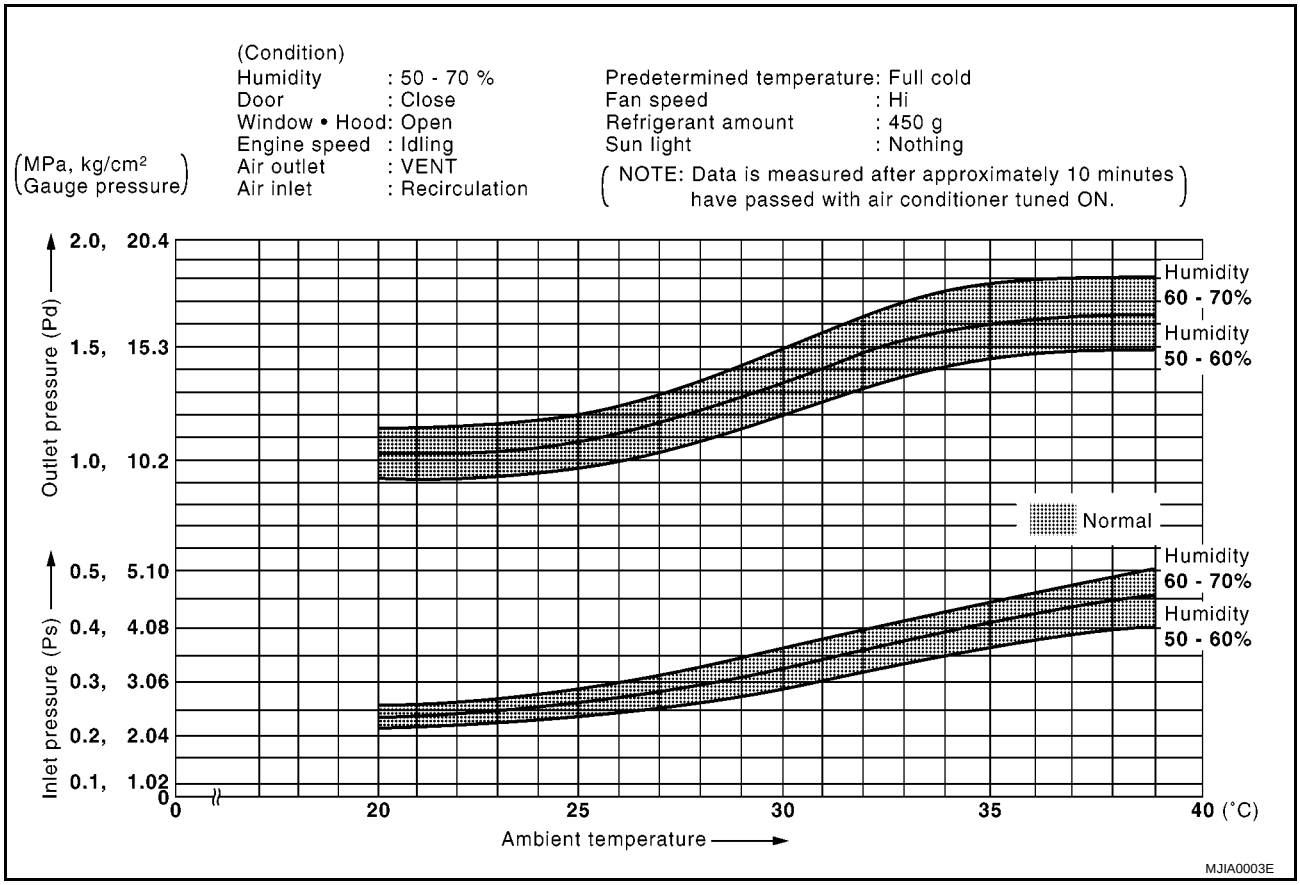
5. Operate compressor. Adjust controller to match conditions below.

Fan speed	**: HI**
Air inlet	**: Recirculation**
Air outlet	**: Ventilator (VENT)**
Predetermined temperature	**: FULL COLD**

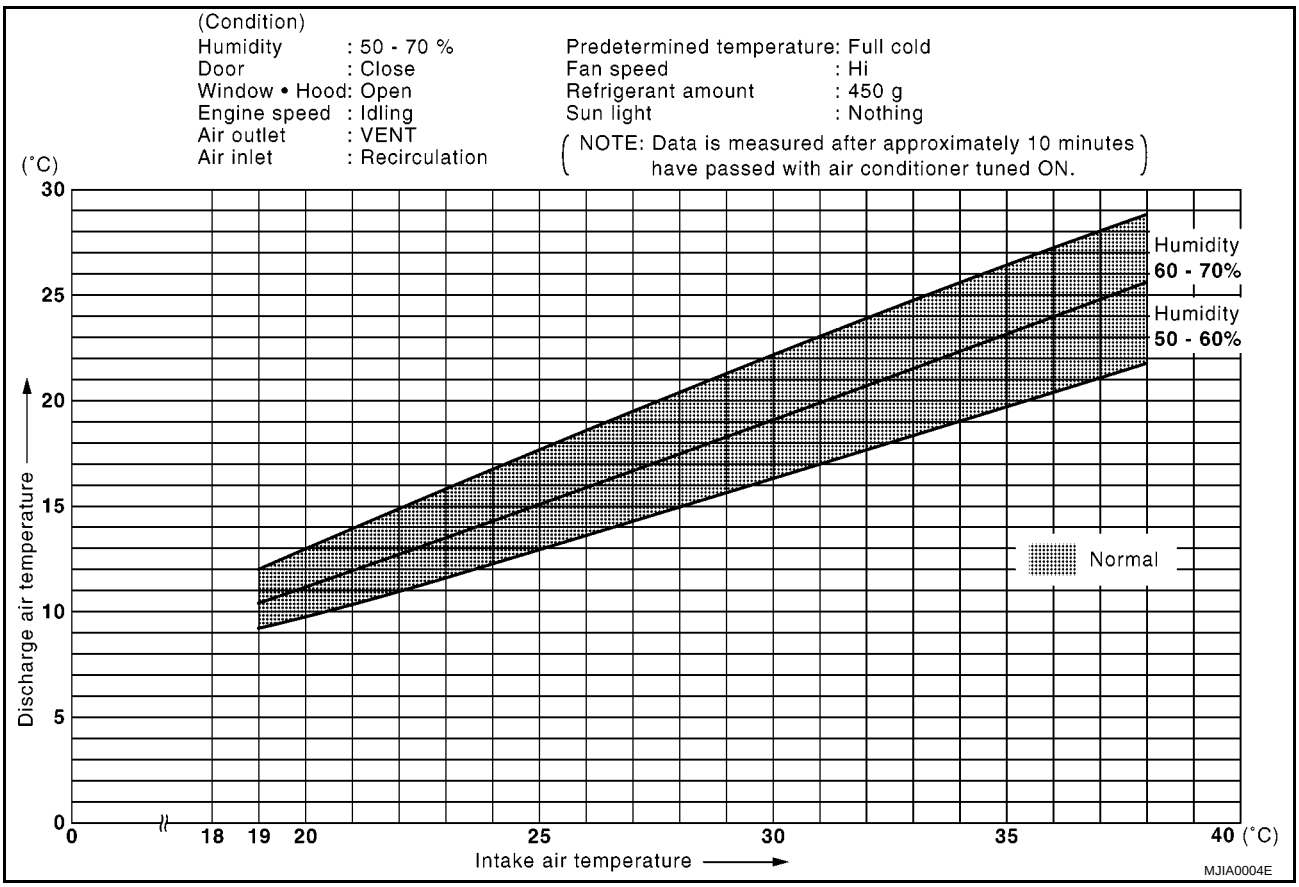
6. Fully open the hood and door windows, and close all the doors.
7. Keep this state until the air conditioner system becomes stable (after approximately 10 minutes).
8. Keep the engine speed at idle.
9. Measure the temperature and humidity at the air inlets, temperature at the air outlets, and the high-pressure and low-pressure of the air conditioner system, and compare them to “Ambient temperature - Pressure characteristic”, “Intake air temperature - Discharge air temperature characteristic” for estimating.

Performance Curve

Ambient temperature - Pressure characteristic



Intake air temperature - Discharge air temperature characteristics



DIAGNOSIS BY PRESSURE GAUGE

Connect a manifold gauge to service valve of air conditioner system, and determine faulty parts and possible causes by pressure in the air conditioning cycle, then troubleshoot.

Symptom	Cycle status	Possible causes	Action
High-pressure and low-pressure are both high.	They return to normal when condenser is cooled with water.	Insufficient cooling of condenser ● Operation malfunction of radiator and condenser fan ● Improper installation of air guide ● Clogged condenser or dirty fins	● Repair or replace as necessary ● Clean and repair condenser fins.
		Excessively charged refrigerant	Discharge refrigerant completely, evacuate again, and recharge with proper amount of refrigerant.
	When the compressor has been stopped, pressure drops quickly by approximately 2 kg/cm^2 , and then decreases gradually.	Mixed air in the air conditioner system	Discharge refrigerant completely, evacuate again, and recharge with proper amount of refrigerant.
	Temperature at low-pressure pipe is lower than that at evaporator outlet, or low-pressure pipe becomes frosted.	Expansion valve opened too far (excessive refrigerant flow).	Replace expansion valve.
High-pressure is extremely high.	Temperature differences occur at points where high-pressure pipe is crushed or clogged.	Crushed points or clogs in high-pressure pipe between compressor and condenser	Repair or replace as necessary

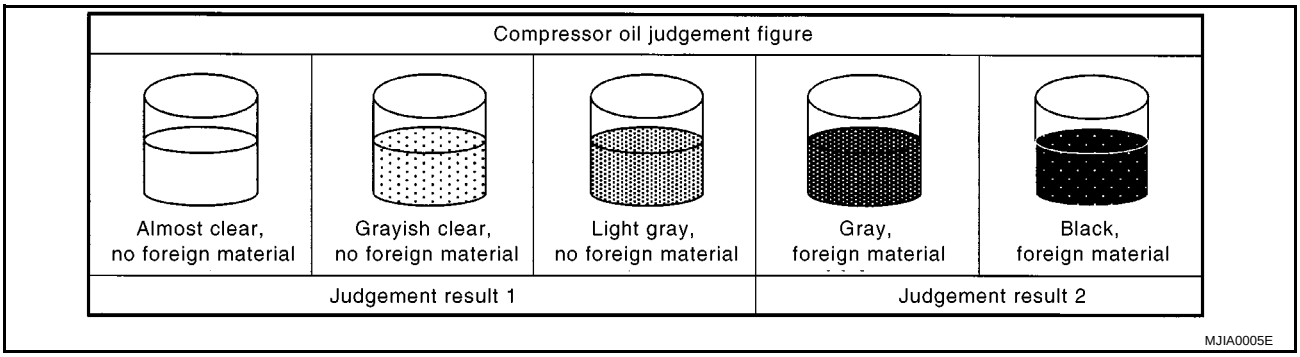
Symptom	Cycle status	Possible causes	Action
High-pressure and low-pressure are both low (low-pressure occasionally becomes minus).	Evaporator outlet is not cold. Frost forms on evaporator inlet.	Expansion valve is blocked. ● Gas leakage around sensor unit. ● Clogged by foreign material	Remove foreign materials from expansion valve or replace expansion valve.
	Temperature differences occur at the top/bottom outlet and inlet of the liquid tank or the liquid tank becomes frosted.	Liquid tank inner malfunction	Replace liquid tank
	Evaporator becomes frosted.	Evaporator fins are clogged or crushed.	Repair or replace.
		Insufficient airflow	ATC-54, "Blower Motor System"
	Some temperature difference occurs between high-pressure and low-pressure pipes of the compressor.	Insufficient refrigerant amount	● Check for refrigerant leaks. ● Discharge refrigerant completely, evacuate again, and recharge with proper amount of refrigerant.
Occasionally high-pressure becomes low, and low-pressure becomes minus.	Sometimes the evaporator outlet side does not become cold. Sometimes frost forms at the evaporator inlet.	Water mixed in cooler system. (Blockage caused by moisture freezing at the expansion valve.)	Discharge refrigerant completely, evacuate again to remove all moisture, and recharge with proper amount of refrigerant. Be certain to replace liquid tank.
High-pressure is low, and low-pressure is high.	The pressure equalizes soon after the compressor is stopped. There is no temperature difference between the compressor high-pressure piping and low-pressure piping.	Compressor malfunction (improper compression) ● Damage or breakage of valve ● Gasket worn or damaged	Replace compressor.

DIAGNOSIS OF COMPRESSOR

If there is a compressor unit malfunction (internal noise, insufficient cooling), follow table below and perform trouble diagnosis.

Symptom	Inspection Method	Checklist	Result	Action
Noise from compressor unit when A/C is ON. (rattling or rolling sound)	Air conditioner system internal pressure	Check with a manifold gauge.	Both high- and low-pressure sides are high. (Refer to Note 2)	Recharge with proper amount of refrigerant.
			High/low-pressures hunt. (Refer to Note 2)	Replace compressor only.
	Check compressor oil condition.	Sample compressor oil and judge.	Refer to the criteria shown in compressor lubricant.	Diagnostic result 1: Replace compressor only. Judgement results 2: Compressor and liquid tank replacement
Insufficient cooling (Refer to Note 1)	Compressor body	Check rotation of compressor. If seized or stuck, sample compressor oil and judge.		
	Air conditioner system internal pressure	Check with a manifold gauge. If the difference between high-pressure and low-pressure is small or if they are almost the same, sample compressor oil and judge.		
Outlet air temperature rises temporarily while driving. (Refer to Note 2)	—	—	—	Replace compressor only.

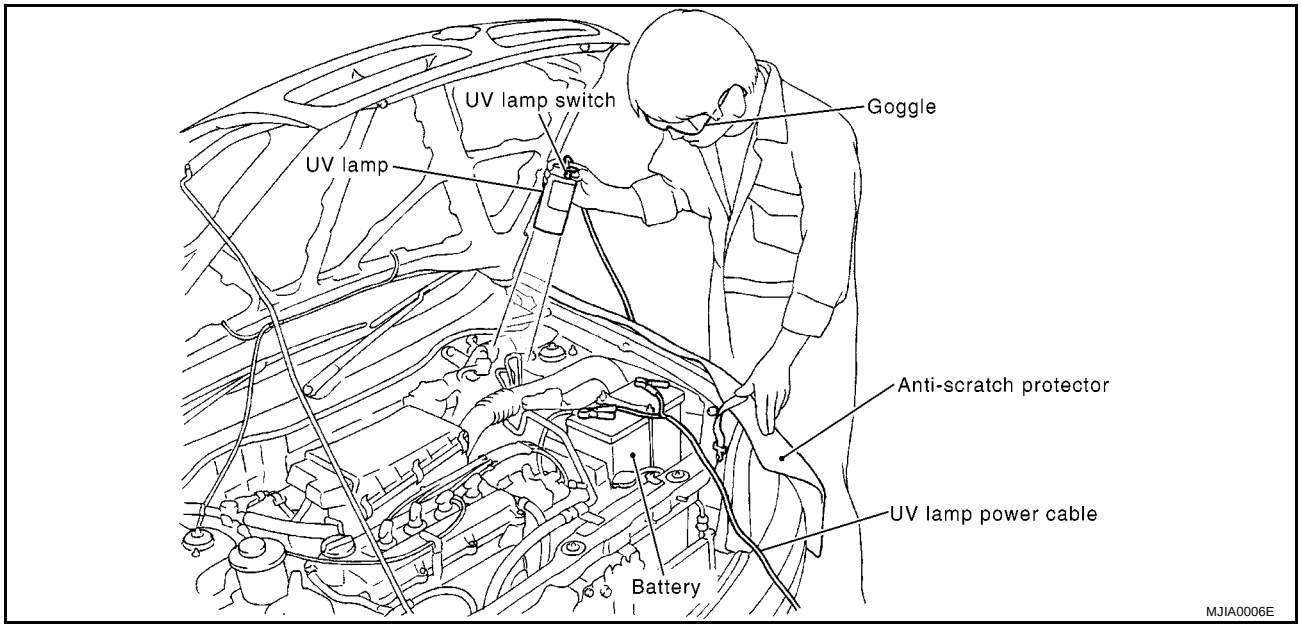
Note 1: First conduct inspection according to trouble diagnosis for each malfunction. Refer to ATC-20, "DIAGNOSIS CHART BY SYMPTOM" .
Note 2: Applicable to variable capacity compressor only.



Detecting Leaks With Fluorescent Indicator

EJS004II

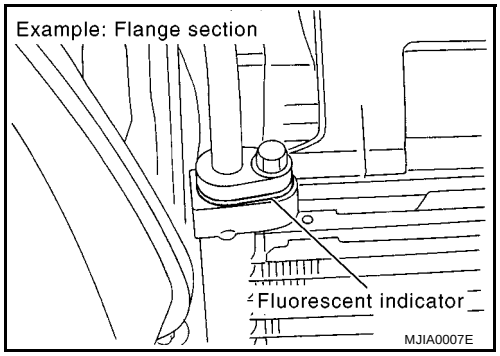
METHOD FOR DETECTING REFRIGERANT LEAKAGE



1. Wear goggles provided with the fluorescent detector.
2. Connect the UV lamp power cable to the negative battery terminal.
3. Press UV lamp switch. Check for air conditioner system leaks. (Light green fluorescent will appear at the leak.)
4. Repair or replace parts with refrigerant leaks and wipe off the fluorescent indicator.

   CAUTION:

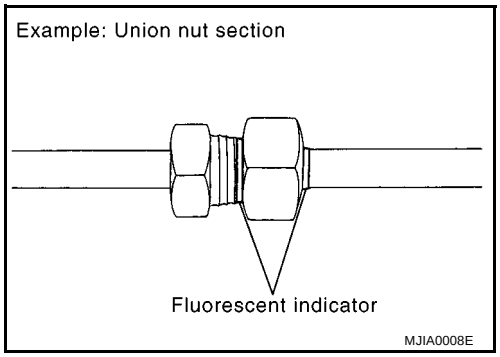
   Completely wipe off all fluorescent indicators. Use a cotton swab or something similar to remove indicator from gaps between parts, screw threads, and similar places.



5. After finishing work, use a UV lamp to make sure no fluorescent indicator remains.

   CAUTION:

   - **Do not look directly into the UV lamp light source.**
   - **For continuous operating time of UV lamp and other details, follow the Operation Manual when performing the operation.**
   - **Dust, dirt, and adhesive of packing materials used in condenser, evaporator, and other locations may fluoresce. Be careful to avoid misidentifying leaks.**



Inspection Procedure

- Shine UV lamp on pipe joints from different angles to make sure there are no leaks.
- Use a cotton swab or something similar to wipe water off of drain hoses. By shining UV lamp, a check can also be made to detect leaks from evaporator.
- Use a mirror to check for refrigerant leaks in difficult to see areas.

CONTROL UNIT

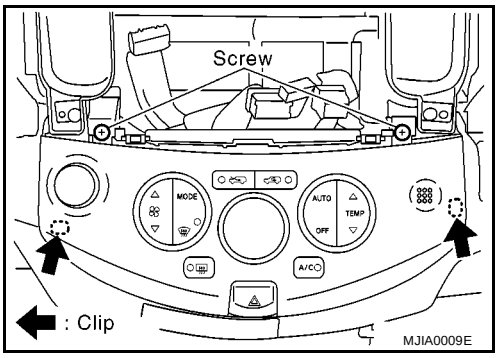
PFP:27500

Removal and Installation

EJS004IJ

REMOVAL

1. Remove cluster lid C. Refer to IP-7, "L. Cluster Lid C" .
2. Remove two screws and two clip, then remove controller.

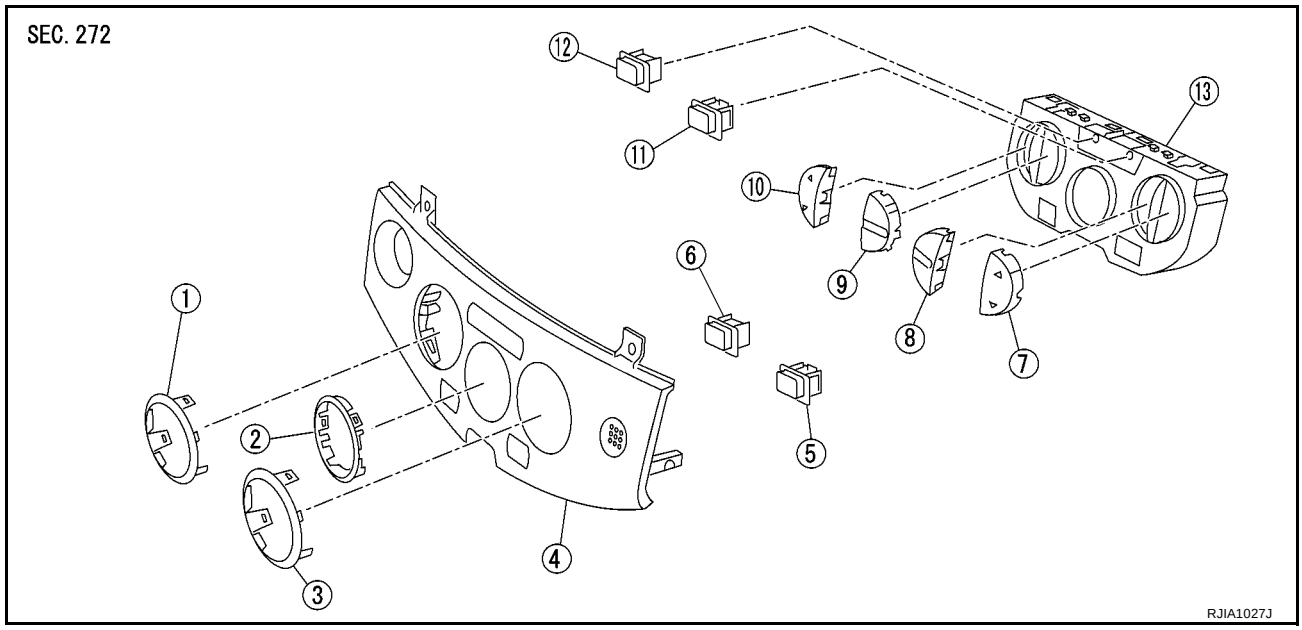


INSTALLATION

Install in the reverse order of removal.

Disassembly and Assembly

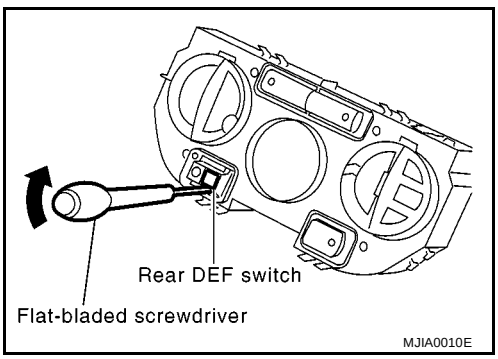
EJS004IK



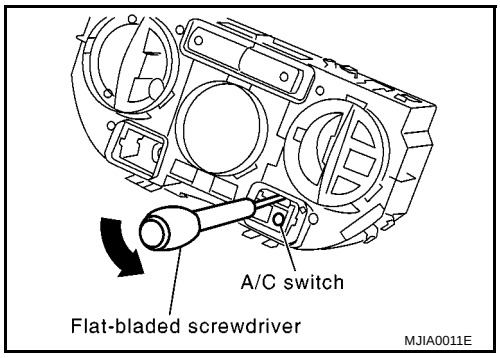
1. MODE ring
2. LCD ring
3. TEMP ring
4. Air conditioner finisher
5. A/C switch
6. Rear DEF switch
7. TEMP switch
8. AUTO switch
9. MODE switch
10. FAN switch
11. REC switch
12. FRE switch
13. Controller assembly

NOTE:

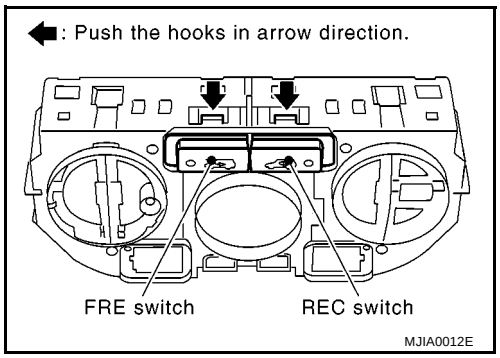
After removing the rear DEF switch, use a flat bladed screwdriver to push the hooks in the arrow direction, and then remove the rear DEF switch.



NOTE:
After removing the A/C switch, use a flat bladed screwdriver to push the hooks in the arrow direction, and then remove the A/C switch.



NOTE:
Use a flat bladed screwdriver to push the hooks in the arrow direction, and then remove the FRE and REC switch.



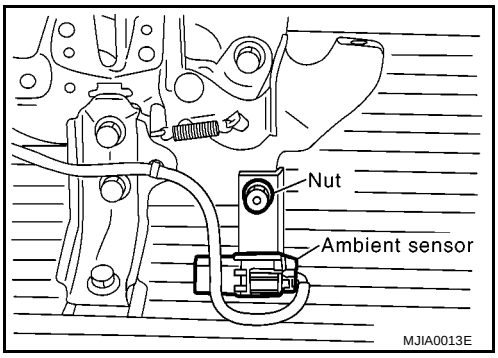
AMBIENT SENSOR

PFP:27722

Removal and Installation

EJS004IL

1. Remove the front grille (LH). Refer to EI-11, "FRONT GRILLE" .
2. Remove the nut and then remove the ambient sensor.



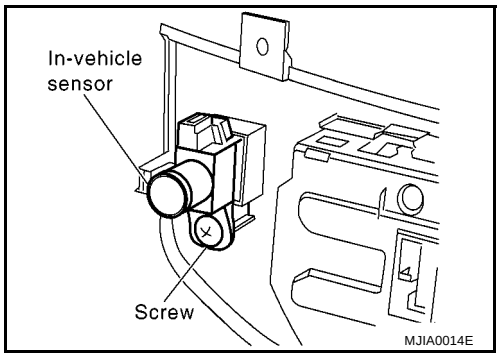
IN-VEHICLE SENSOR

PFP:27720

Removal and Installation

EJS004IM

1. Remove the controller. Refer to ATC-71, "CONTROL UNIT" .
2. Remove the screw and the remove the in-vehicle sensor.



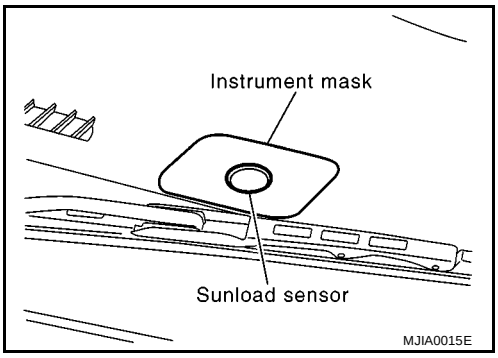
SUNLOAD SENSOR

PFP:27721

Removal and Installation

EJS004IN

1. Remove the instrument mask. Refer to IP-4, "Component Parts Location" .
2. Remove the sunload sensor.



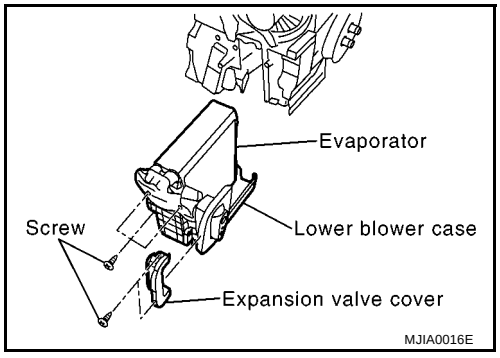
INTAKE SENSOR

PFP:27723

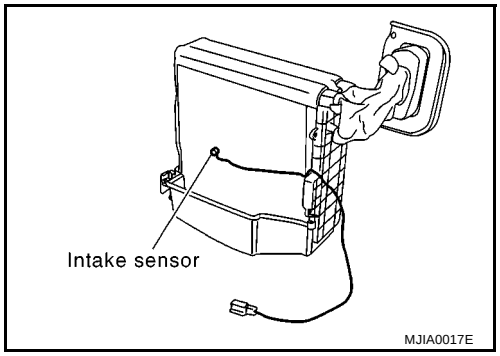
Removal

EJS004IO

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Remove the A/C unit. Refer to ATC-77, "A/C UNIT ASSEMBLY" .
3. Remove the air conditioner filter, mode door actuator, and foot duct (RH). Refer to ATC-83, "AIR CONDITIONER FILTER" , ATC-85, "MODE DOOR MOTOR" , ATC-91, "FOOT DUCT" .
4. Remove the lower blower case and expansion valve cover.



5. Slide the evaporator and door blower case downward, and remove the intake sensor.



Installation

EJS004IP

CAUTION:

- **Replace the low-pressure and high-pressure flexible hoses and high-pressure pipe O-rings with new ones. Apply compressor lubricant to them during installation.**
- **When replacing the intake air temperature sensor, install the intake sensor thermistor in the same position as the removed intake sensor.**
- **When removing and installing the intake sensor, do not rotate the thermistor insertion part.**
- **After charging with refrigerant, check for refrigerant leaks.**
- **After installing actuator, reset zero position by following Self-Diagnosis Step 3. Refer to ATC-40, "Self-Diagnosis Function" .**

Mounting bolts for the low-pressure flexible hoses and high-pressure pipes.

Tightening torque : 2.9 - 5.9 N·m (0.3 - 0.6kg-m, 26 - 52 in-lb)

A/C UNIT ASSEMBLY

PFP:27210

Removal and Installation

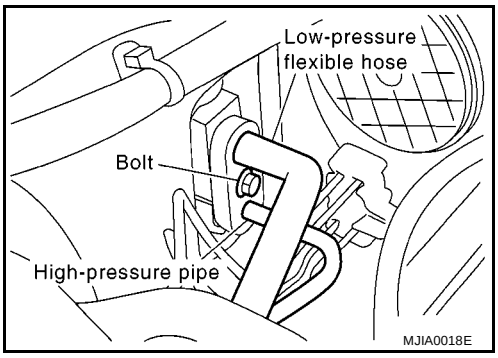
EJS004IQ

REMOVAL

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Drain engine coolant.
3. Disconnect the low-pressure flexible hose and high-pressure pipe from the evaporator.

CAUTION:

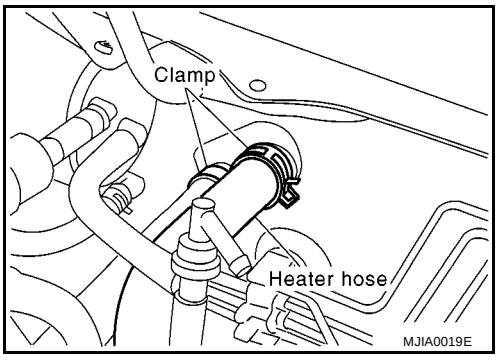
Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.



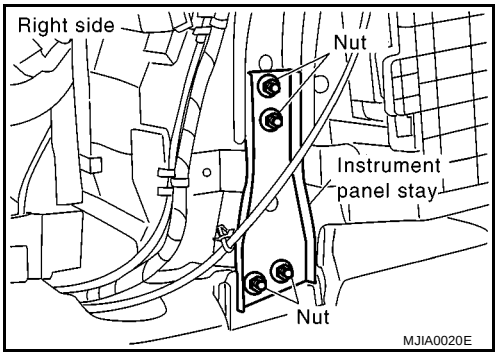
4. Pull out the heater hoses from the heater core.

CAUTION:

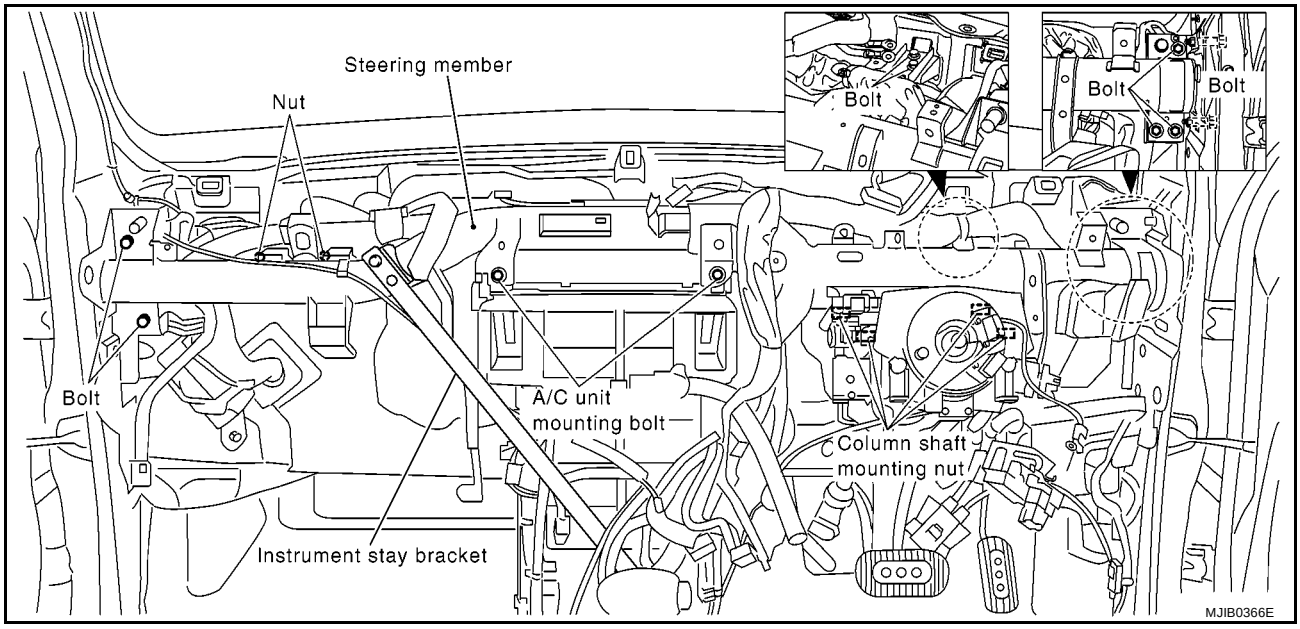
- **Some coolant may spill when heater hoses are disconnected.**
- **Close off the coolant inlet and outlet on the heater core (2 locations) with shop cloths.**



5. Remove instrument panel. Refer to IP-5, "Removal and Installation" .
6. Remove the vehicle harness clips and then remove the instrument panel stay.



NOTE:
This illustration is for RHD model. The layout for LHD model is symmetrically opposite.



7. Remove the ventilator duct mounting screws and clips.
8. Remove the two A/C unit mounting bolts, nine steering member mounting bolts, four column shaft mounting bolts, and the harness clips.
9. Remove the instrument stay bracket mounting bolts, and then remove the instrument stay bracket. (C+C models only)
10. Remove the BCM. Refer to BCS-3, "BCM (BODY CONTROL MODULE)" .
11. Remove the steering member, and then remove the A/C unit.

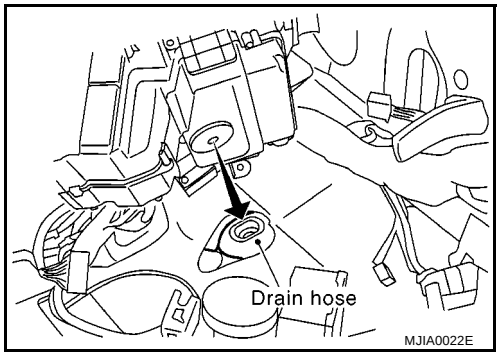
INSTALLATION

CAUTION:

- **Replace all O-rings on the pipes with new ones. Apply a coat of compressor lubricant prior to installation.**
- **After charging with refrigerant, check for refrigerant leaks.**

1. Install the A/C unit.

CAUTION:
Confirm that the A/C unit drain and drain hose positions match up.



A/C unit mounting bolt.
Tightening torque : 5.98 - 7.65 N·m (0.61 - 0.78 kg-m, 53 - 67 in-lb)

2. Perform removal steps 3 through 10 in reverse order.

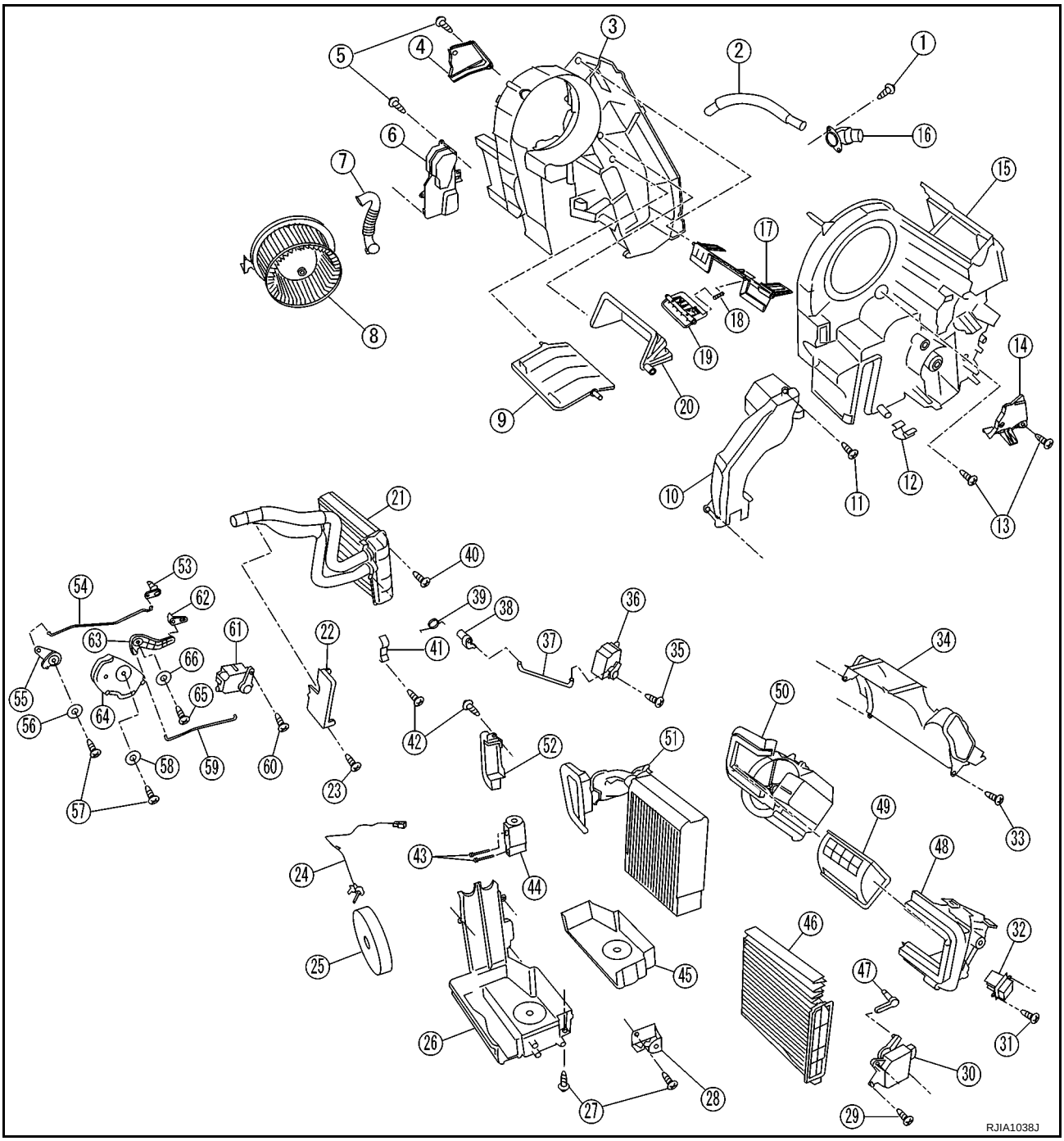
Steering member mounting nut and bolt
Tightening torque :11 - 13 N·m (1.1 - 1.4 kg-m, 8.2 - 9.5 ft-lb)

Mounting bolts for the low-pressure flexible hoses and high-pressure pipes.
Tightening torque : 2.9 - 5.9 N·m (0.3 - 0.6kg-m, 26 - 52 in-lb)

3. Fill engine coolant.
4. Charge refrigerant using refrigerant recovery unit (for HFC134a).

Disassembly and Assembly

EJS004IR



1. Screw
2. Aspirator duct
3. Blower case (RH)
4. Cover (RH)
5. Screw
6. Foot duct (RH)
7. Coolant hose
8. Blower motor
9. Air mix door
10. Foot duct (LH)
11. Screw
12. Clips
13. Screw
14. Cover (LH)
15. Blower case (LH)
16. Aspirator
17. Vent door
18. DEF rod
19. DEF door
20. Foot door
21. Heater core
22. Heater pipe cover
23. Screw
24. Intake sensor
25. Heater pipe packing
26. Lower blower case
27. Screw
28. Bracket
29. Screw
30. Intake door motor
31. Screw
32. Fan control amp.
33. Screw
34. Attachment case
35. Screw
36. Air mix door motor

37. Air mix door rod	38. Air mix door lever	39. Spring
40. Screw	41. Heater pipe clip	42. Screw
43. Bolt	44. Expansion valve	45. Insulator
46. Air conditioner filter	47. Intake link	48. Intake case (LH)
49. Intake door	50. Intake case (RH)	51. Evaporator
52. Expansion valve cover	53. Vent DEF lever	54. Vent DEF rod
55. Vent DEF link	56. Washer	57. Screw
58. Washer	59. Mode door rod	60. Screw
61. Mode door motor	62. Foot lever	63. Foot link
64. Main link	65. Screw	66. Washer

CAUTION:

After installing actuator, reset zero position by following Self-Diagnosis Step 3. Refer to ATC-40, "Self-Diagnosis Function" .

HEATER CORE

PFP:27140

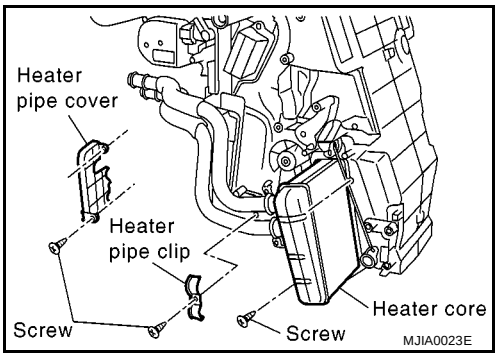
Removal and Installation

EJS004IS

REMOVAL

1. Remove the A/C unit. Refer to ATC-77, "A/C UNIT ASSEMBLY" .
2. Remove the foot duct (LH), two screws, and heater pipe cover.
3. Remove the mode door actuator, main link, and vent DEF link.

   CAUTION:
   After installing actuator, reset zero position by following Self-Diagnosis Step 3. Refer to ATC-40, "Self-Diagnosis Function" .
4. Remove the heater pipe clip, and then pull out heater core from the A/C unit.



INSTALLATION

Install in the reverse order of removal.

BLOWER MOTOR

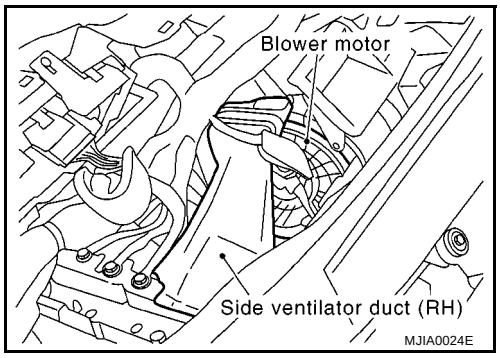
PFP:27226

Removal and Installation

EJS004IT

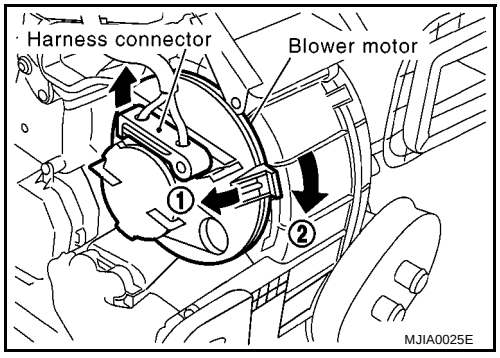
REMOVAL

1. Remove instrument panel. Refer to IP-5, "Removal and Installation" .
2. Remove the side ventilator duct (RH). Refer to ATC-90, "SIDE VENTILATOR DUCT" .



3. Disconnect the harness connector, and remove the blower motor.

CAUTION:
When the blower fan and blower motor are assembled, the balance is adjusted, so do not replace the individual parts.



INSTALLATION

Install in the reverse order of removal.

CAUTION:
Correctly install the blower motor flange holding hooks in the air conditioner unit.

AIR CONDITIONER FILTER

PFP:27277

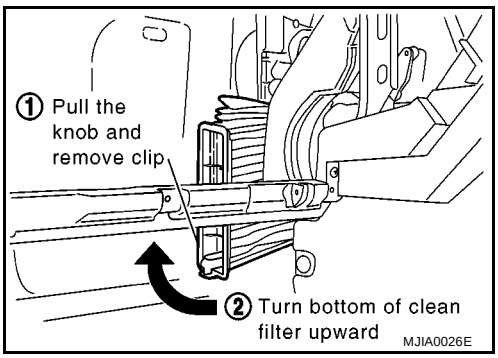
Removal, Replacement and Installation

EJS004IU

REMOVAL

NOTE:
Following illustration is for RHD model. The layout for LHD model is symmetrically opposite.

1. Remove the glove box cover assembly. Refer to IP-8, "P. Glove Box Cover Assembly" .
2. Compress the air conditioner filter downward while sliding it to the out side of the vehicle.
3. Turn the bottom of the air conditioner filter upward, and then remove it.

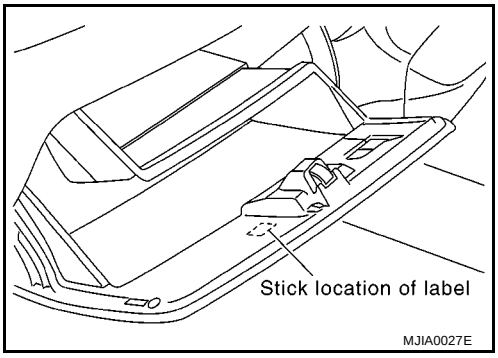


REPLACEMENT

NOTE:
Following illustration is for RHD model. The layout for LHD model is symmetrically opposite.

Air conditioner filter Replacement interval : Once a year or every 12,000 km

Fill in the necessary information on the label, and stick it on the inside of the glove box as shown in the figure.



INSTALLATION

Install in the reverse order of removal.

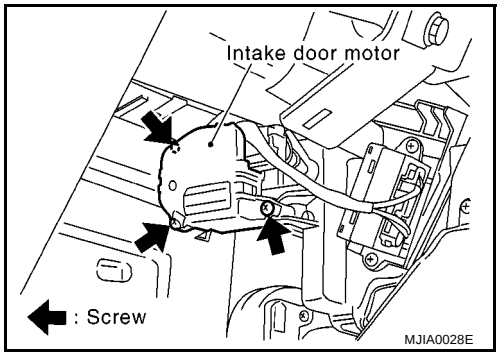
INTAKE DOOR MOTOR

PFP:27730

Removal and Installation

EJS004IV

1. Remove the glove box cover assembly. Refer to IP-8, "P. Glove Box Cover Assembly" .
2. Remove the three screws and then remove the intake door motor.



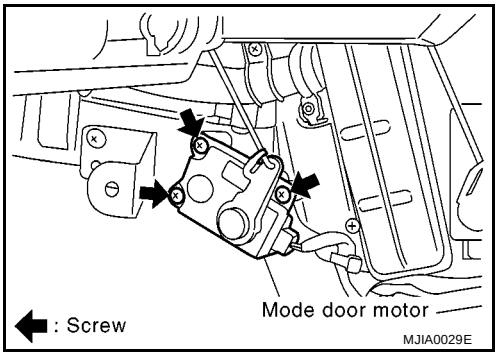
MODE DOOR MOTOR

PFP:27731

Removal and Installation

EJS004IW

1. Remove the instrument panel stay cover. Refer to IP-8, "N. Instrument Panel Stay Cover" .
2. Remove the three screws and then remove the mode door motor.



CAUTION:

After installing actuator, reset zero position by following Self-Diagnosis Step 3. Refer to ATC-40, "Self-Diagnosis Function" .

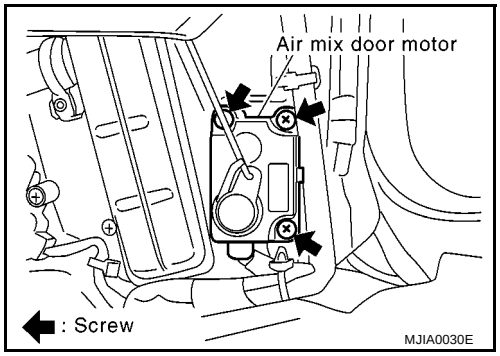
AIR MIX DOOR MOTOR

PFP:27732

Removal and Installation

EJS004IX

1. Remove the instrument panel stay cover. Refer to IP-8, "N. Instrument Panel Stay Cover" .
2. Remove the three screws and then remove the air mix door actuator.



CAUTION:

After installing actuator, reset zero position by following Self-Diagnosis Step 3. Refer to ATC-40, "Self-Diagnosis Function" .

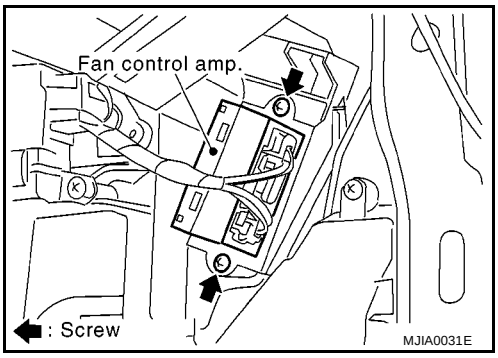
FAN CONTROL AMPLIFIER

PFP:27761

Removal and Installation

EJS004IY

1. Remove the glove box cover assembly. Refer to IP-8, "P. Glove Box Cover Assembly" .
2. Remove the two screws and then remove the fan control amp.



DUCTS AND GRILLES

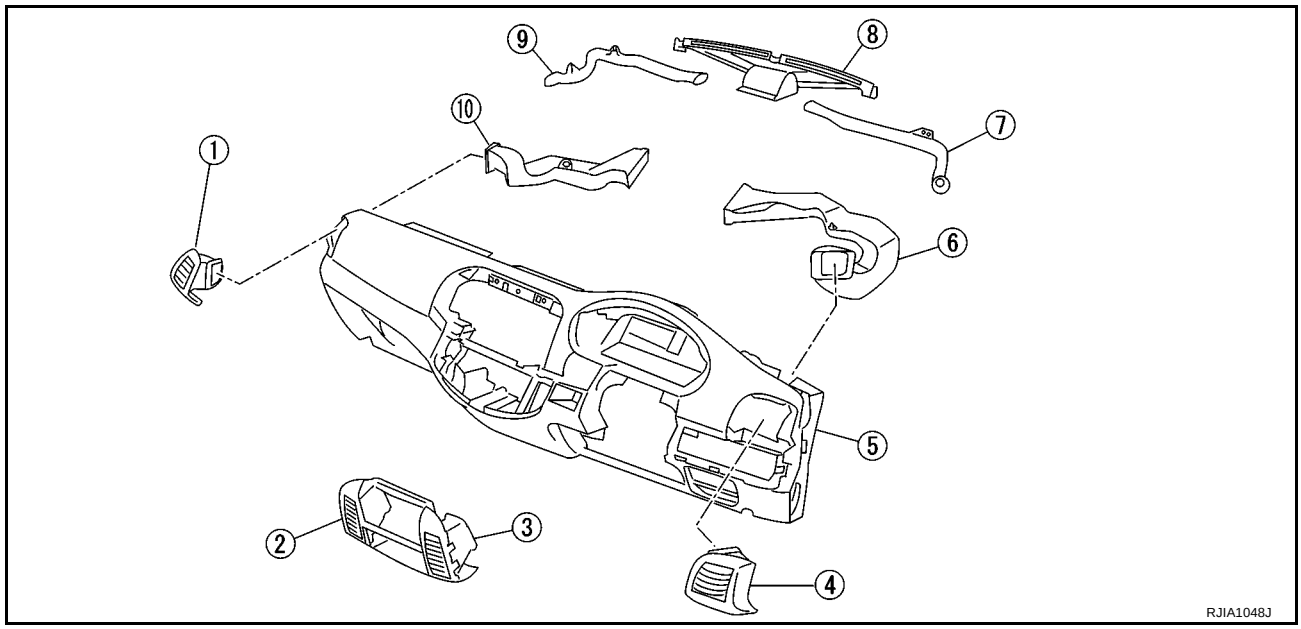
PFP:27860

Removal and Installation

EJS004IZ

COMPONENT PARTS LOCATION

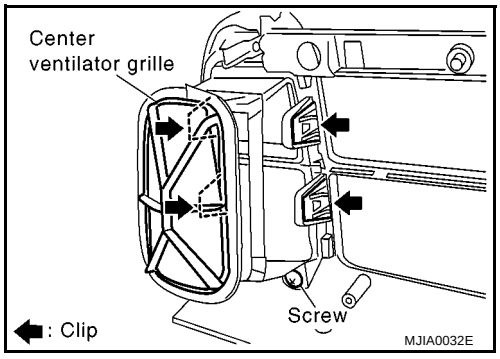
NOTE:
Following illustration is for RHD model. The layout for LHD model is symmetrically opposite.



1. Side ventilator grille (passenger side)
2. Central ventilator grille (passenger side)
3. Central ventilator grille (driver side)
4. Side ventilator grille (driver side)
5. Instrument panel
6. Side ventilator duct (driver side)
7. Side defroster duct (driver side)
8. Defroster nozzle
9. Side defroster duct (passenger side)
10. Side ventilator duct (passenger side)

CENTRAL VENTILATOR GRILLE

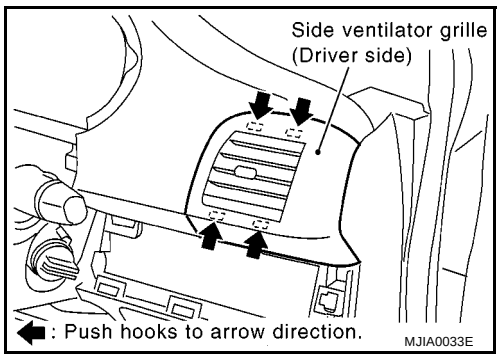
1. Remove cluster lid C. Refer to IP-7, "L. Cluster Lid C" .
2. Remove the audio. Refer to AV-15, "Removal and Installation of Audio Unit" .
3. Remove the center ventilator grille.



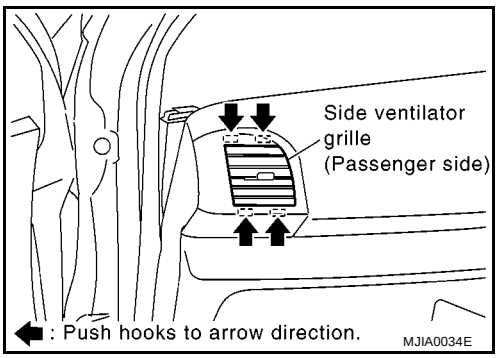
SIDE VENTILATOR GRILLE

NOTE:
Following illustration is for RHD model. The layout for LHD model is symmetrically opposite.

1. Remove the upper instrument panel. Refer to IP-6, "C. Upper Instrument Panel" .
2. Remove the switch panel finisher. Refer to IP-6, "F. Switch Panel Finisher" .
3. Remove the side ventilator grille (driver side) hooks from the back side of the instrument panel, and then remove the side ventilator grille (driver side).
4. Remove the glove box cover assembly. Refer to IP-8, "P. Glove Box Cover Assembly" .



5. Remove the side ventilator grille (passenger side) hooks from the back side of the instrument panel, and then remove the side ventilator grille (passenger side).

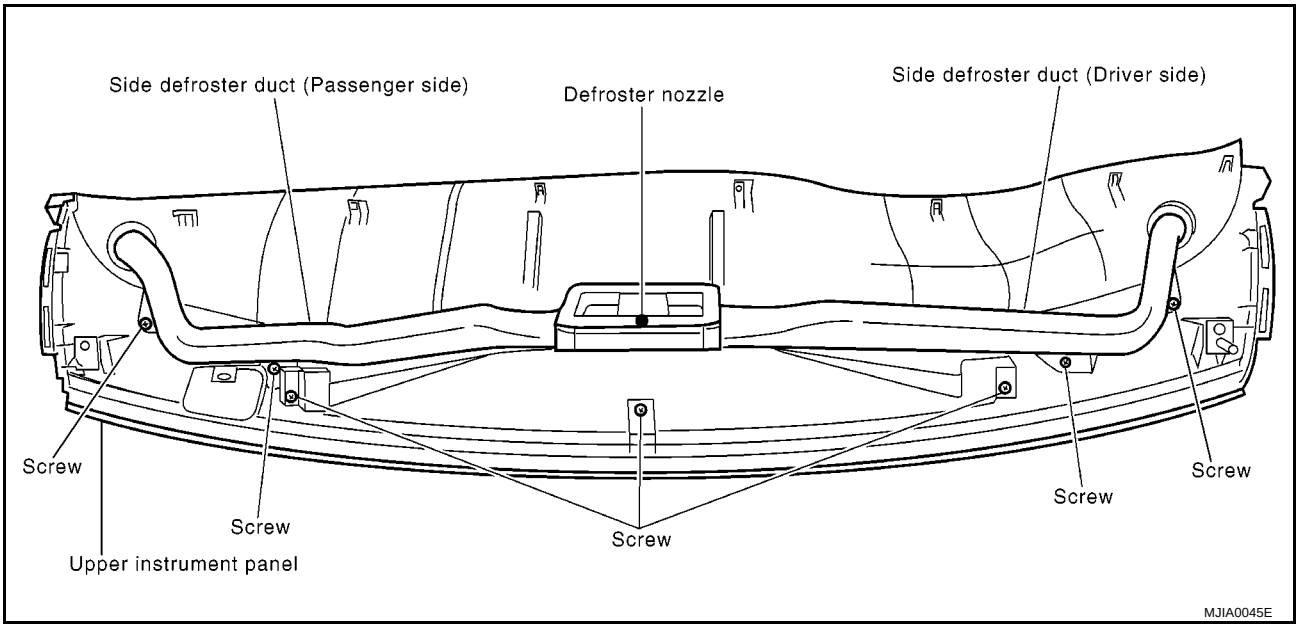


DEFROSTER NOZZLE AND DUCT

NOTE:

Following illustration is for RHD model. The layout for LHD model is symmetrically opposite.

1. Remove the upper instrument panel. Refer to IP-6, "C. Upper Instrument Panel" .



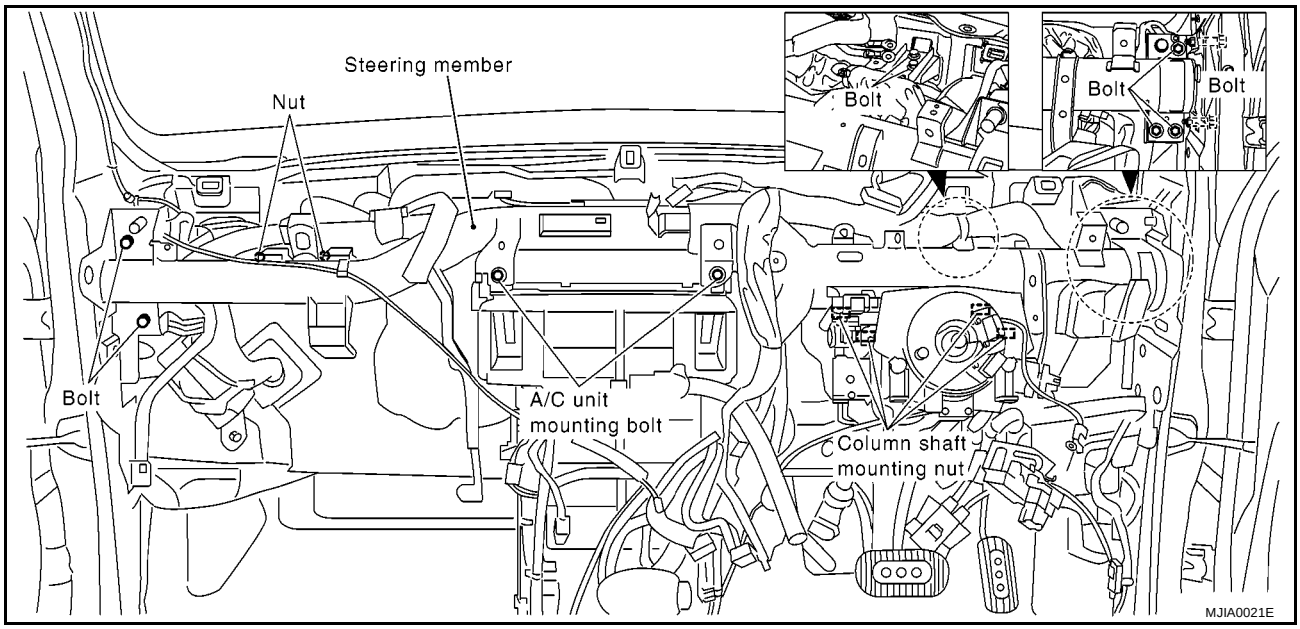
2. Remove the side defroster ducts and defroster nozzles from the upper instrument panel.

SIDE VENTILATOR DUCT

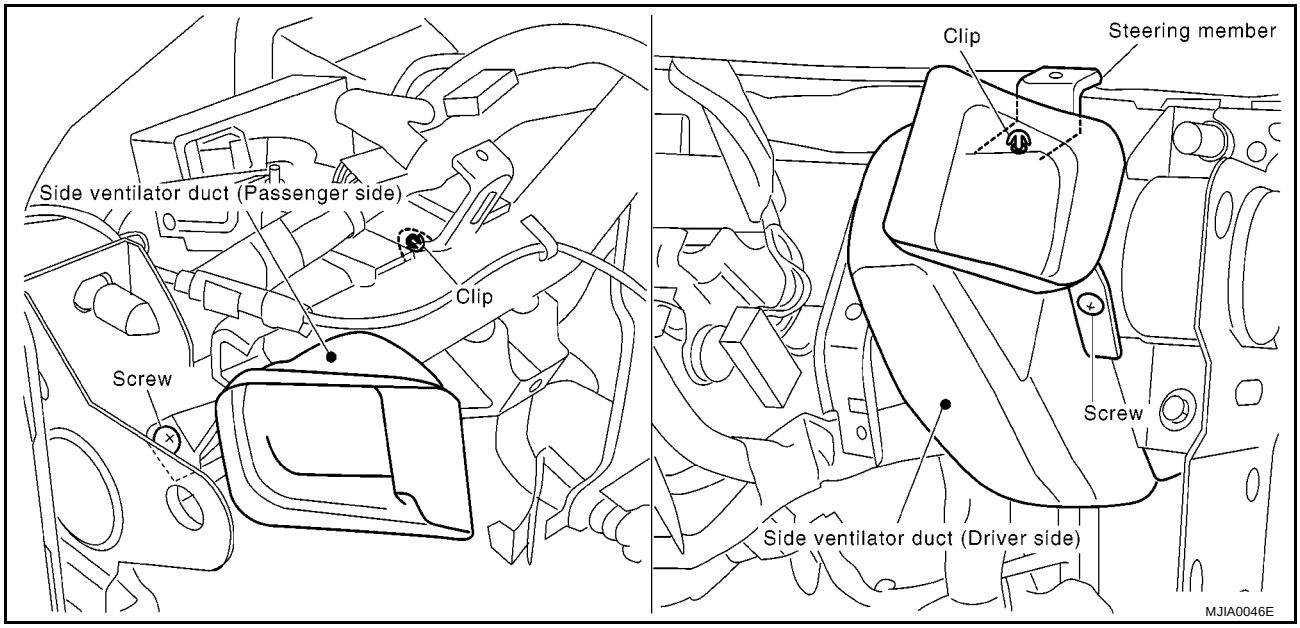
NOTE:

Following illustration is for RHD model. The layout for LHD model is symmetrically opposite.

1. Remove the glove box cover assembly. Refer to IP-8, "P. Glove Box Cover Assembly" .
2. Remove the side ventilator duct (passenger side).
3. Remove instrument panel. Refer to IP-5, "Removal and Installation" .
4. Remove the BCM. Refer to BCS-3, "BCM (BODY CONTROL MODULE)" .
5. Remove the two A/C unit mounting bolts, nine steering member mounting bolts, four column shaft mounting bolts, and the harness clips.



6. Remove the steering member, and then remove the side ventilator duct (driver side).

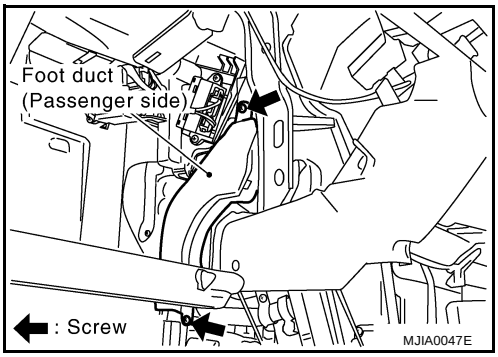


Steering member mounting nut and bolt

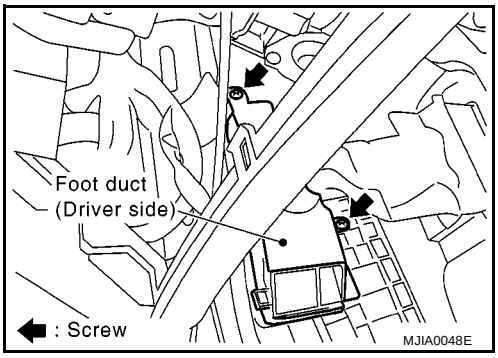
Tightening torque :11 - 13 N·m (1.1 - 1.4 kg-m, 8.2 - 9.5 ft-lb)

FOOT DUCT

1. Remove the glove box cover assembly. Refer to IP-8, "P. Glove Box Cover Assembly" .
2. Remove the two screws and then remove the foot duct (passenger side).



3. Remove the instrument under tray. Refer to IP-6, "E. Instrument Panel Under Tray" .
4. Remove the two screws and intake sensor connector, and then remove the foot duct (driver side).



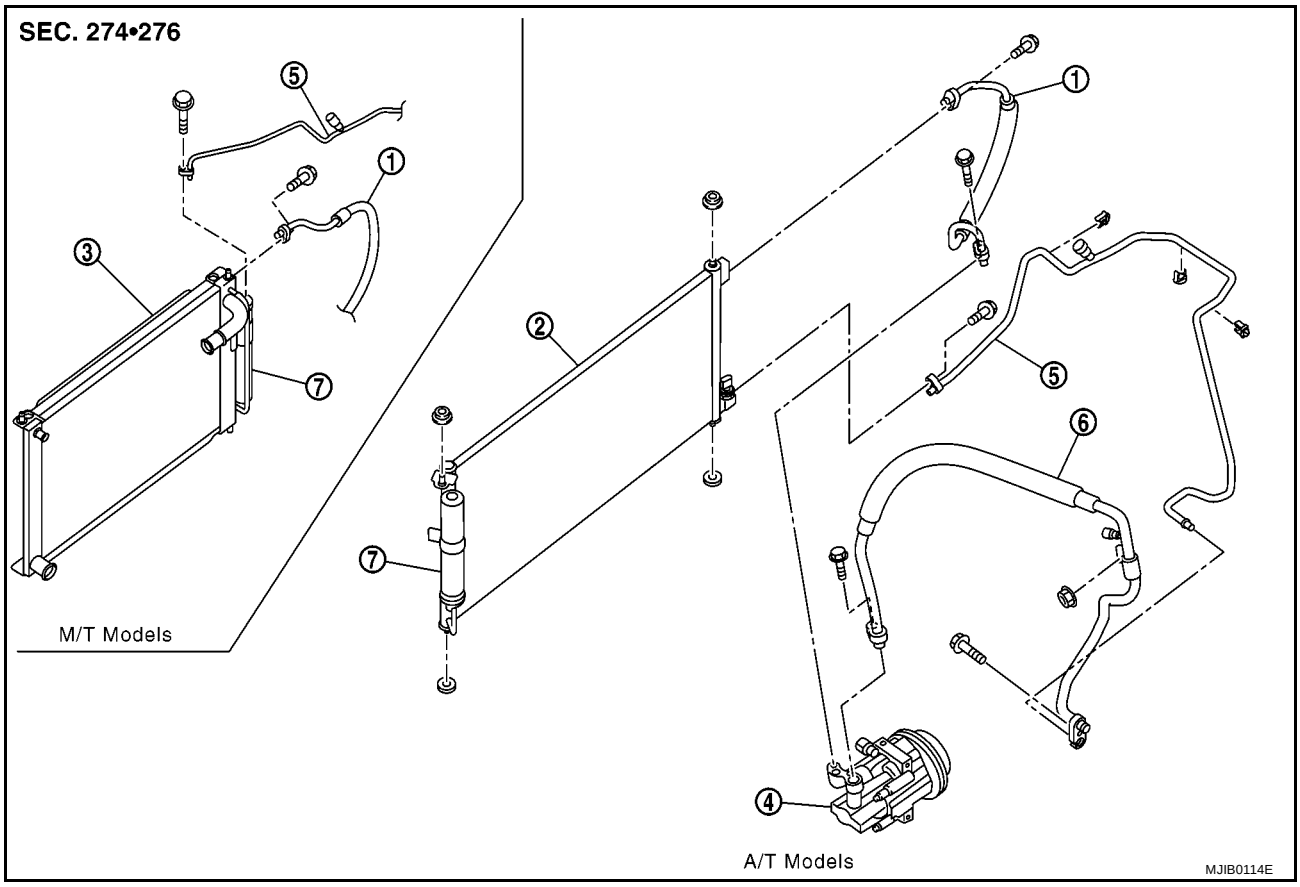
REFRIGERANT LINES

PFP:92600

Component Parts Location

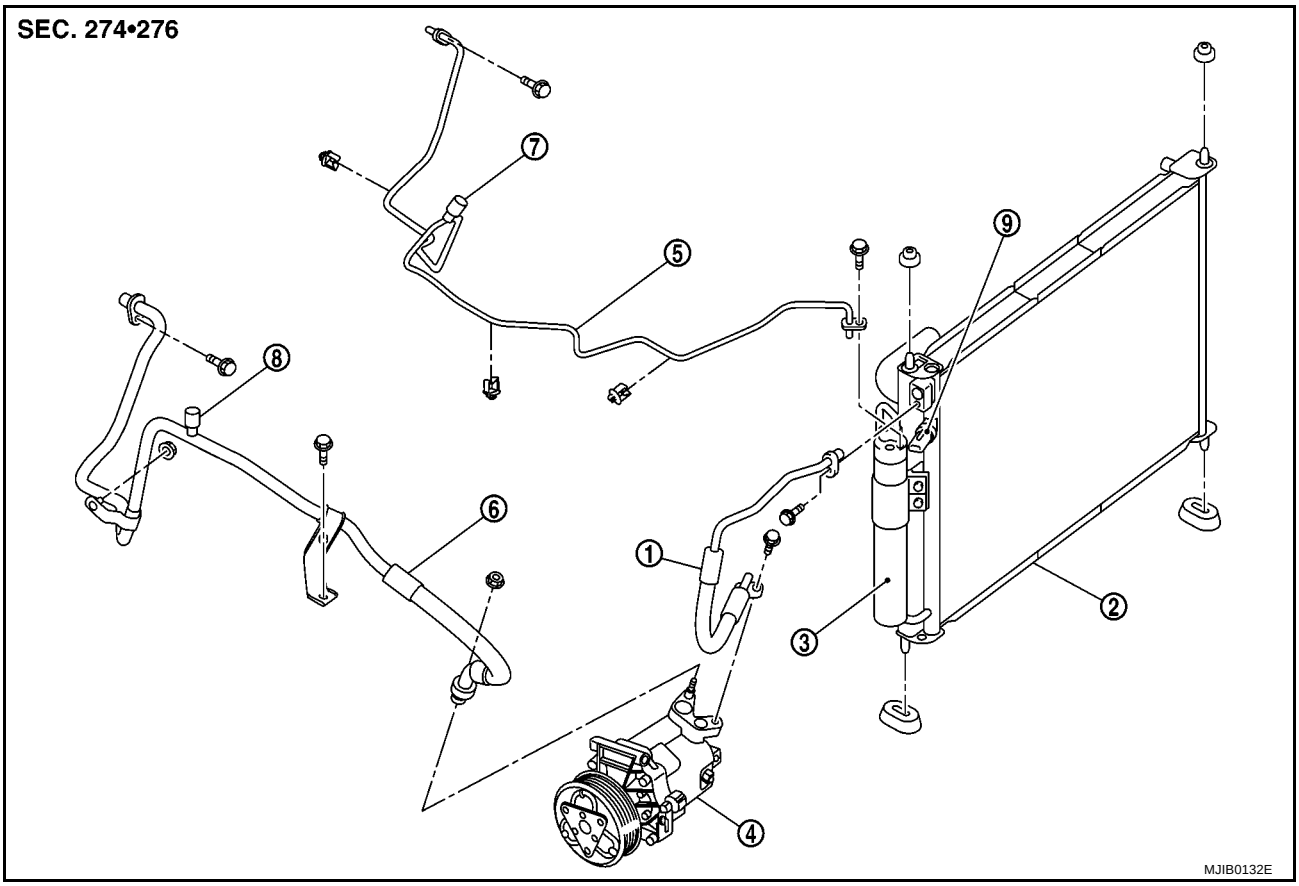
EJS004J0

CR ENGINE MODELS



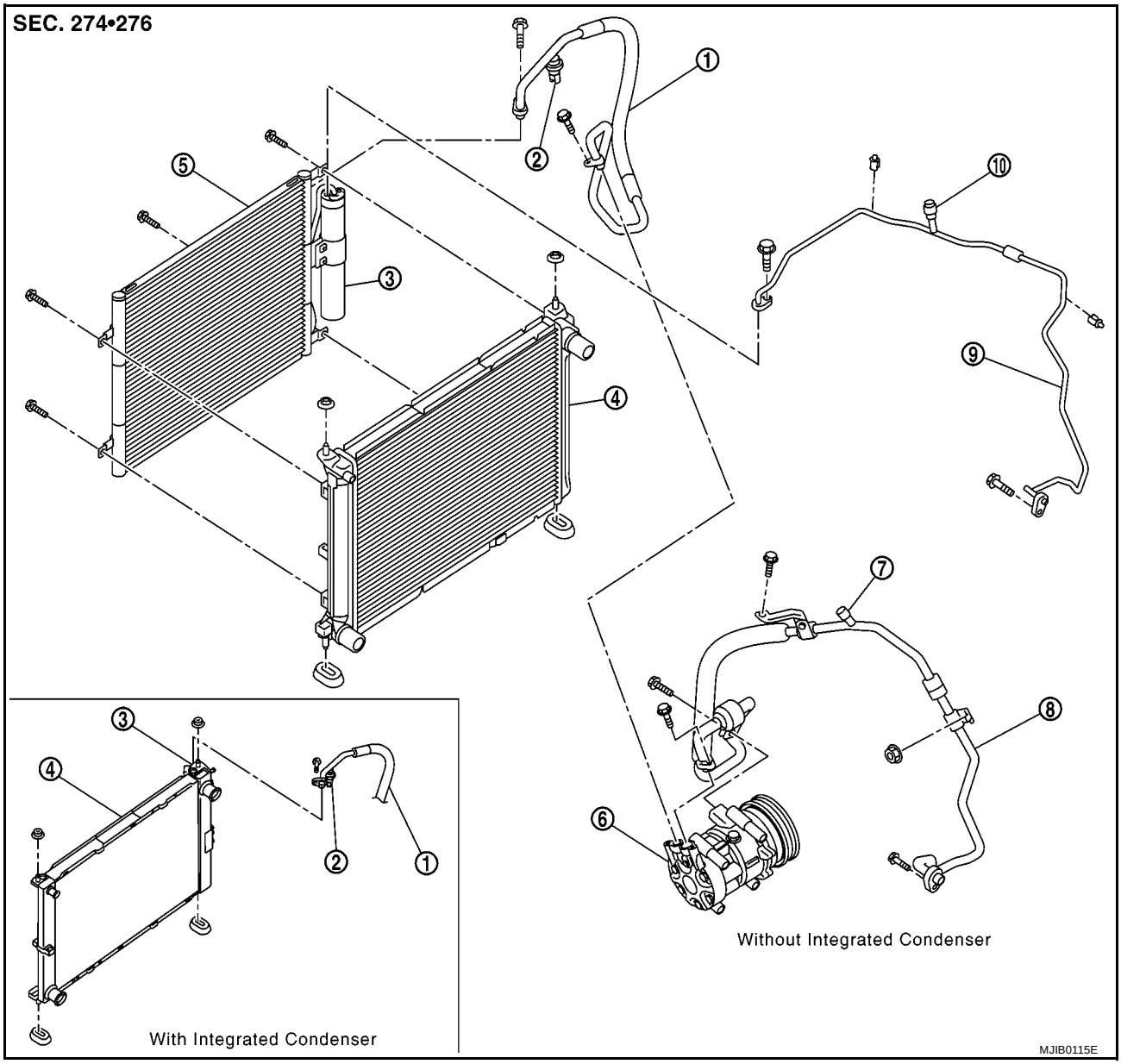
1. High-pressure flexible hose
2. Condenser
3. condenser (Radiator)
4. Compressor
5. High-pressure pipe
6. Low-pressure flexible hose
7. Liquid tank

HR ENGINE MODELS



1. High-pressure flexible hose
2. Radiator (Condenser)
3. Liquid tank
4. Compressor
5. High-pressure pipe
6. Low-pressure flexible hose
7. Service valve (High pressure)
8. Service valve (Low pressure)
9. Refrigerant pressure sensor

K9K ENGINE MODELS



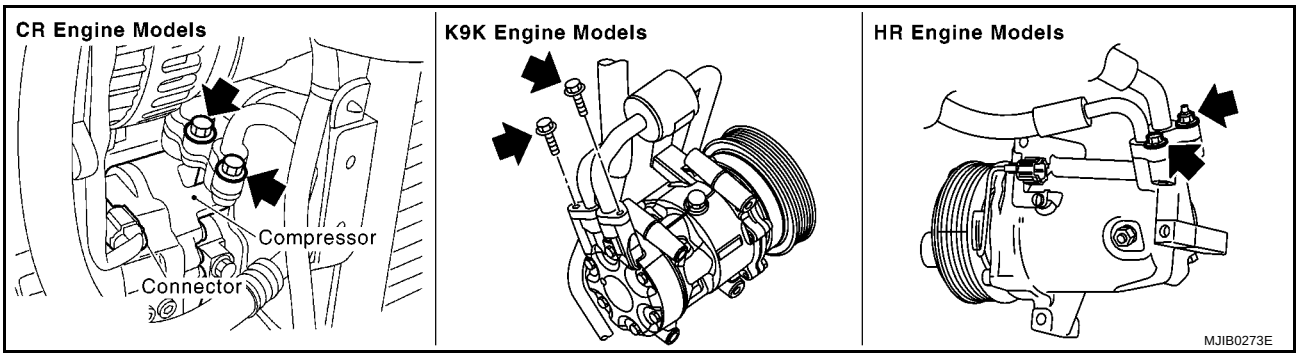
1. High-pressure flexible hose
2. Refrigerant pressure sensor
3. Liquid tank
4. Radiator (Condenser)
5. Condenser
6. Compressor
7. Service valve (Low pressure)
8. Low-pressure flexible hose
9. High-pressure pipe
10. Service valve (High pressure)

Removal and Installation for Compressor

EJS004J1

REMOVAL

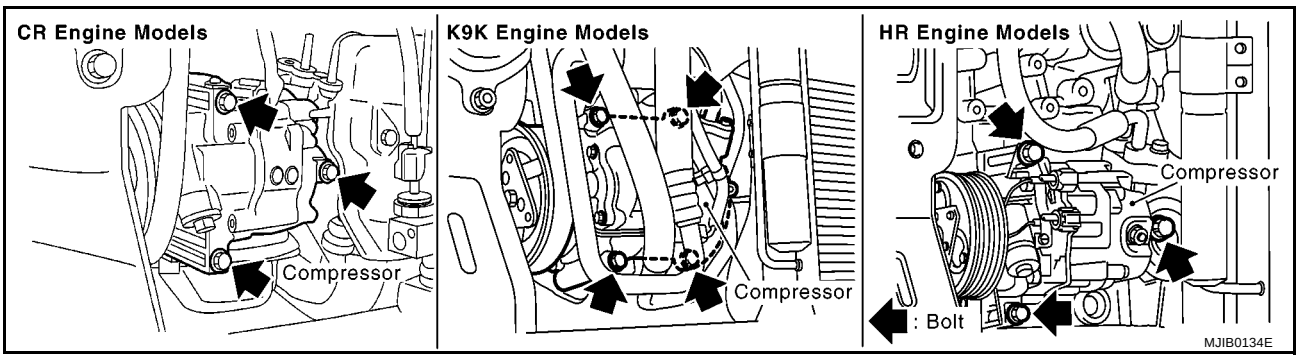
1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Remove air duct (fresh air intake side). Refer to EM-18, "AIR CLEANER AND AIR DUCT" .
3. Disconnect compressor connector.
4. Remove the high-pressure and low-pressure flexible hose mounting bolts or nut, and then disconnect the high-pressure and low-pressure flexible hose from the compressor.



CAUTION:

- **Cover the compressor high and low-pressure ports with caps to keep the lubricant from spilling.**
- **Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.**

5. Remove the air conditioner compressor belt and alternator belt. Refer to EM-14, "DRIVE BELTS" .



6. Remove compressor mounting bolts.
7. Remove the compressor from under the vehicle.

INSTALLATION

CAUTION:

- **Replace O-rings on high-pressure and low-pressure flexible hoses with new ones. Apply compressor oil when installing new O-rings.**
- **After installing the air conditioner compressor and alternator belt, adjust the belt tension. Refer to EM-14, "DRIVE BELTS" .**
- **When charging refrigerant, check for refrigerant leaks.**

Compressor mounting bolt

Tightening torque : 16.6 - 23.5 N·m (1.7 - 2.3 kg-m, 13 - 17 ft-lb)

High-pressure flexible hose mounting bolt

Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 69 - 173 in-lb)

Low-pressure flexible hose mounting bolt

Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 69 - 173 in-lb)

Removal and Installation for Pipe and Hose

EJS0057P

REMOVAL

1. Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] to discharge refrigerant.
2. Remove the low-pressure flexible hose bracket mounting bolt and nut.
3. Remove the high-pressure pipe and low-pressure flexible hose mounting bolts (air conditioner unit side).

   CAUTION:
   Seal the connecting points of the pipe and hose with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.
4. Remove the low-pressure flexible hose mounting bolt (compressor side) and then remove the low-pressure flexible hose.

   CAUTION:
   Seal the connecting points of the hose with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.
5. Remove the front bumper and air guide (RH). Refer to EI-5, "FRONT BUMPER" .
6. Remove the high-pressure pipe mounting bolt (liquid tank side) and then remove the high-pressure pipe.

   CAUTION:
   Seal the connecting points of the pipe with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.
7. Remove the high-pressure flexible hose mounting bolts and then remove the high-pressure flexible hose.

   CAUTION:
   Seal the connecting points of the hoses with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.

INSTALLATION

CAUTION:

- **Replace the O-rings on the high-pressure pipe, low-pressure flexible hose, and high-pressure flexible hose with new ones, and apply compressor lubricant to O-rings before installing.**
- **When charging refrigerant, check for refrigerant leaks.**

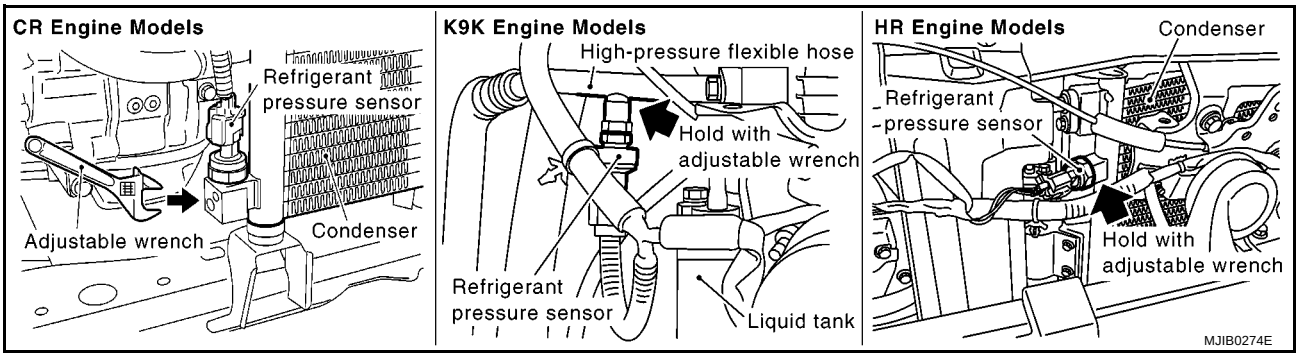
High-pressure pipe mounting bolt
Tightening torque : 2.9 - 5.9 N·m (0.3 - 0.6 kg-m, 26 - 52 in-lb)
Low-pressure flexible hose and high-pressure pipe mounting bolts (evaporator side)
Tightening torque : 2.9 - 5.9 N·m (0.3 - 0.6 kg-m, 26 - 52 in-lb)
Low-pressure flexible hose mounting bolt (compressor side)
Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 69 - 173 in-lb)
Low-pressure flexible hose bracket mounting bolt/nut
Tightening torque : 3.82 - 4.51 N·m (0.39 - 0.46 kg-m, 34 - 39 in-lb)
High-pressure flexible hose mounting bolt
Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 69 - 173 in-lb)

Removal and Installation for Refrigerant Pressure Sensor

EJS004J5

REMOVAL AND INSTALLATION

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Remove the front bumper and air guide (RH). Refer to EI-5, "FRONT BUMPER" and BL-13, "RADIATOR CORE SUPPORT" .
3. Use a adjustable wrench or other tool to hold the refrigerant pressure sensor mounting block, and then remove the refrigerant pressure sensor from the condenser (CR and HR engine models) or the high-pressure flexible hose (K9K engine models).



CAUTION:

- **Be careful when working so as not to damage the condenser core.**
- **When installing refrigerant pressure sensor, apply compressor lubricant to the O-rings.**

Refrigerant pressure sensor

Tightening torque : 9.8 - 11.7 N·m (1.0 - 1.1 kg-m, 87 - 103 in-lb)

Removal and Installation for Condenser (Models without Integrated Condenser)

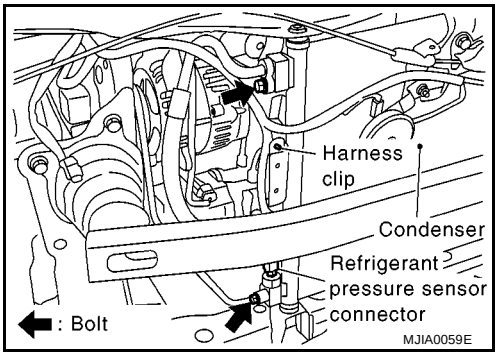
EJS004J6

REMOVAL

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Remove the front bumper and air guide (RH). Refer to EI-5, "FRONT BUMPER" and BL-13, "RADIATOR CORE SUPPORT" .
3. Disconnect the high-pressure flexible hose and high-pressure pipe from the condenser.

   CAUTION:

   Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.
4. Disconnect the refrigerant pressure sensor connector, and then remove the harness clip (CR engine models).



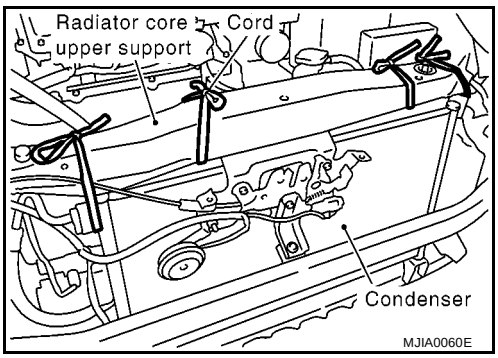
5. Use cord, etc., to hold the condenser and radiator to each radiator core support upper.

   NOTE:

   To prevent the condenser and radiator from being dropped when the radiator core lower support is removed.
6. Remove the mounting bolts, and then remove the radiator core lower support.
7. Remove the condenser from underneath the vehicle.

   CAUTION:

   Do not damage the condenser core.



INSTALLATION

CAUTION:

- **Replace O-rings on the high-pressure pipe and high-pressure flexible hose with new ones. Apply compressor lubricant to O-rings when installing them.**
- **When charging refrigerant, check for refrigerant leaks.**

High-pressure flexible hose bolt

Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 69 - 173 in-lb)

High-pressure pipe mounting bolt

Tightening torque : 2.9 - 5.9 N·m (0.3 - 0.6 kg-m, 26 - 52 in-lb)

Radiator core lower support mounting bolts.

Tightening torque : 43.4 - 58.7 N·m (4.5 - 5.9 kg-m, 32 - 43 ft-lb)

Removal and Installation for Condenser (Models with Integrated Condenser)

EJS0057Q

REMOVAL

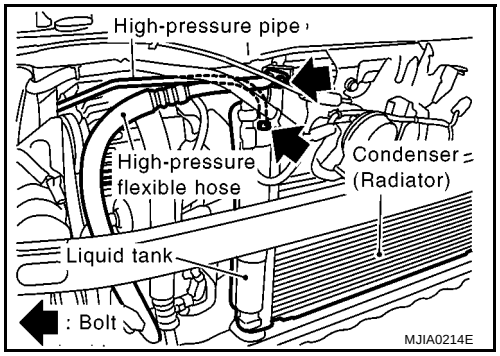
1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Remove the front bumper and air guide (RH). Refer to EI-5, "FRONT BUMPER" .
3. Disconnect the high-pressure flexible hose from the condenser. Disconnect the high-pressure pipe from the liquid tank.

   CAUTION:

   Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.
4. Remove the radiator assembly. Refer to CO-64, "RADIATOR" .

   CAUTION:

   Do not damage the radiator and condenser core.



INSTALLATION

CAUTION:

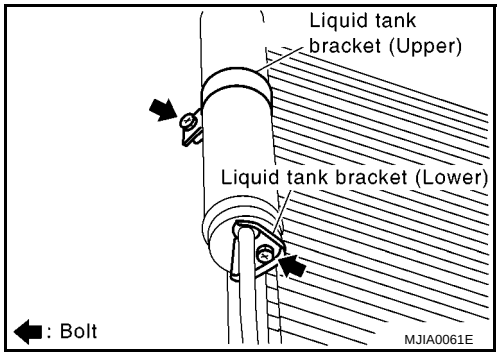
- **Replace O-rings on the high-pressure pipe and high-pressure flexible hose with new ones. Apply compressor lubricant to O-rings when installing them.**
- **When charging refrigerant, check for refrigerant leaks.**

Removal and Installation for Liquid Tank (CR Engine with A/T Models)

EJS004J7

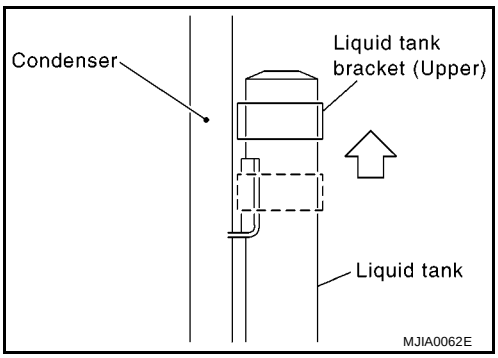
REMOVAL

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Remove condenser. Refer to ATC-97, "Removal and Installation for Condenser (Models without Integrated Condenser)" .
3. Clean around the liquid tank to remove foreign material and corrosion.
4. Remove the liquid tank bracket (upper/lower) mounting bolts.



5. Lift up the liquid tank bracket, and remove it from the condenser protruding area.
6. Lift up the liquid tank and remove it.

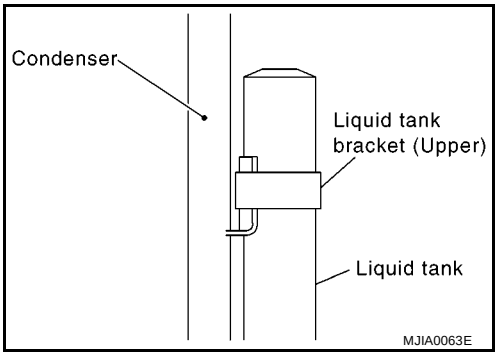
CAUTION:
Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.



INSTALLATION

Install the liquid tank, and then install liquid tank bracket to the condenser.

CAUTION:
- **Make sure the liquid tank bracket is correctly inserted into the condenser's protruding area (the liquid tank bracket does not move below the center of the liquid tank).**
- **Replace the condenser pipe O-rings with new ones. Apply a coat of compressor lubricant to the O-rings prior to installation.**



Liquid tank bracket (upper) mounting bolt
Tightening torque : 2.94 - 3.82 N·m (0.29 - 0.38 kg-m, 26 - 33 in-lb)
Liquid tank bracket (lower) mounting bolt
Tightening torque : 5.0 - 6.47 N·m (0.51 - 0.65 kg-m, 45 - 57 in-lb)

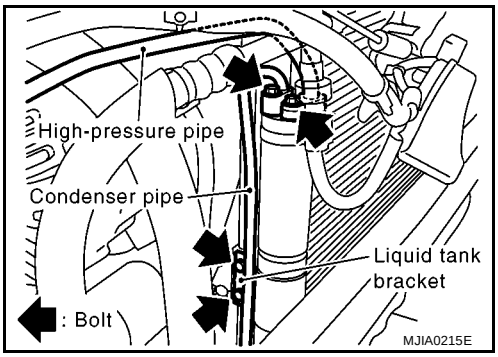
Removal and Installation for Liquid Tank (Except CR Engine with A/T Models)

EJS0057R

REMOVAL

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Clean around the liquid tank to remove foreign material and corrosion.
3. Remove the high-pressure pipe from the liquid tank.
4. Remove the condenser pipe mounting bolt from the liquid tank, and remove pipe from the condenser protruding area.
5. Remove the liquid tank bracket bolts and then remove the liquid tank.

CAUTION:
Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.



INSTALLATION

Install the liquid tank, and then install liquid tank bracket to the condenser.

CAUTION:
Replace the condenser pipe O-rings with new ones. Apply a coat of compressor lubricant to the O-rings prior to installation.

Removal and Installation for Evaporator

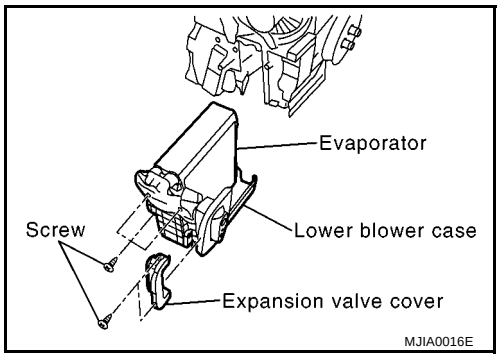
EJS004J8

REMOVAL

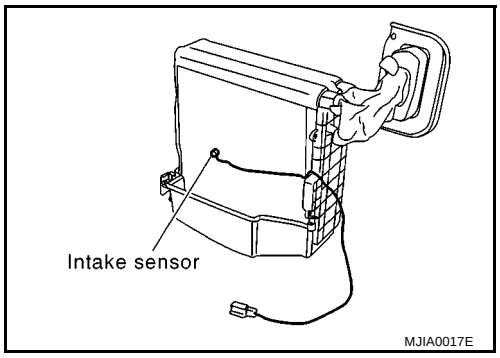
1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Remove the A/C unit. Refer to ATC-77, "A/C UNIT ASSEMBLY" .

CAUTION:
Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.

3. Remove the air conditioner filter, mode door motor, and foot duct (RH). Refer to ATC-83, "AIR CONDITIONER FILTER" , ATC-85, "MODE DOOR MOTOR" and ATC-91, "FOOT DUCT" .
4. Remove the lower blower case and expansion valve cover.



5. Slide the evaporator and lower blower case downward, and remove the intake sensor.
6. Remove the evaporator from the lower blower case.



INSTALLATION

CAUTION:

- **Replace low-pressure flexible hose and high-pressure pipe O-rings with new ones. Apply a coat of compressor lubricant prior to installation.**
- **When installing a new evaporator, install the thermistor of intake air temperature in the same position as the removed intake sensor.**
- **When removing and installing the intake sensor, do not rotate the thermistor insertion part.**

Mounting bolts for the low-pressure flexible hoses and high-pressure pipes.
Tightening torque : 2.9 - 5.9 N·m (0.3 - 0.6 kg-m, 26 - 52 in-lb)

Removal and Installation for Expansion Valve

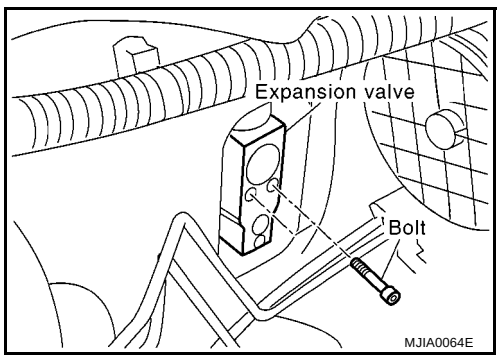
EJS004J9

REMOVAL

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Disconnect the low-pressure flexible hose and high-pressure pipe from the evaporator.

CAUTION:
Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.

3. Remove the two bolts from the expansion valve, and then remove the expansion valve.



INSTALLATION

CAUTION:
Replace the removed O-rings with new ones. Apply a coat of compressor lubricant to the O-rings prior to installation.

Expansion valve mounting bolts
Tightening torque : 2.9 - 5.0 N·m (0.29 - 0.51 kg-m, 26 - 44 in-lb)
Mounting bolts for the low-pressure flexible hoses and high-pressure pipes.
Tightening torque : 2.9 - 5.9 N·m (0.29 - 0.60 kg-m, 26 - 52 in-lb)

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Compressor

EJS006G4

Model		CR engine models	HR engine models	K9K engine models
		ZEXEL VALEO CLIMATE CONTROL make KC59G	CR-10	SANDEN make SD6V12
Type		Vane rotary		Variable volume piston
Displacement cm^3 (cu in)/rev	Max.	80 (4.88) Theoretical displacement	96 (5.86) Theoretical displacement	125.1 (7.63)
	Min.			6.2 (0.38)
Cylinder bore × stroke mm (in)		5 vanes, $\phi 51.0 \times 7.28$	5 vanes, $\phi 50.2 \times 8.5$	—
Direction of rotation		Clockwise (viewed from drive end)		
Drive belt		Poly V (4grooves)	V-Ribbed (7 grooves)	Poly V (6 grooves)

Lubricant

EJS006G5

Model		CR engine models	HR engine models	K9K engine models
		ZEXEL VALEO CLIMATE CONTROL make KC59G	CR-10	SANDEN make SD6V12
Name		Nissan A/C System Oil Type R		SP-10
Part number		KLH00-PAGR0		—
Capacity m ℓ (Imp fl oz)	Total in system	80 (2.8)	120 (4.2)	135 (4.8)
	Compressor (Service part) charging amount	80 (2.8)	120 (4.2)	135 (4.8)

Refrigerant

EJS006G6

Model	CR engine models	HR engine models	K9K engine models
	ZEXEL VALEO CLIMATE CONTROL make KC59G	CR-10	SANDEN make SD6V12
Type	HFC-134a (R-134a)		
Capacity kg (lb)	A/T 0.45 ± 0.05 (0.99 ± 0.11) M/T 0.50 ± 0.05 (1.10 ± 0.11)	0.45 ± 0.05 (0.99 ± 0.11)	0.55 ± 0.05 (1.21 ± 0.11)

Engine idling speed

EJS006G7

Refer to EC-450, "SERVICE DATA AND SPECIFICATIONS (SDS)" . CR (with EURO–OBD).
Refer to EC-802, "SERVICE DATA AND SPECIFICATIONS (SDS)" . CR (without EURO–OBD).
Refer to EC-1239, "SERVICE DATA AND SPECIFICATIONS (SDS)" . HR (with EURO–OBD).
Refer to EC-1601, "SERVICE DATA AND SPECIFICATIONS (SDS)" . HR (without EURO–OBD).
Refer to EC-K9K-53, “Idle speed adjustment”, “DIESEL INJECTION” (K9K engine models).

Belt tension

EJS006G8

Refer to MA-38, "Tension Adjustment" . (CR engine models).
Refer to MA-49, "Tension Adjustment" . (HR engine models).
Refer to MA-60, "TENTION ADJUSTMENT" . (K9K engine models).