SECTION MTC

MANUAL AIR CONDITIONER

CONTENTS

PRECAUTIONS

PFP:00001

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

EJS004G7

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)

EJS002FU

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

EJS002FV

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

EJS002FW

- 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

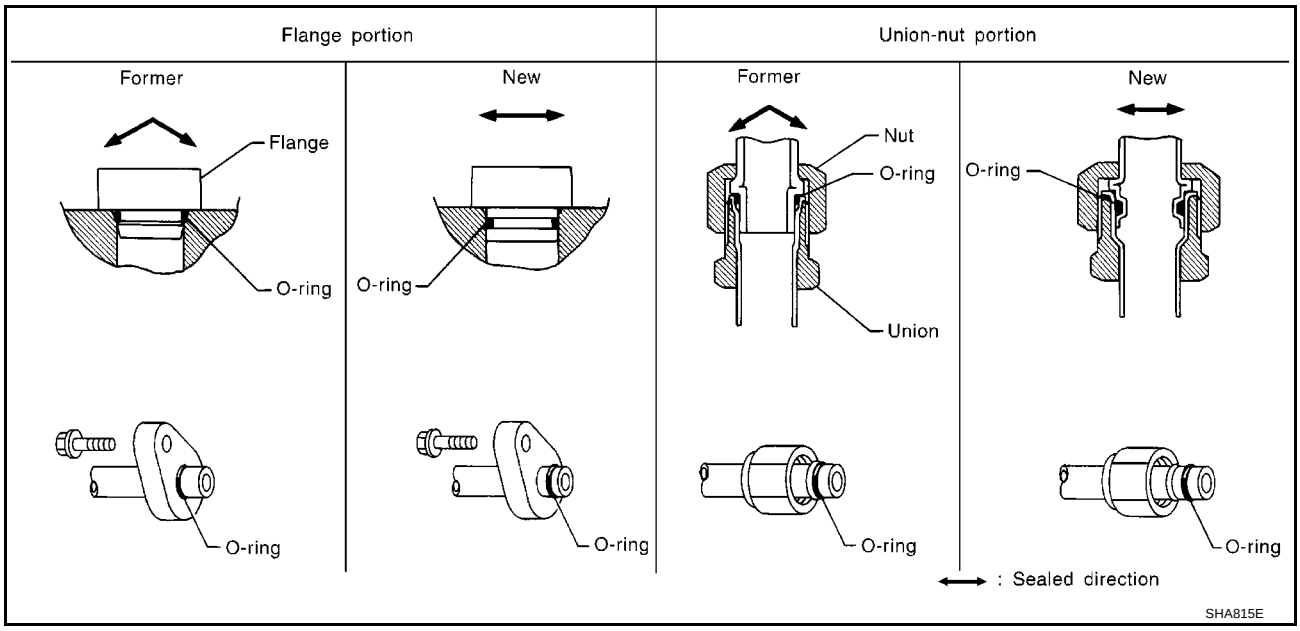
EJS002FX

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 (All 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.

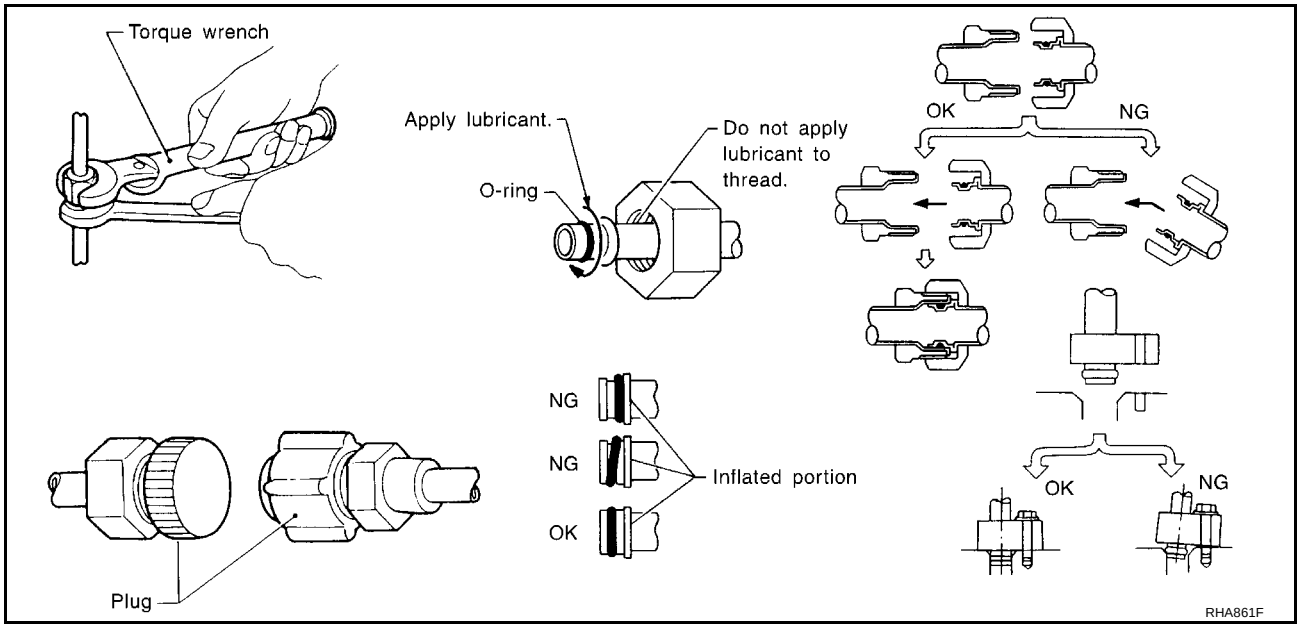
CAUTION:

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

EJS002FY

- **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 MTC-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

EJS002FZ

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

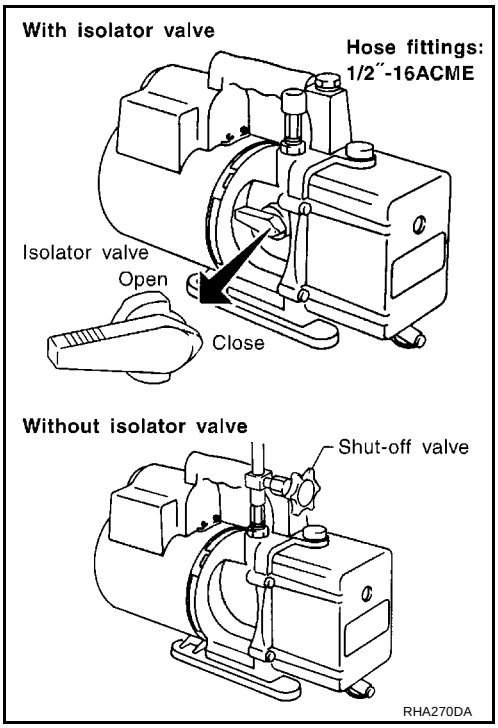
Be certain to follow the manufacturer's instructions for tester operation and tester maintenance.

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.

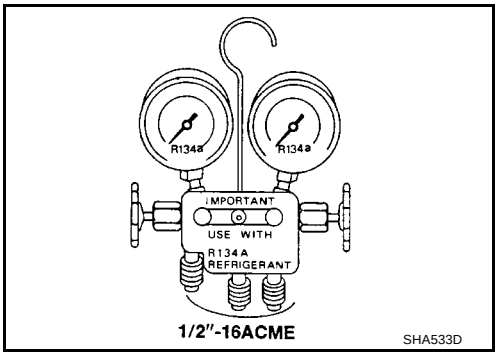
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has 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.



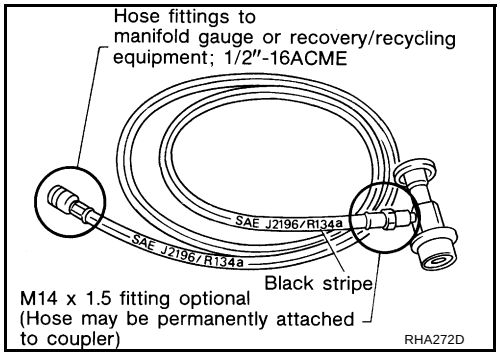
MANIFOLD GAUGE SET

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

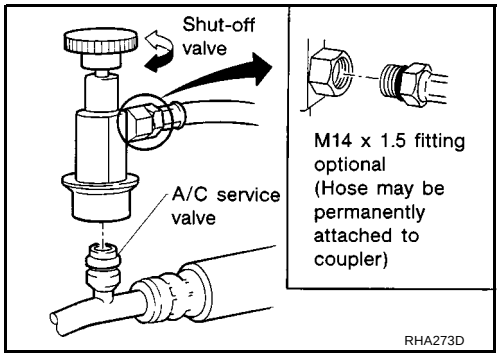
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

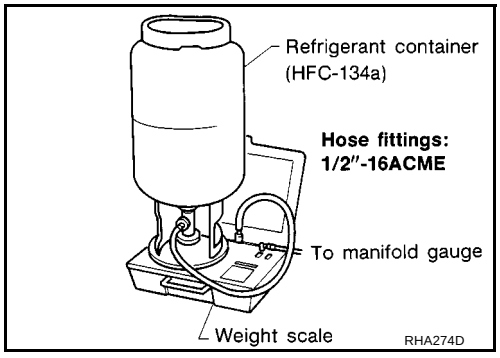
Never attempt to connect HFC-134a (R-134a) service couplers to an CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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

EJS002G0

- 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.

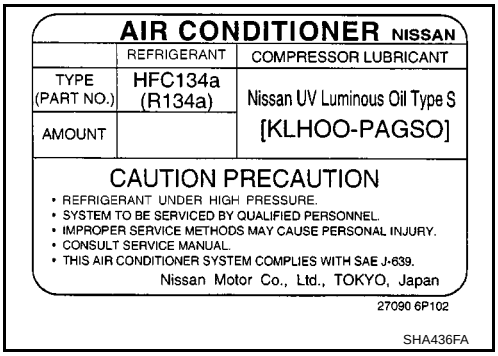
IDENTIFICATION

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.

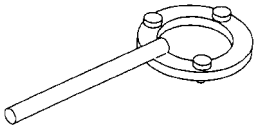
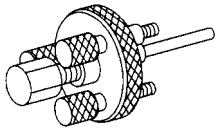
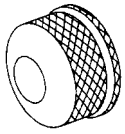
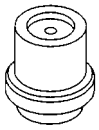


PREPARATION

PFP:00002

Special Service Tools

EJS002G9

Tool number Tool name	Description	
KV99231260 Clutch disc wrench	 RJIA0475E	Removing shaft nut and clutch disc
KV992T0001 Clutch disc puller	 RJIA0476E	Removing clutch disc
KV992T0002 Pulley installer	 RJIA0477E	Installing pulley
KV99233130 Pulley puller	 RJIA0478E	Removing pulley

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

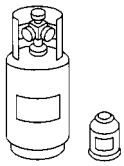
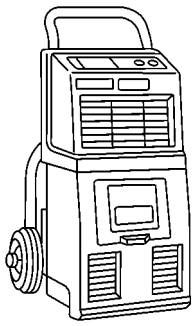
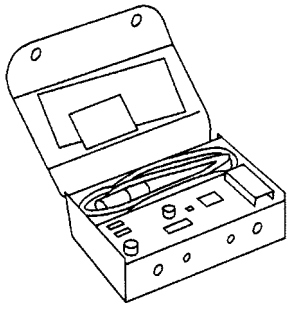
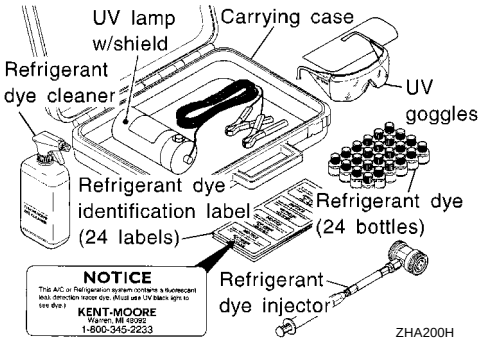
EJS002GA

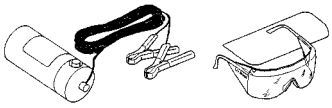
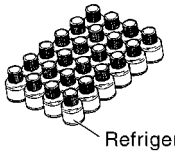
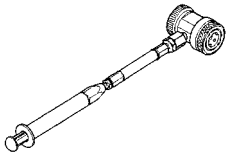
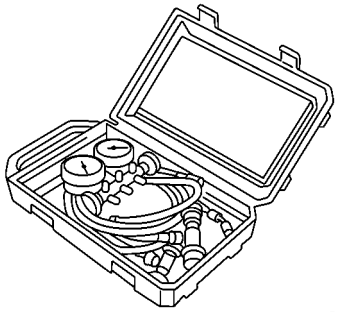
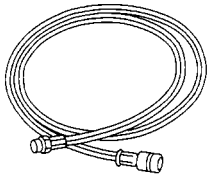
Never mix HFC-134a (R-134a) refrigerant and/or its specified lubricant with CFC-12 (R-12) refrigerant and/or its lubricant.

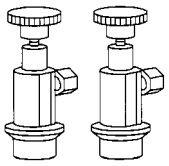
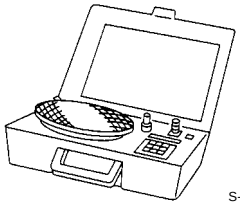
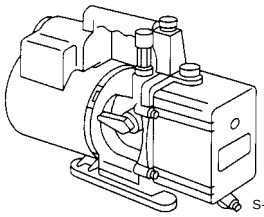
Separate and non-interchangeable service equipment must be used for handling each type of refrigerant/lubricant.

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)
(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)

Tool number Tool name	Description	
(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)	 Refrigerant dye (24 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
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

Tool number Tool name	Description	
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

EJS006G9

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

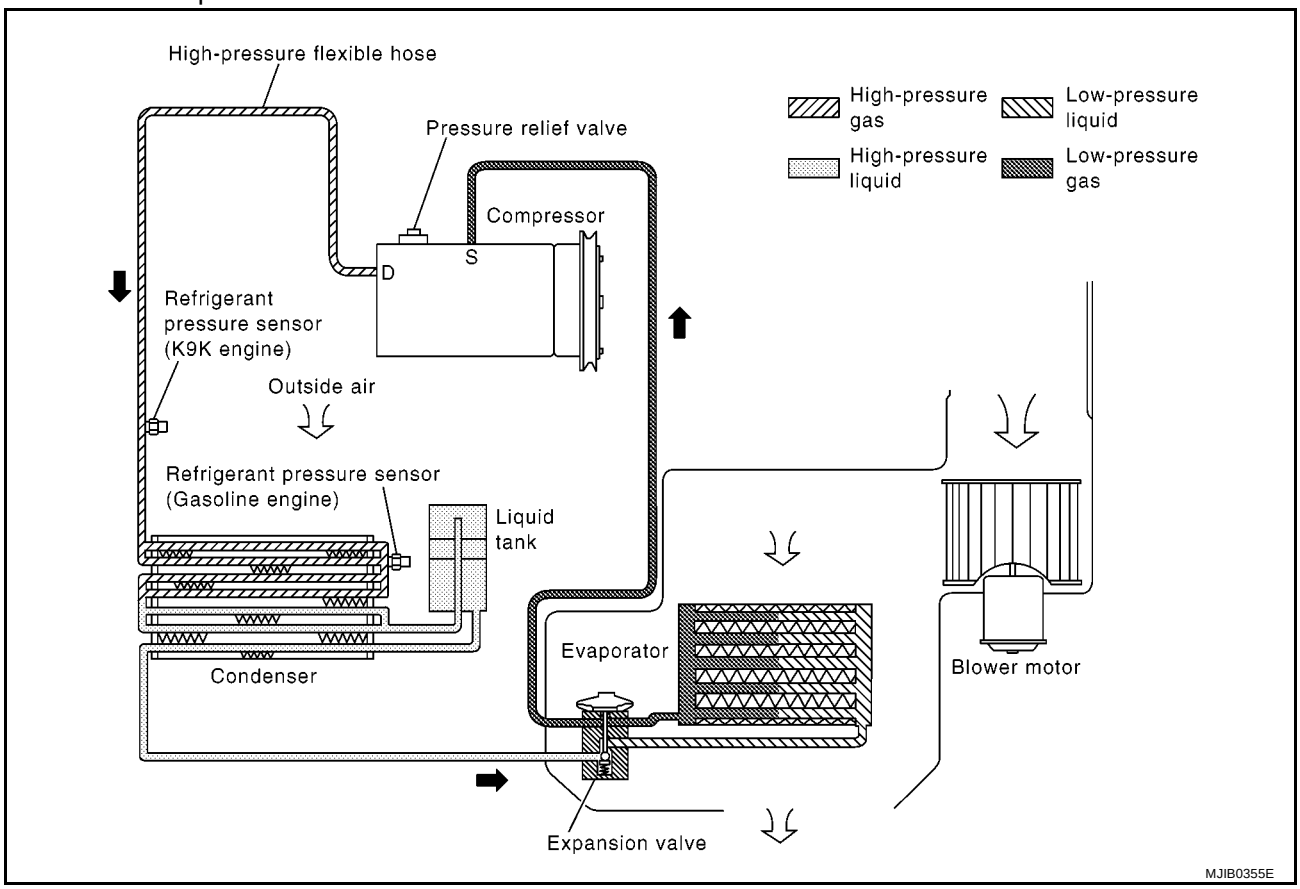
EJS006GA

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

EJS002GD

Compressor lubricant circulates through the system with refrigerant. When cooler 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

	KC59G Compressor
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 switch: ON
- Fan speed: HI
- Air intake: 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 MTC-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 refrigerant or lubricant)

YES >> GO TO MTC-16, "LUBRICANT LEVEL ADJUSTMENT WHEN REPLACING COMPONENTS OTHER THAN COMPRESSOR" .
NO >> GO TO MTC-40, "CHECK FUNCTION (FOR GASOLINE ENGINE)" .

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

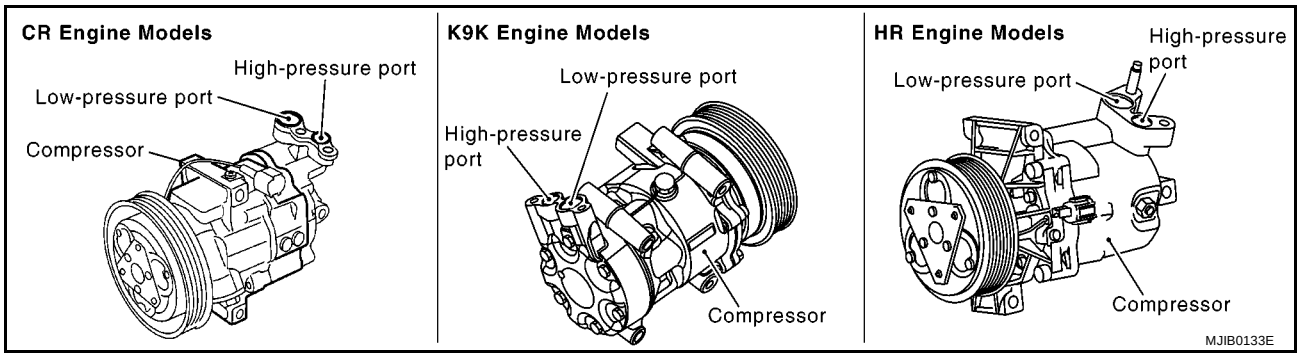
CAUTION:

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.

TROUBLE DIAGNOSIS

PFP:00004

CONSULT-II Functions

EJS002FE

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.

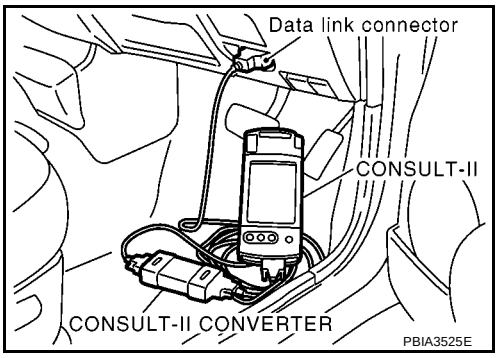
BCM trouble diagnosis item	Inspection Item, Diagnosis Mode	Description
Air conditioner	Data monitor	Displays BCM input data in real time.

CONSULT-II BASIC OPERATION

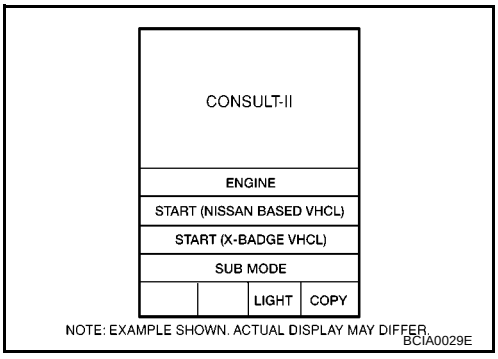
CAUTION:

If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

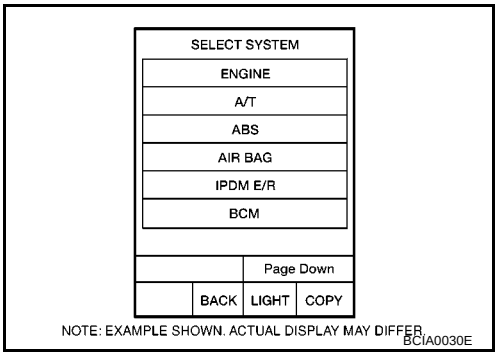
1. Turn ignition switch OFF.
2. Connect CONSULT-II and CONSULT-II CONVERTER to the data link connector.
3. Turn ignition switch ON.



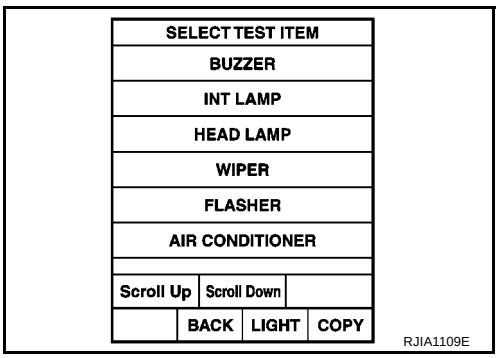
4. Touch “START (NISSAN BASED VHCL)”.



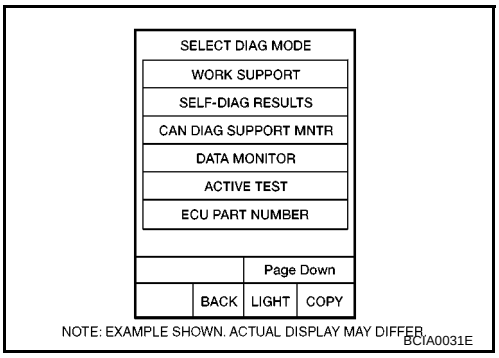
5. Touch “BCM” on the “SELECT SYSTEM” screen.
   - If “BCM” is not displayed, print the “SELECT SYSTEM” screen, and then refer to GI-36, "CONSULT-II Data Link Connector (DLC) Circuit" .



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



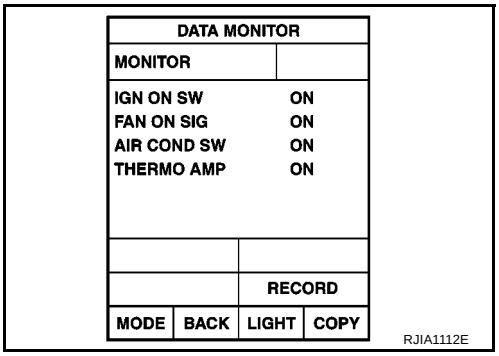
7. Touch “DATA MONITOR” on the “SELET DIAG MODE” screen. For details, refer to separate volume “CONSULT-II Operation Manual”.



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 fan switch.
AIR COND SW	[ON/OFF]	Displays status “Compressor on (ON)/compressor off (OFF)” as judged by the BCM from the input from the controller.
THERMO AMP	[ON/OFF]	Displays status “Thermal control amplifier on (ON)/thermal amplifier off (OFF)” judged by the BCM from the input from thermal control amplifier.
IGN ON SW	[ON/OFF]	Displays status “IGN position (ON)/OFF, ACC position (OFF)” as judged from the key switch signal.

Diagnosis Procedure

EJS002FF

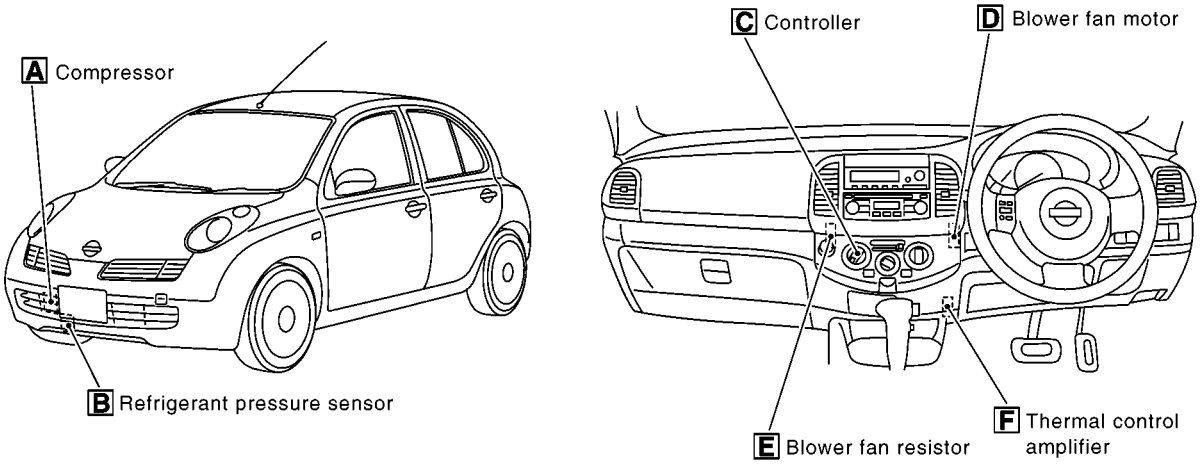
DIAGNOSIS CHART BY SYMPTOM

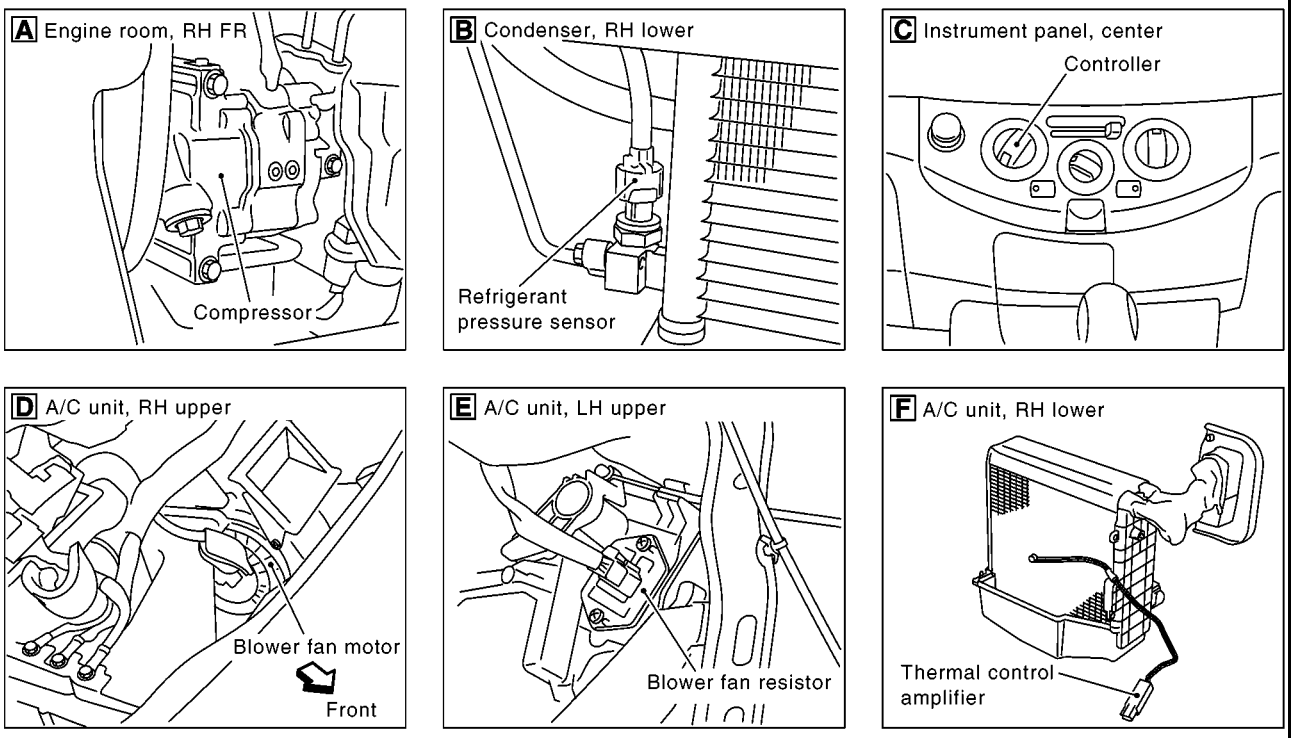
Symptom		Operation inspection	Suspect systems	Possible causes
No air comes out. Airflow volume does not change.		Check blower fan motor operation.	Blower fan motor harness	Refer to MTC-32, "Blower Fan Motor System" .
Inaccurate temperature control	Common items (Check these items for either of two malfunctions listed below.)	Operate temperature control dial. Confirm that air mix door moves through full stroke.	Air mix door harness	● Improper air mix door lever installation ● Air mix door system malfunction (damage, locking, etc.) ● Air mix door cable inoperative ● Refer to MTC-58, "Air Mix Door Cable Adjustment" .
	No cold air comes out. (Normal airflow amount)	With the fan setting dial and A/C switch ON, check operation of the magnetic clutch.	Magnetic clutch harness	Refer to MTC-34, "Magnetic Clutch System" .
		● Check refrigerant level. ● Performance check	Cooler system	● Refer to MTC-40, "CHECK FUNCTION (FOR GASOLINE ENGINE)" in “Cooling malfunction”. ● Refer to MTC-42, "DIAGNOSIS BY PRESSURE GAUGE" in “Cooling 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 route	● Poor engine coolant ● Blockage of heater hose or heater core
Unable to switch air outlets to others.		Operate the mode dial to confirm that the mode door moves through the full stroke.	Mode door harness	● Improper installation of mode door lever ● Mode door system malfunction (damage, locking, etc.) ● Mode door cable inoperative ● Refer to MTC-57, "Mode Door Cable Adjustment" .
Unable to switch intake inlets to others.		Operate the intake switch lever and make sure the intake door moves through a full stroke.	Intake door harness	● Improper installation of intake door lever ● Intake door system malfunction (damage, locking, etc.) ● Intake door cable inoperative ● Refer to MTC-56, "Intake Door Cable Adjustment" .

Component Parts Location

EJS002FG

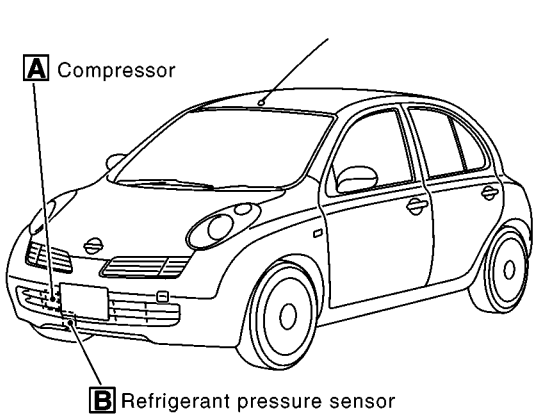
CR ENGINE MODELS

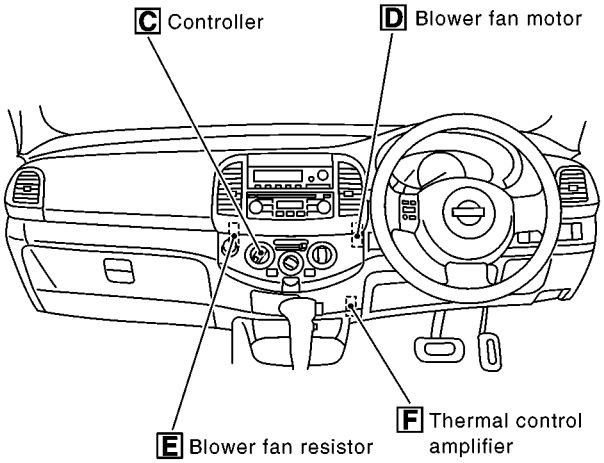


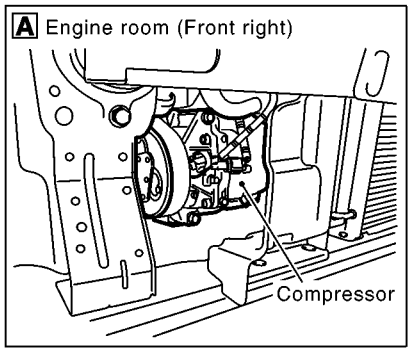


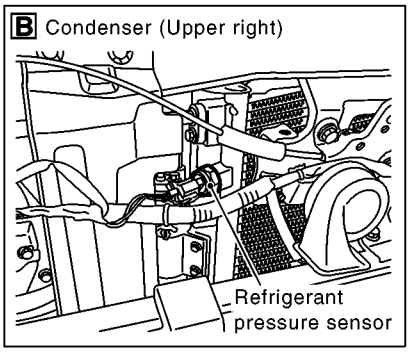
MJIA0175E

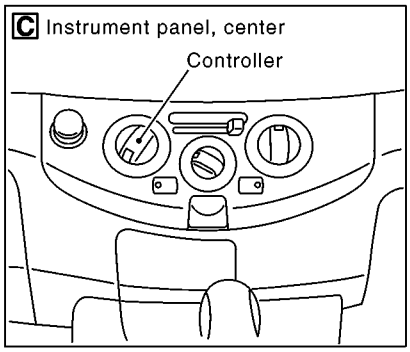
HR ENGINE MODELS

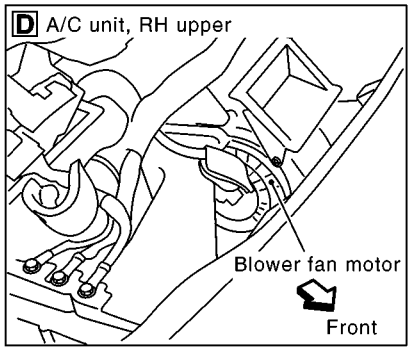


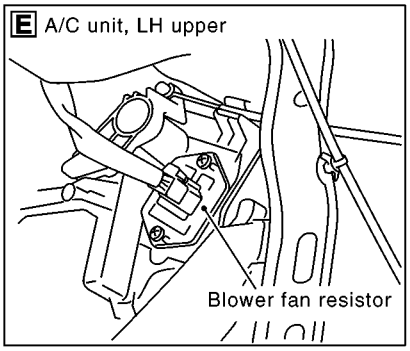


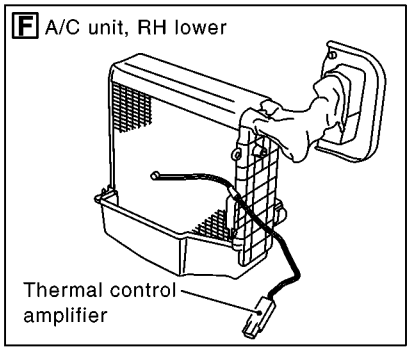






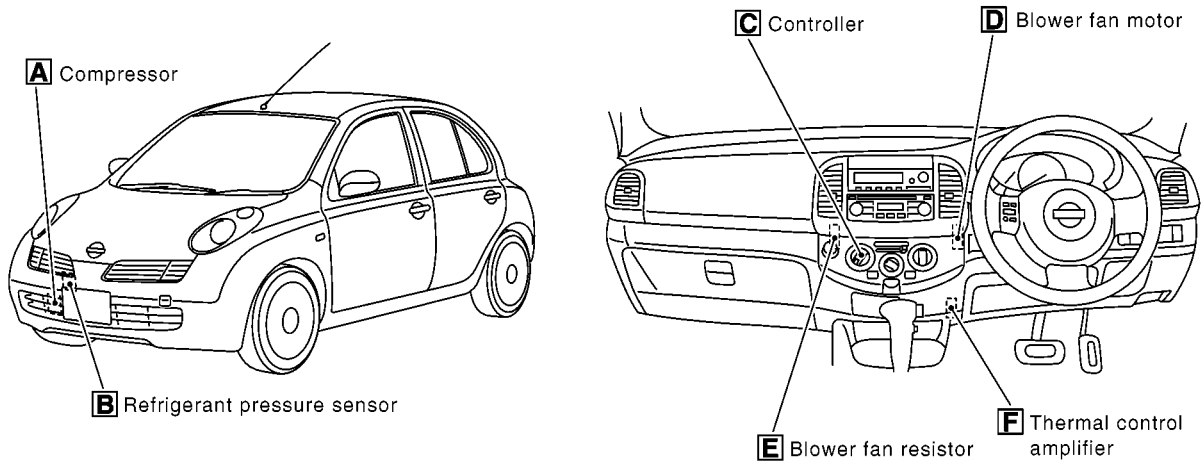


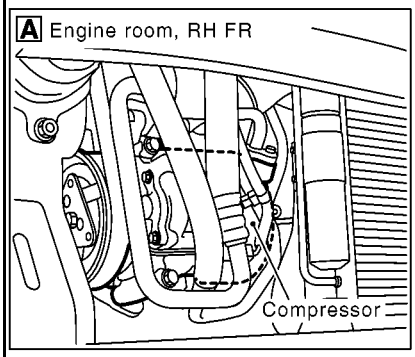


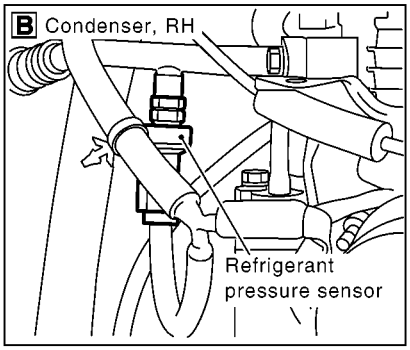


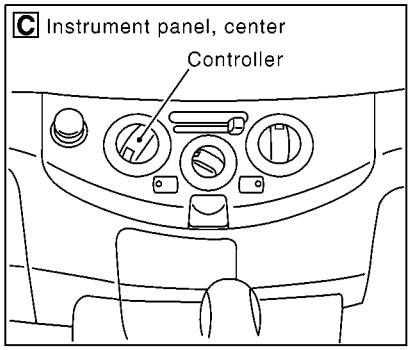
MJIB0275E

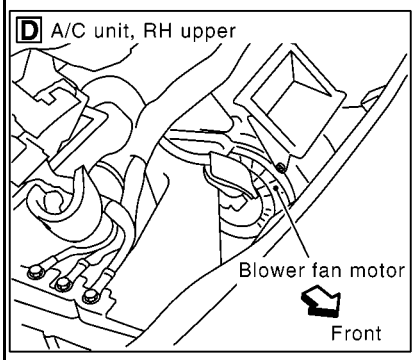
K9K ENGINE MODELS

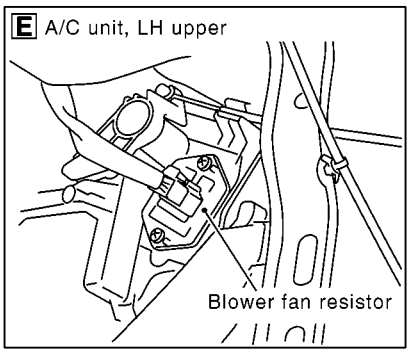


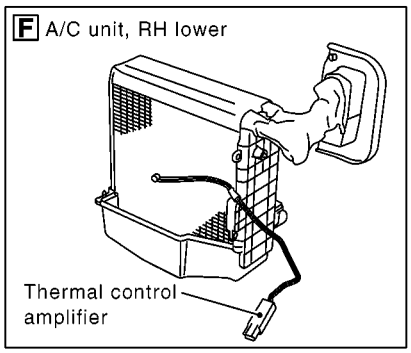








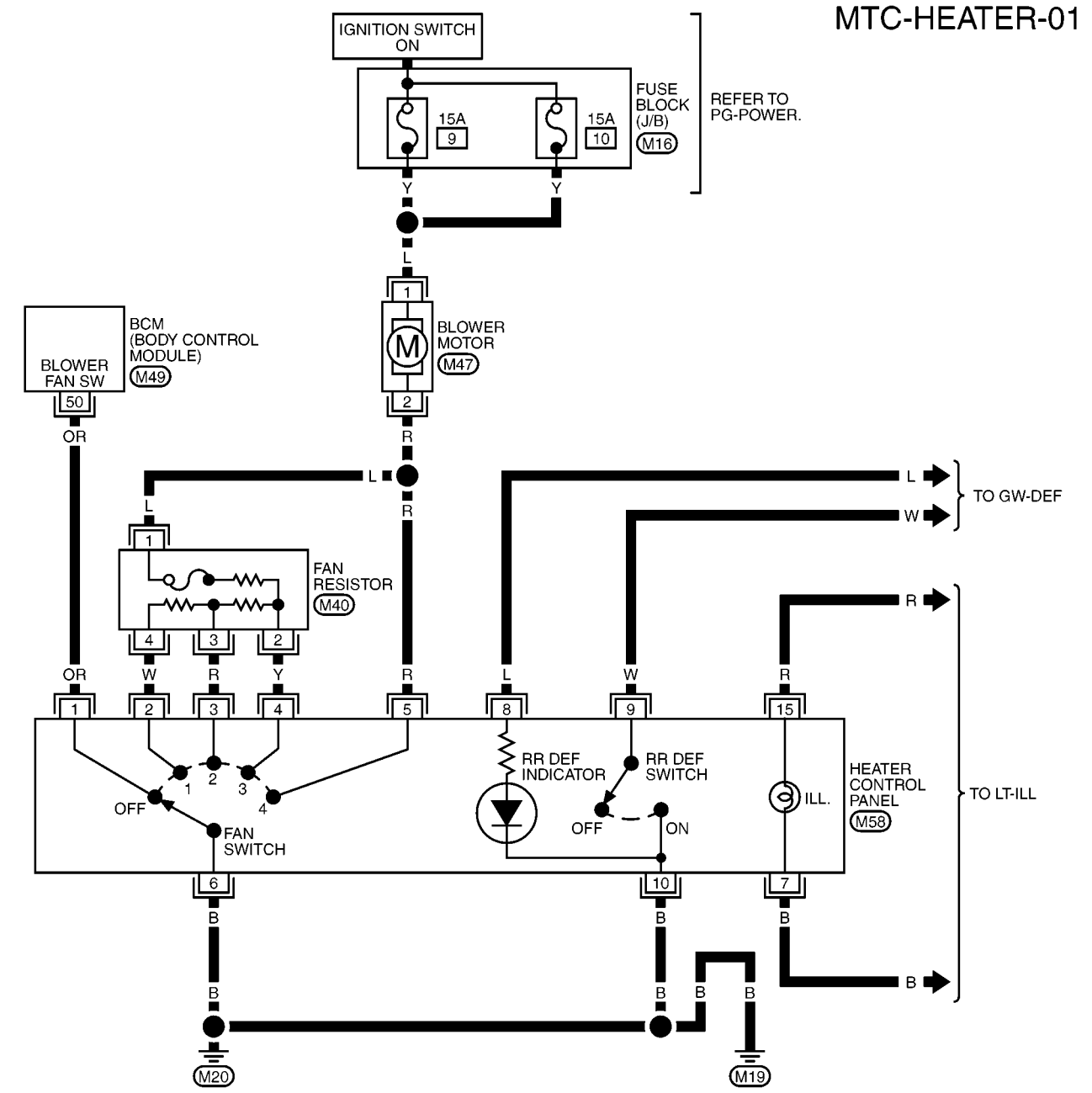


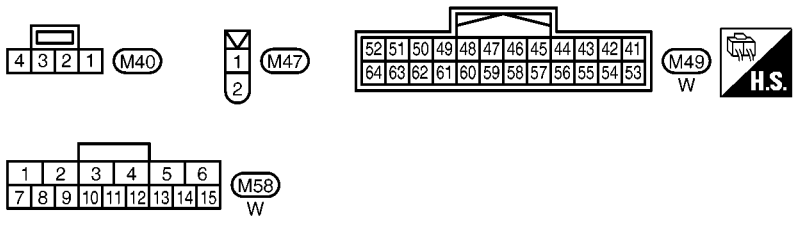


MJIA0198E

Wiring Diagram —HEATER—

EJS002FH



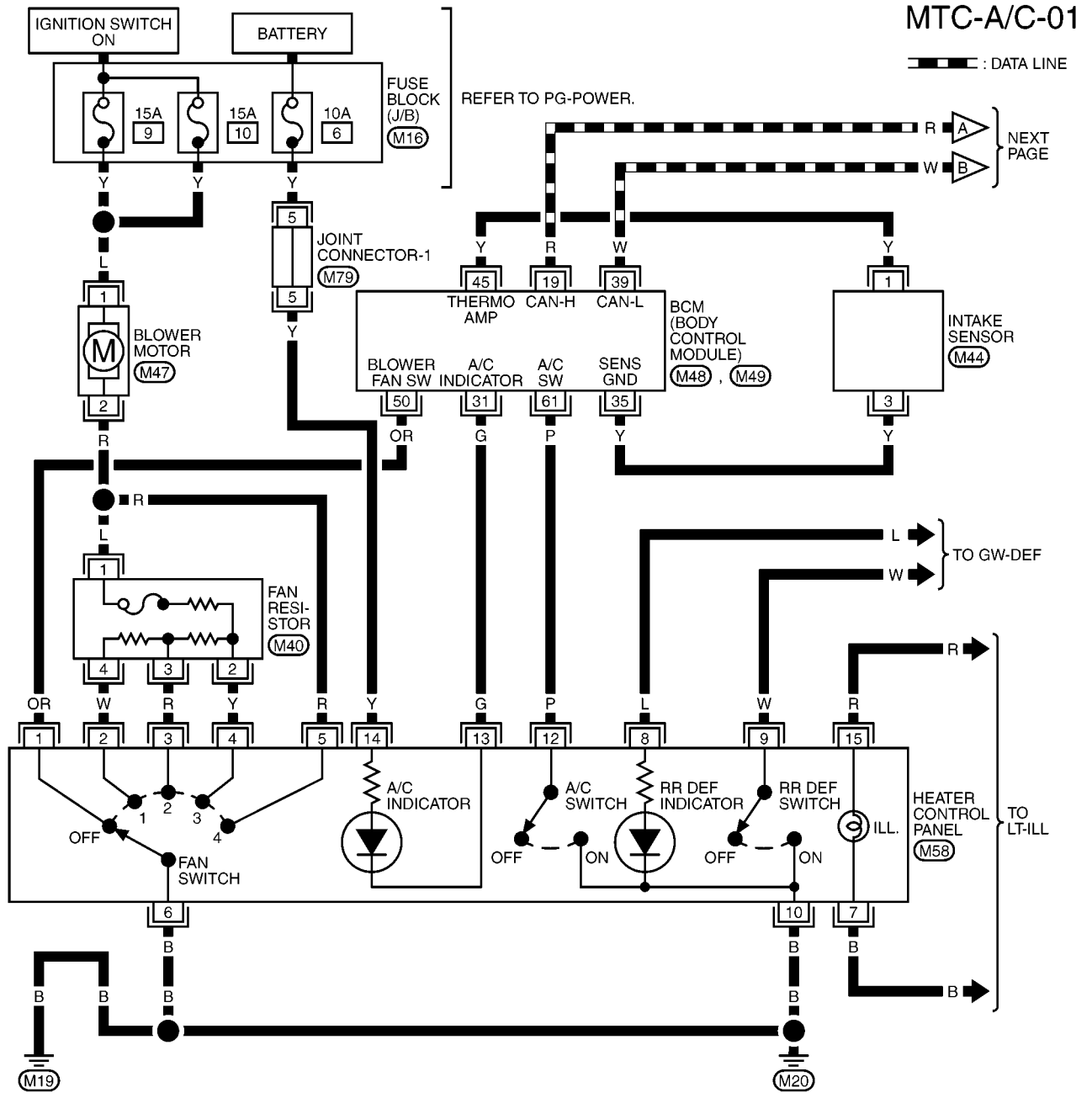


REFER TO THE FOLLOWING.
M16 - FUSE BLOCK - JUNCTION BOX (J/B)

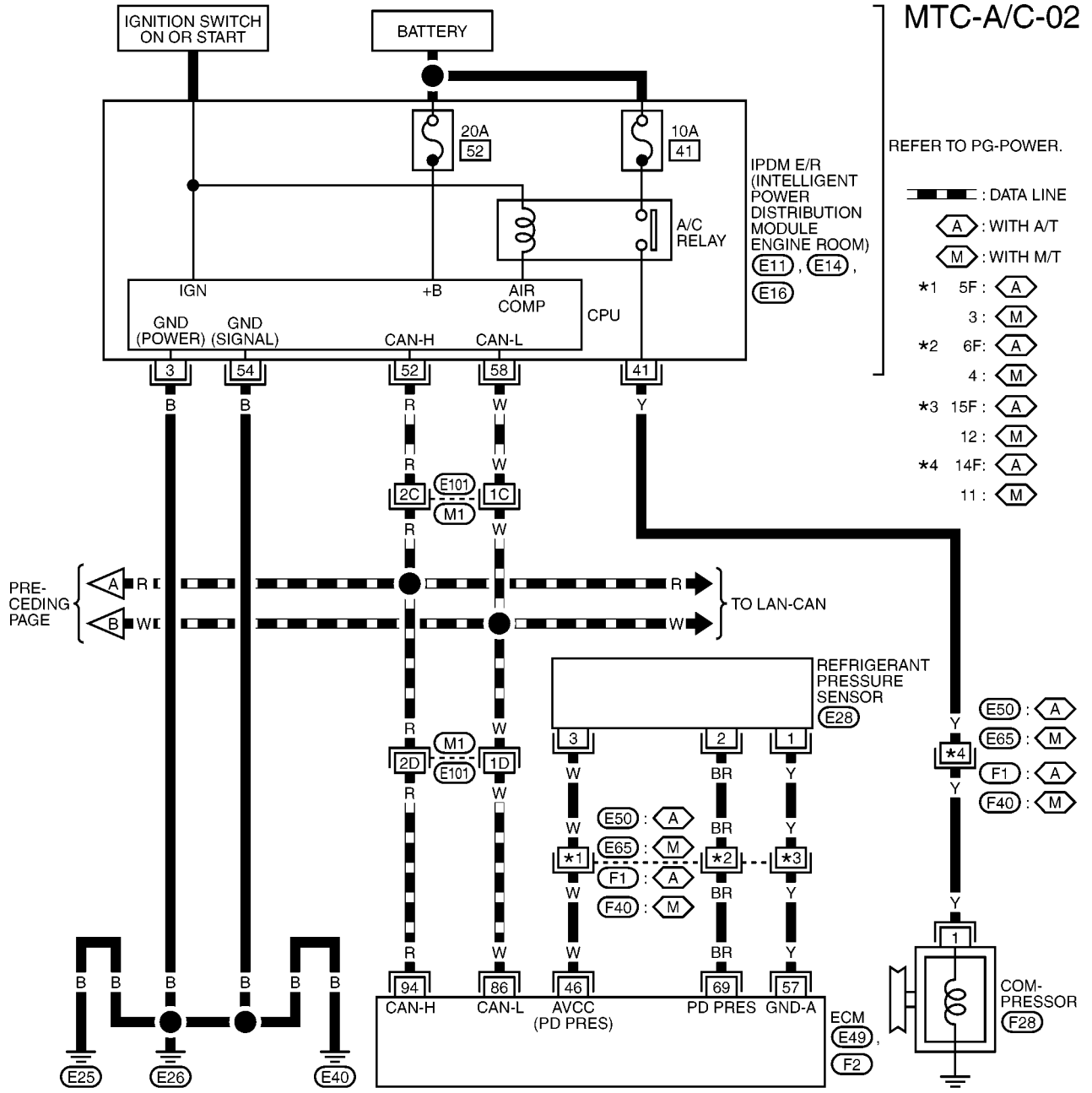
MJWA0163E

Wiring Diagram —A/C— CR Engine Models

EJS002FN



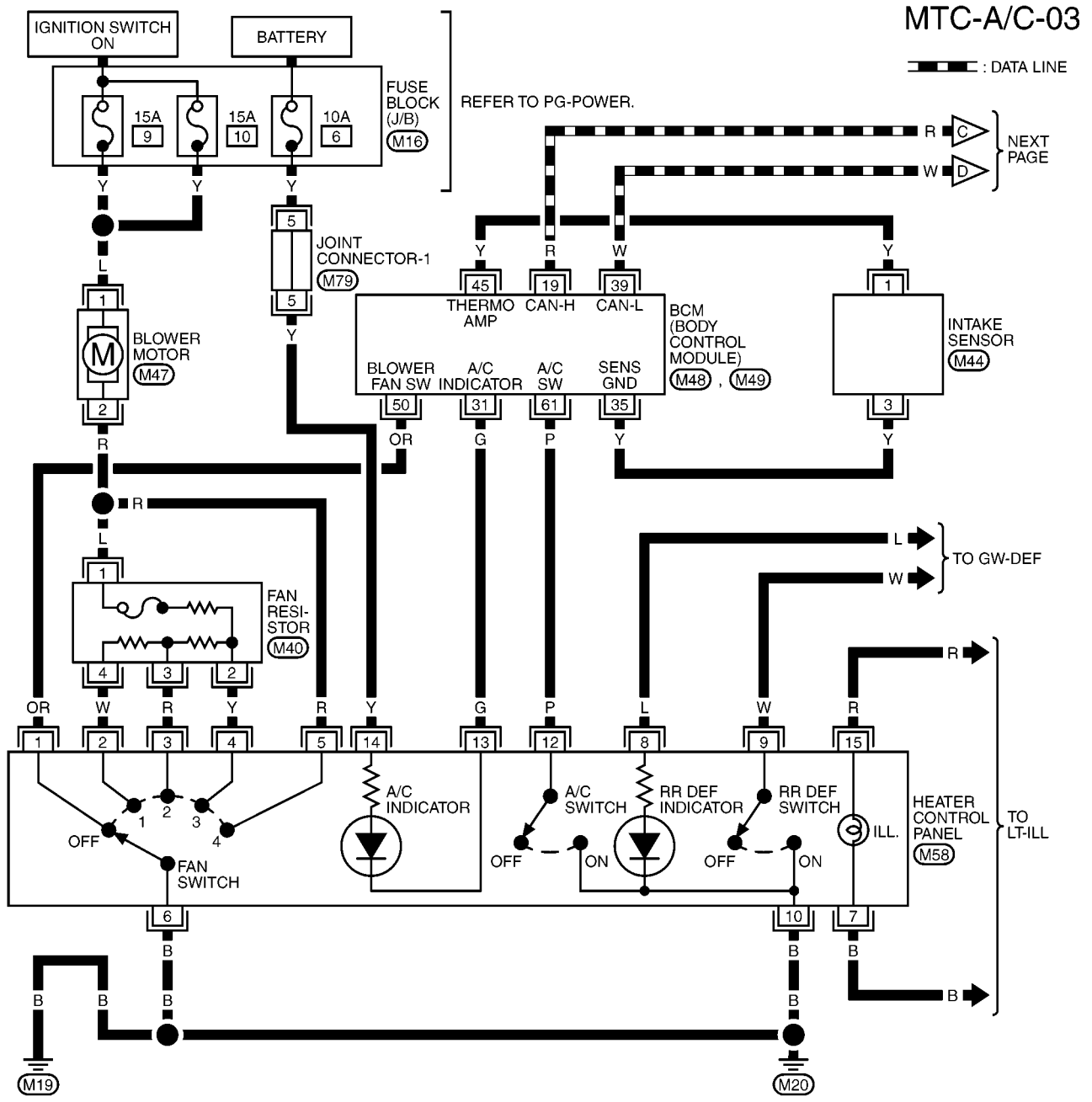
MJWA0164E


MTC-A/C-02
IGNITION SWITCH ON OR START
BATTERY
20A 52
10A 41
A/C RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E11, E14, E16
IGN
+B
AIR COMP
CPU
GND (POWER)
GND (SIGNAL)
CAN-H
CAN-L
3
54
52
58
41
B
B
R
W
Y
E101
2C
1C
M1
PRE-CEDING PAGE
A
B
TO LAN-CAN
REFRIGERANT PRESSURE SENSOR E28
2D
1D
3
2
1
BR
*1
*2
*3
*4
E50 : A
E65 : M
F1 : A
F40 : M
94
86
46
69
57
CAN-H
CAN-L
AVCC (PD PRES)
PD PRES
GND-A
ECM E49, F2
COM-PRESSOR F28
E25
E26
E40
REFER TO PG-POWER.
: DATA LINE
A : WITH A/T
M : WITH M/T
*1 5F : A
3 : M
*2 6F: A
4 : M
*3 15F : A
12 : M
*4 14F: A
11 : M
E11 B
E14 W
E16 W
H.S.
E28 B
F28 B
REFER TO THE FOLLOWING.
M1, F1, F40 - SUPER MULTIPLE JUNCTION (SMJ)
E49, F2 - ELECTRICAL UNITS

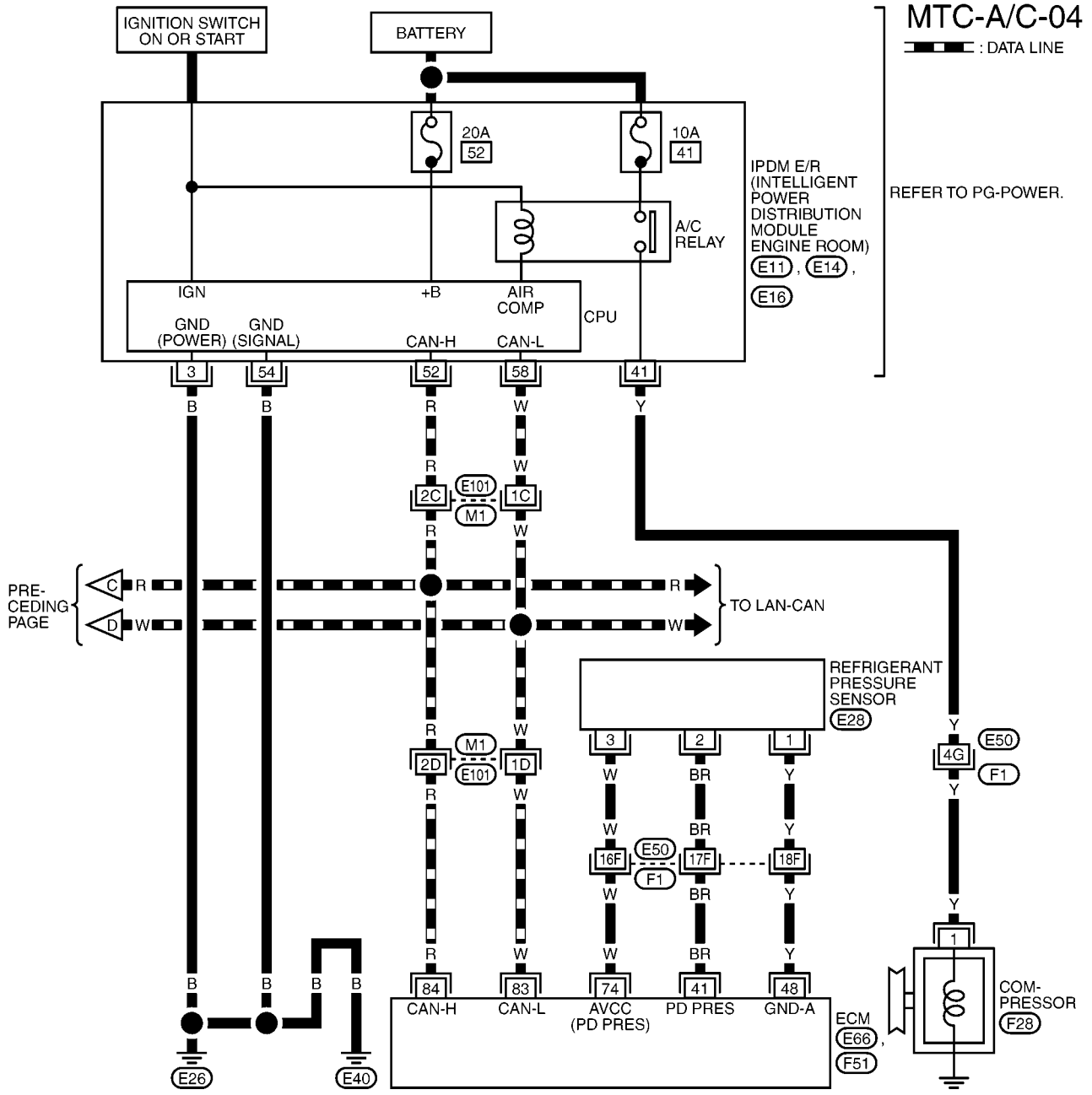
MJWA0258E

Wiring Diagram —A/C— HR Engine Models

EJS006AE



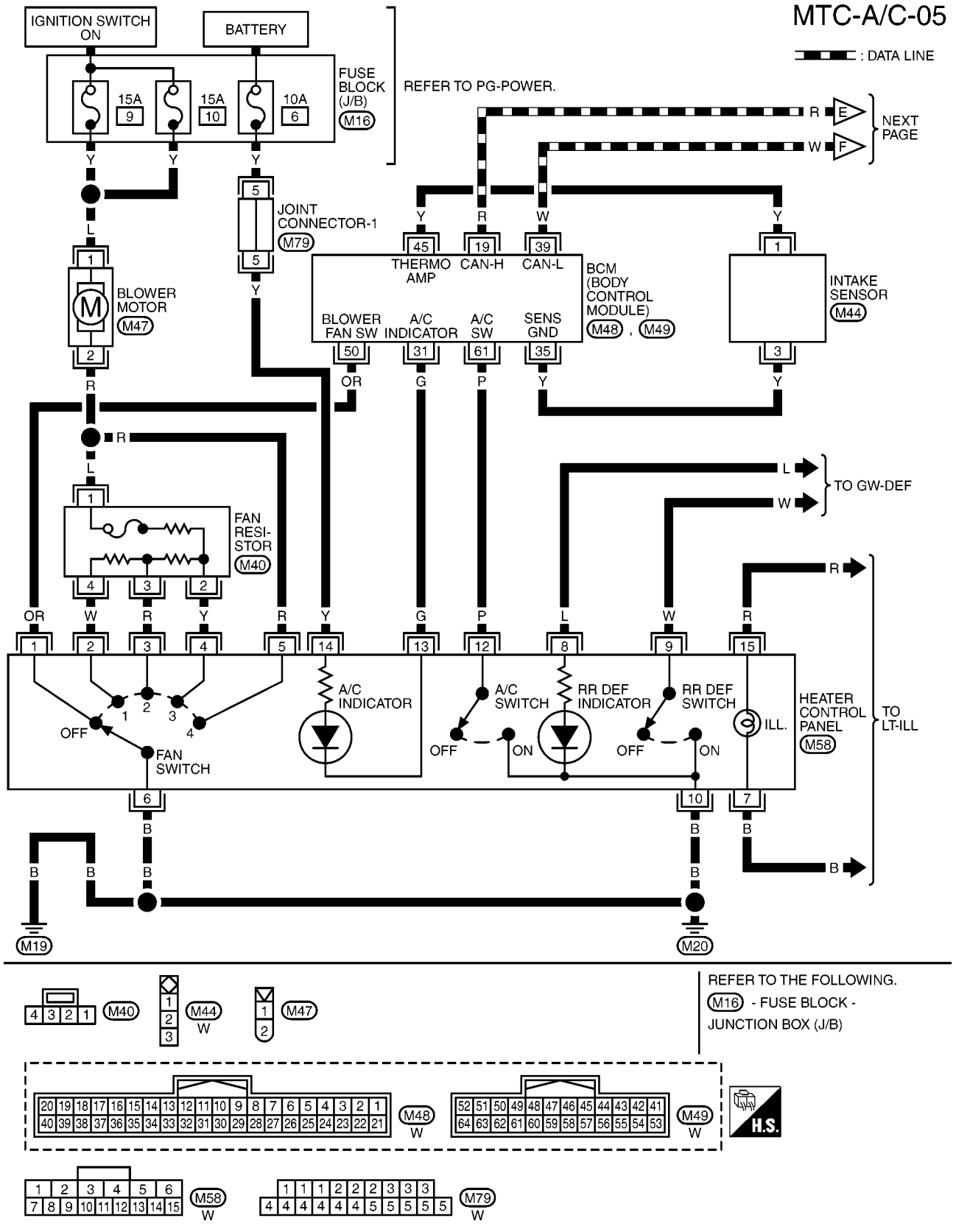
MJWA0227E


MTC-A/C-04
: 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
GND (POWER)
GND (SIGNAL)
CAN-H
CAN-L
CPU
3
54
52
58
41
B
B
R
W
Y
2C
E101
M1
1C
PRE-CEDING PAGE
C
D
TO LAN-CAN
REFRIGERANT PRESSURE SENSOR E28
2D
1D
4G
E50
F1
16F
17F
18F
84
83
74
41
48
CAN-H
CAN-L
AVCC (PD PRES)
PD PRES
GND-A
ECM E66, F51
COM-PRESSOR F28
E26
E40
REFER TO THE FOLLOWING.
M1, F1 - SUPER MULTIPLE JUNCTION (SMJ)
E11
E14
E16
E28
F28
F51
E66
H.S.

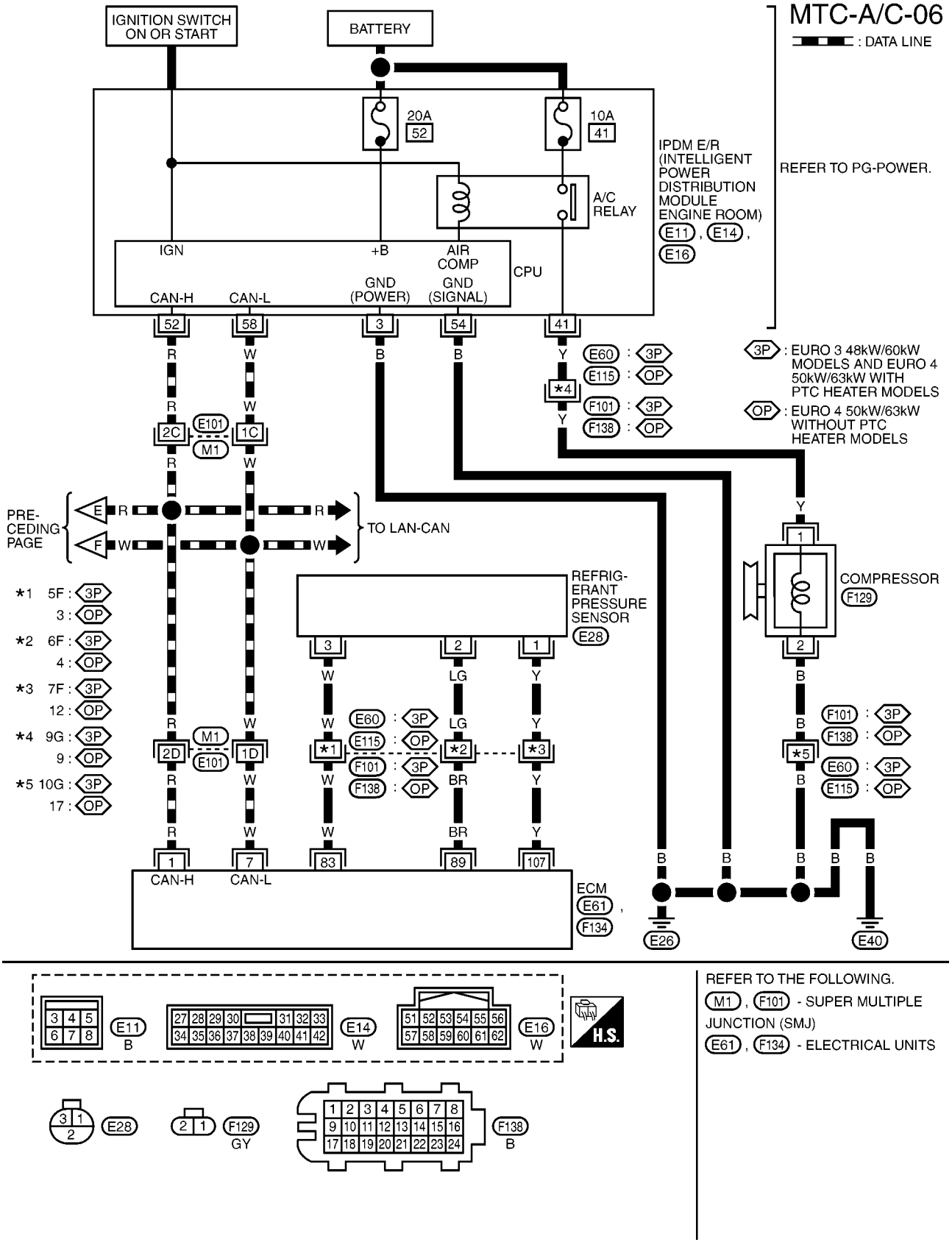
MJWA0165E

Wiring Diagram —A/C— K9K Engine Models

EJS0057F



MJWA0166E

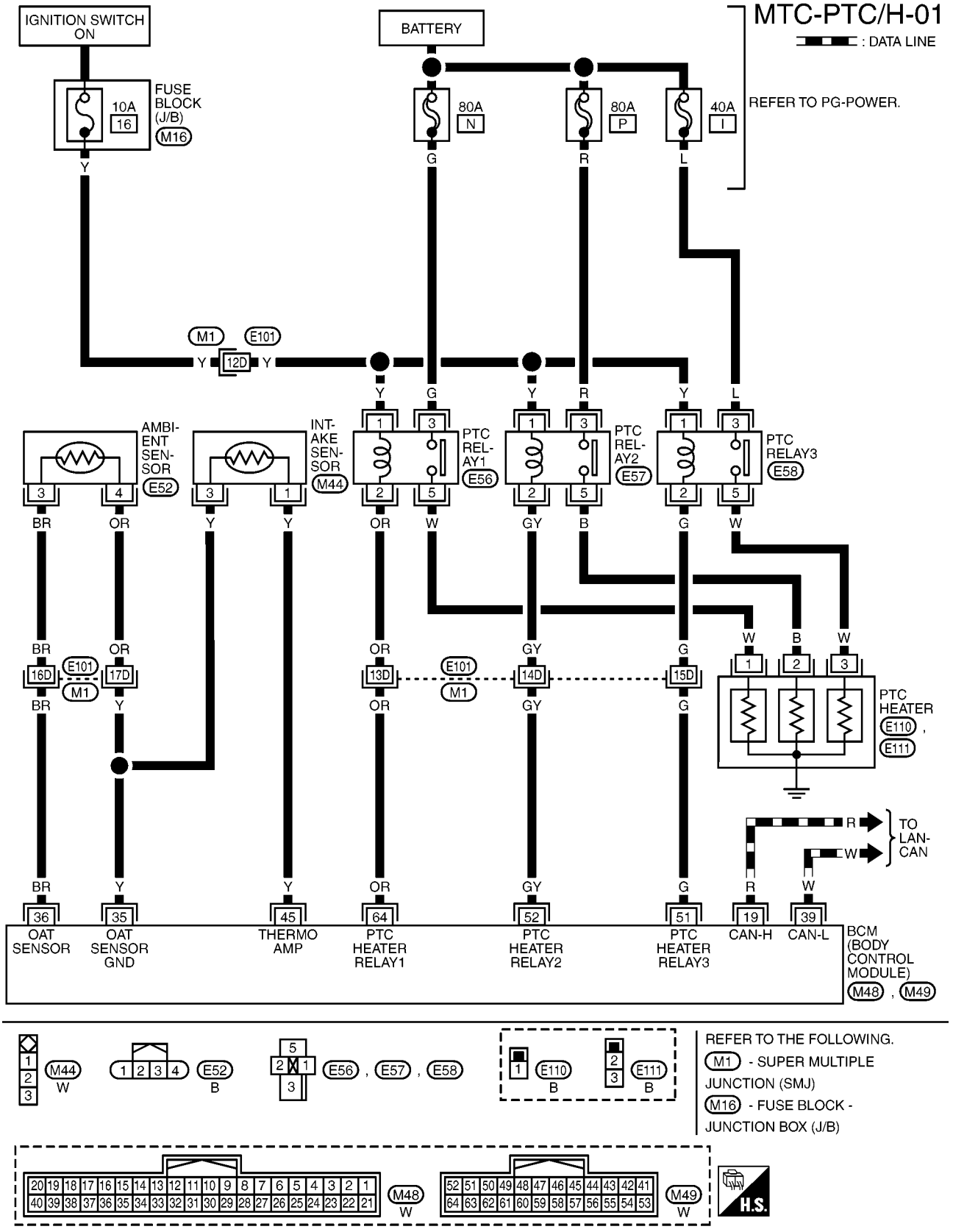


REFER TO THE FOLLOWING.
M1, F101 - SUPER MULTIPLE JUNCTION (SMJ)
E61, F134 - ELECTRICAL UNITS

MJWA0263E

Wiring Diagram —PTC/H—

EJS005KI



MJWA0264E

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.

Function Inspection

EJS0057G

1. CHECK FAN SPEED

Operate the fan setting dial to make sure the fan speed changes. Confirm operation for all fan speeds.

OK or NG

OK >> Switch fan speed to “4” and GO TO 2.
NG >> Refer to MTC-32, "Blower Fan Motor System" , MTC-34, "Magnetic Clutch System" .

2. CHECK A/C SWITCH

1. Push A/C switch.
2. Check visually that indicator lamp turns on. Check by sound that compressor is operating.

OK or NG

OK >> GO TO 3.
NG >> Magnetic clutch system malfunction: Refer to MTC-34, "Magnetic Clutch System" .

3. CHECK AIR OUTLET

Operate the mode dial to make sure the air outlet changes.

OK or NG

OK >> GO TO 4.
NG >> Mode door system malfunction: Refer to MTC-57, "Mode Door Cable Adjustment" .

4. CHECK AIR INLET

Operate intake air control lever and listen to intake sound to confirm that inlet switches.

OK or NG

OK >> GO TO 5.
NG >> Intake door system malfunction: Refer to MTC-56, "Intake Door Cable Adjustment" .

5. CHECK WITH TEMPERATURE SETTING LOWERED

1. Turn compressor ON.
2. Set temperature control dial to “FULL COLD”.
3. Confirm cool air blows from outlets.

OK or NG

OK >> GO TO 6.
NG >> Air mix door system malfunction: Refer to MTC-58, "Air Mix Door Cable Adjustment" .

6. CHECK WITH TEMPERATURE SETTING RAISED

1. Warm up the engine.
2. Set temperature control dial to “FULL HOT”.
3. Confirm warm air blows from outlets.

OK or NG

OK >> If all function checks are normal (no phenomena reoccurrence), refer to MTC-19, "DIAGNOSIS CHART BY SYMPTOM" and perform appropriate diagnosis.
NG >> Air mix door system malfunction: Refer to MTC-58, "Air Mix Door Cable Adjustment" .

Blower Fan Motor System

EJS0057H

INSPECTION PROCEDURE

Symptom: Blower fan motor does not operate.

1. START INSPECTION

Check blower fan motor operation at each fan speed.

1 : Blower fan motor does not operate at all.

2 : Blower fan motor does not operate at one of speeds 1 - 4.

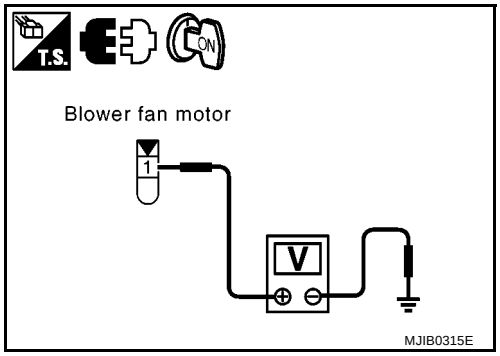
Do inspection results indicate 1 or 2 above?

1 >> GO TO 2.
2 >> GO TO 6.

2. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect blower fan motor connector.
3. Turn ignition switch ON.
4. Check voltage between blower fan motor connector terminal 1 and ground.

1 (L) – Ground : Battery voltage



OK or NG

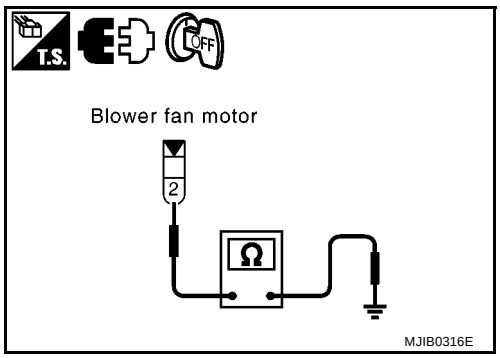
OK >> GO TO 3.
NG >> Check power supply circuit and 15A fuses [Nos. 9 and 10, located in the fuse block (J/B)]. Refer to PG-5, "POWER SUPPLY ROUTING" .

- 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.

3. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between blower fan motor connector terminal 2 and ground.

2 (R) – Ground : Continuity should exist.



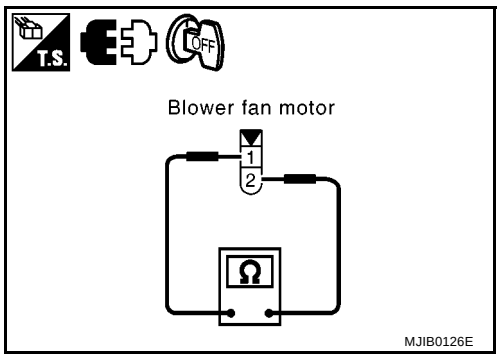
OK or NG

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

4. CHECK BLOWER FAN MOTOR

Check continuity between blower fan motor terminals 1 and 2.

1 – 2 : Continuity should exist.



OK or NG

OK >> End of trouble diagnosis
NG >> Replace the blower fan motor.

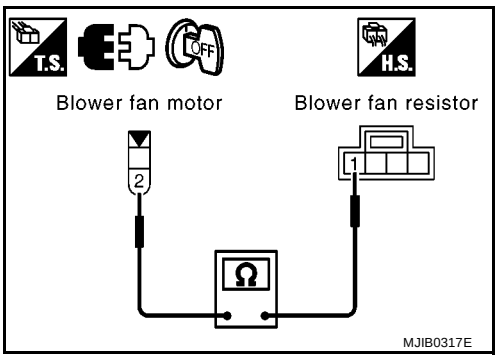
5. CHECK CIRCUIT CONTINUITY BETWEEN BLOWER FAN MOTOR AND BLOWER FAN RESISTOR

1. Disconnect blower fan resistor harness connector.
2. Check continuity between blower fan motor connector terminal and blower fan resistor terminal 1.

2 (R) – 1 (L) : Continuity should exist.

OK or NG

OK >> GO TO 6.
NG >> Repair harness or connector between blower fan motor and blower fan resistor.



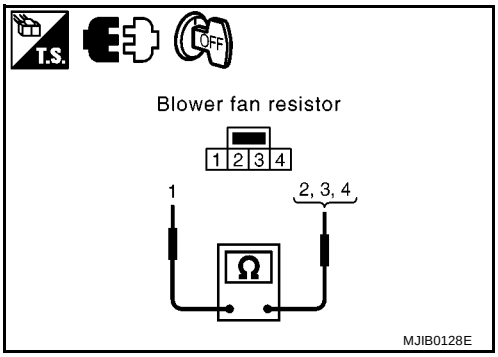
6. CHECK BLOWER FAN RESISTOR

Check continuity between blower fan resistor terminals 1 and 2, 3, 4.

Terminals		Continuity
1	2	Approx. 0.32Ω
	3	Approx. 1.4Ω
	4	Approx. 2.7Ω

OK or NG

OK >> GO TO 7.
NG >> Replace blower fan resistor.



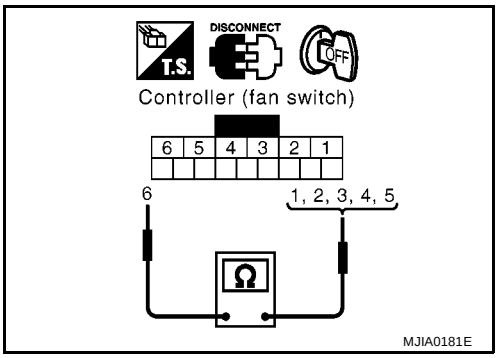
7. CHECK FAN SWITCH

1. Disconnect controller connector.
2. Check continuity between controller terminals 1 and 2, 3, 4, 5, 6.

Terminals		Condition	Continuity
6	1	Fan: OFF	Yes
	5	Fan: Speed 4	
	4	Fan: Speed 3	
	3	Fan: Speed 2	
	2	Fan: Speed 1	

OK or NG

OK >> GO TO 8.
NG >> Replace controller.



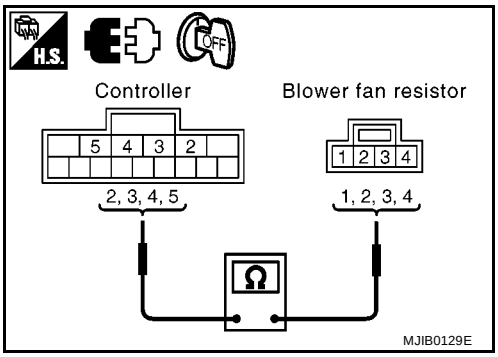
8. CHECK CIRCUIT CONTINUITY BETWEEN CONTROLLER AND BLOWER FAN RESISTOR

Check continuity between the controller and the blower fan resistor terminals.

5 (R) – 1 (L) : Continuity should exist.
4 (Y) – 2 (Y) : Continuity should exist.
3 (R) – 3 (R) : Continuity should exist.
2 (W) – 4 (W) : Continuity should exist.

OK or NG

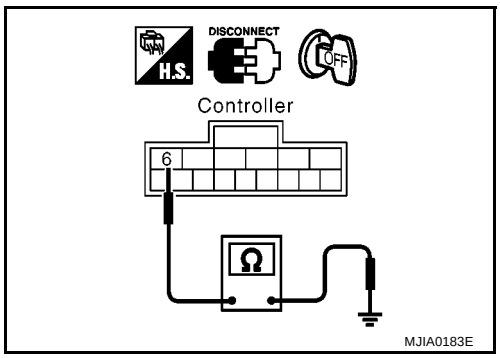
OK >> GO TO 9.
NG >> Repair harness or connector.



9. CHECK FAN SWITCH GROUND CIRCUIT

Check continuity between controller terminal 6 and ground.

6 (B) – Ground : Continuity should exist.



OK or NG

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

Magnetic Clutch System

EJS0057I

INSPECTION PROCEDURE

Symptom: When A/C switch and fan switch are turned ON, magnetic clutch does not operate.

1. CHECK WITH AUTO ACTIVE TEST MODE

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

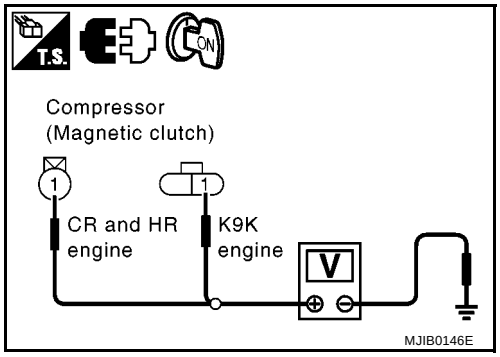
OK or NG

OK >> GO TO 7.
NG >> GO TO 2.

2. CHECK MAGNETIC CLUTCH VOLTAGE

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

1 (Y) – Ground : Battery voltage



OK or NG

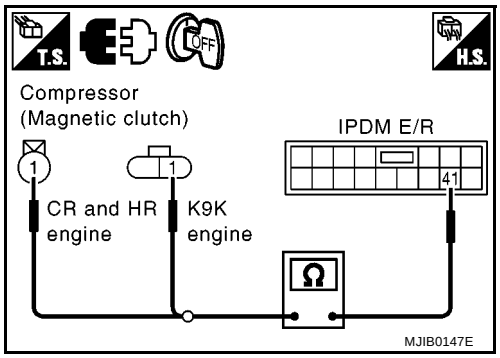
OK >> ● GO TO 4. (CR and HR engine models)
● GO TO 5. (K9K engine models)

NG >> After Checking the Fuse (#41), GO TO 3. For 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.

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

Disconnect the IPDM E/R connector, and check continuity between compressor terminal 1 and IPDM E/R terminal 41.

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



OK or NG

OK >> ● GO TO 4. (CR and HR engine models)
● GO TO 5. (K9K engine models)

NG >> Repair harness or connector.

4. CHECK MAGNETIC CLUTCH

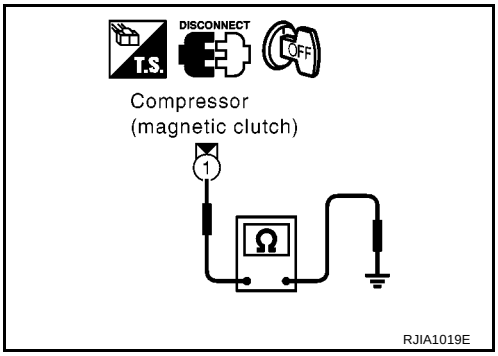
Check continuity between compressor terminal 1 and ground.

1 (Y) – 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.



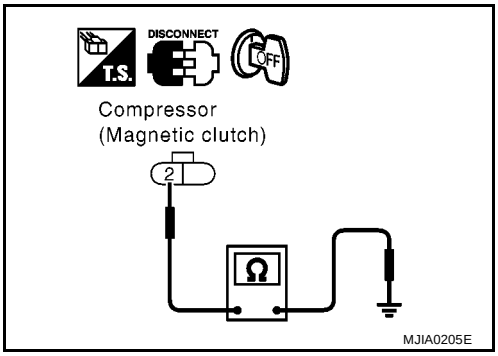
5. CHECK GROUND CIRCUIT

Check continuity between compressor terminal 2 and ground.

2 (B) – Ground : Continuity should exist.

OK or NG

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



6. CHECK MAGNETIC CLUTCH

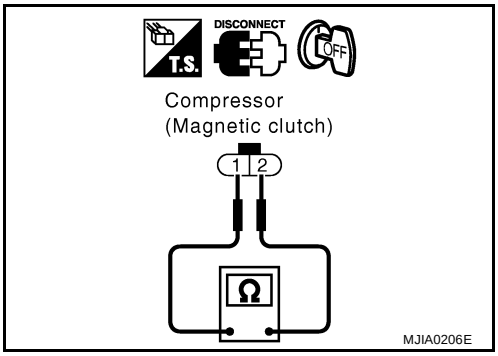
Check continuity between compressor terminals 1 and 2.

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.



7. CHECK REFRIGERANT PRESSURE SENSOR

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

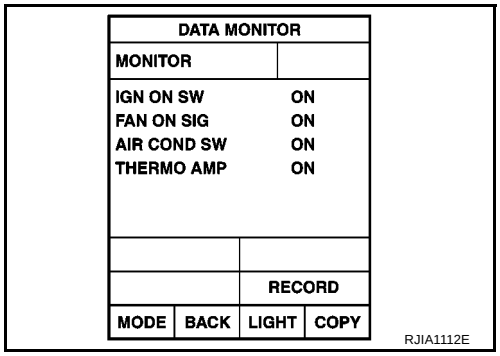
OK or NG

OK >> Connect compressor and IPDM E/R connectors, then GO TO 8.
NG >> Repair or replace parts according to the inspection results.

8. CHECK BCM INPUT SIGNAL

With CONSULT-II

- Check if the compressor ON-OFF, fan ON-OFF and thermal amplifier ON-OFF using the BCM can “air conditioner” data monitor Refer to MTC-17, "CONSULT-II Functions" .



Without CONSULT-II

- GO TO 9.

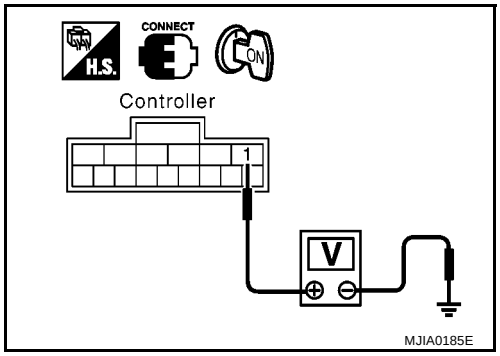
OK or NG

OK >> GO TO 21.
NG >>
- Blower fan switch malfunction: GO TO 9.
- A/C switch malfunction: GO TO 13.
- Thermal amplifier malfunction: GO TO 17.

9. CHECK FAN ON SIGNAL

Check voltage between controller terminal 1 and ground.

Connector	Terminals (Wire color)		Condition	Voltage [V] (Approx.)
	(+)	(-)		
M58	1 (OR)	Ground	Fan: ON	Battery voltage
			Fan: OFF	1



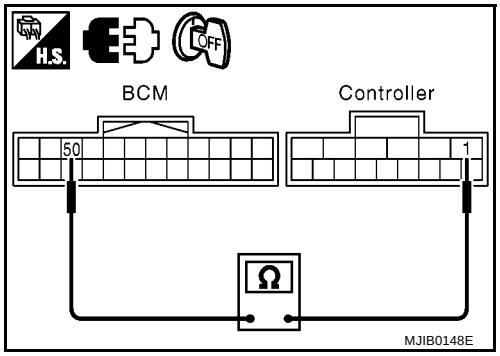
OK or NG

OK >> GO TO 13.
NG >> GO TO 10.

10. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND CONTROLLER

Disconnect controller and BCM connectors, and check continuity between BCM terminal 50 and controller terminal 1.

50 (OR) – 1 (OR) : Continuity should exist.



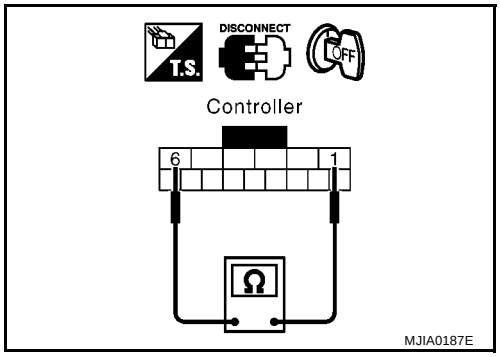
OK or NG

OK >> GO TO 11.
NG >> Repair harness or connector.

11. CHECK FAN SWITCH

Check continuity between controller terminals 1 and 6.

Terminal		Condition	Continuity
1	6	Fan: OFF	Yes
		Fan: ON	No



OK or NG

OK >> GO TO 12.
NG >> Replace controller.

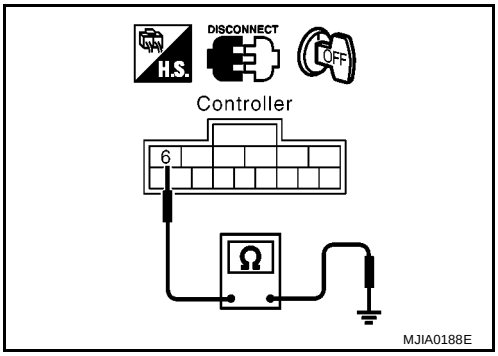
12. CHECK GROUND CIRCUIT

Check continuity between controller terminal 6 and ground.

6 (B) – Ground : Continuity should exist.

OK or NG

OK >> Connect controller connector, and GO TO 13.
NG >> Repair harness or connector.



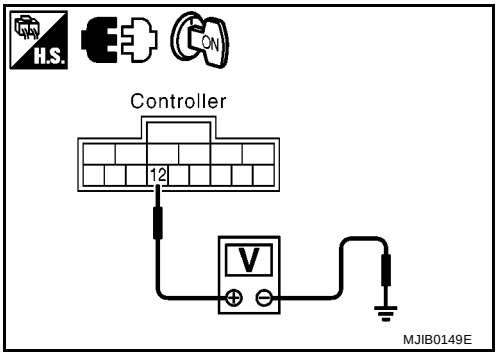
13. CHECK AIR CONDITIONER SIGNAL

Check voltage between controller terminal 12 and ground.

12 (P) – Ground : Battery voltage

OK or NG

OK >> GO TO 14.
NG >> GO TO 16.



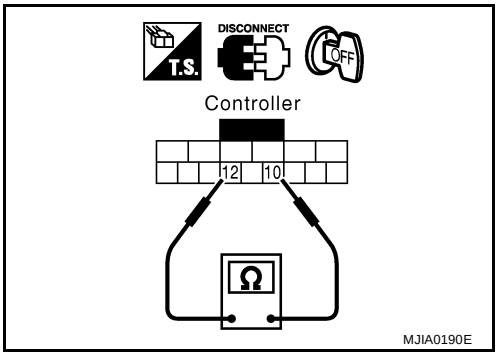
14. CHECK A/C SWITCH

Check continuity between controller terminals 10 and 12.

Terminal		Condition	Continuity
10	12	A/C switch: Only during operation	Yes

OK or NG

OK >> GO TO 15.
NG >> Replace controller.



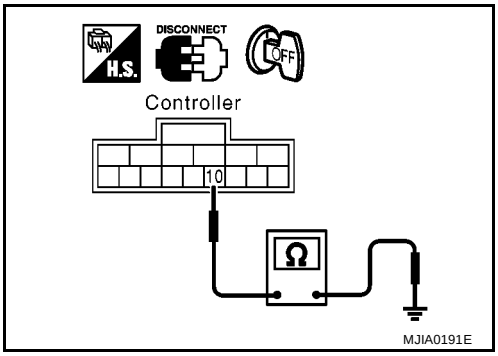
15. CHECK GROUND CIRCUIT

Check continuity between controller terminal 10 and ground.

10 (B) – Ground : Continuity should exist.

OK or NG

OK >> GO TO 17.
NG >> Repair harness or connector.



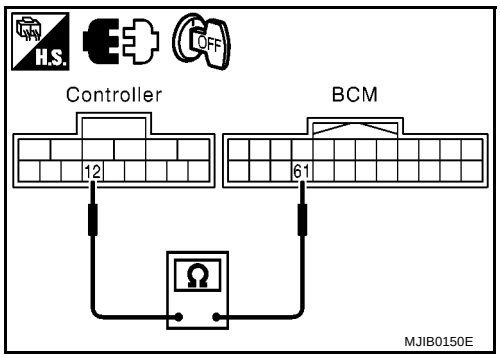
16. CHECK CIRCUIT CONTINUITY BETWEEN CONTROLLER AND BCM

Check continuity between controller terminal 12 and BCM terminal 61.

12 (P) – 61 (P) : Continuity should exist.

OK or NG

OK >> Replace BCM.
NG >> Repair harness or connector.



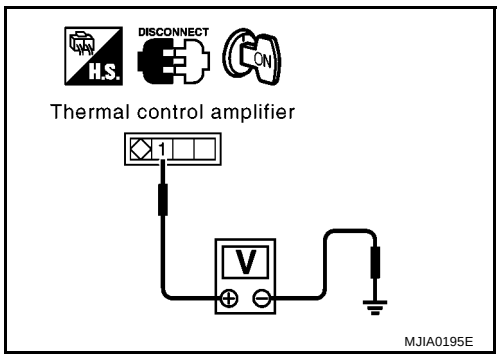
17. CHECK 1: INTAKE SENSOR POWER SUPPLY CIRCUIT

Disconnect intake sensor connector, turn ignition switch ON, and check voltage between intake sensor terminal 1 and ground.

1 (Y) – Ground : Approx. 5V

OK or NG

OK >> GO TO 18.
NG >> GO TO 20.



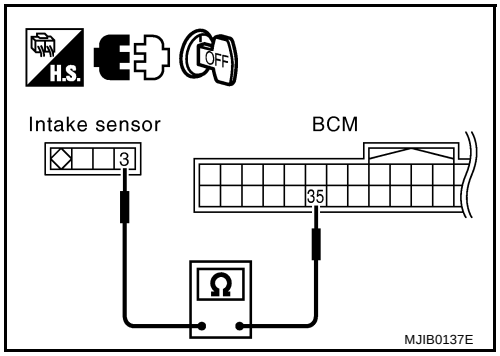
18. CHECK CIRCUIT CONTINUITY BETWEEN INTAKE SENSOR AND BCM

Check continuity between intake sensor terminal 3 and BCM terminal 35.

3 (Y) – 35 (Y) : Continuity should exist.

OK or NG

OK >> GO TO 19.
NG >> Repair harness or connector.

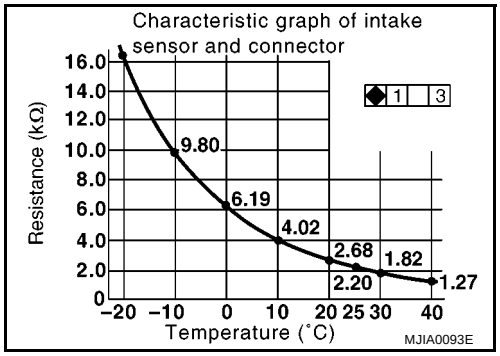


19. CHECK INTAKE SENSOR

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

OK or NG

OK >> Replace BCM.
NG >> Replace the intake sensor.



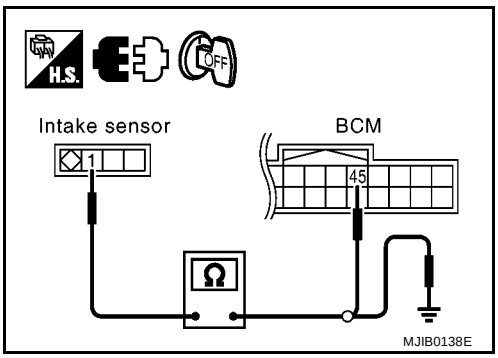
20. CHECK CIRCUIT CONTINUITY BETWEEN INTAKE SENSOR AND BCM

1. Disconnect the BCM connector.
2. Check continuity between intake sensor terminal 1 and BCM amp. terminal 45.

1 (Y) – 45 (Y) : Continuity should exist.

3. Check continuity between intake sensor terminal 1 and ground.

1 (Y) – Ground : Continuity should not exist.



OK or NG

OK >> Replace BCM.
NG >> Repair harness or connector.

21. CHECK CAN COMMUNICATION CIRCUIT

Check the CAN communication between the BCM and ECM control unit, and the ECM control unit and IPDM E/R. Refer to BCS-30, "CAN Communication Inspection With CONSULT-II (Self-Diagnosis)" and LAN-7, "CAN Communication Unit" .

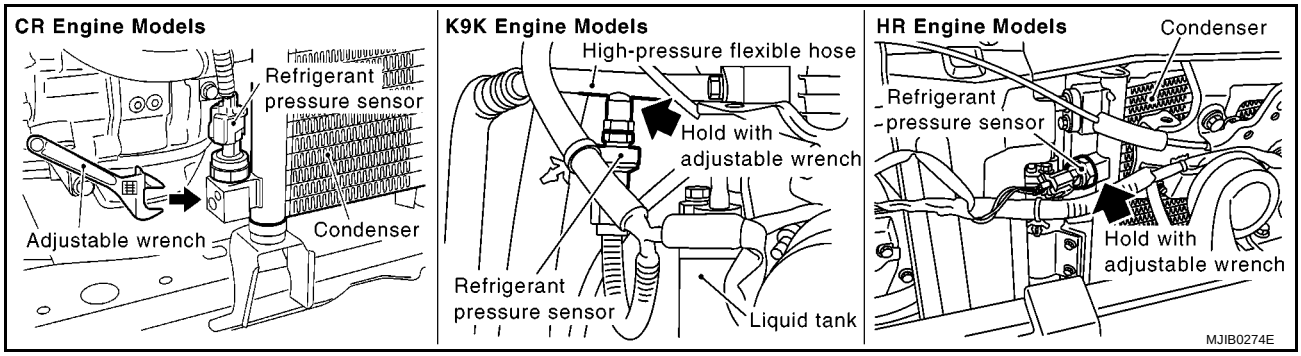
OK or NG

OK >> End of trouble diagnosis
NG >> Repair or replace parts based on the diagnosis results.

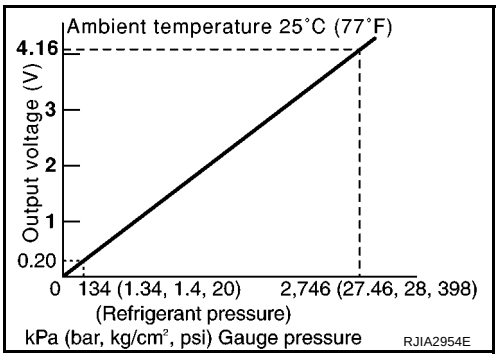
Component Inspection

EJS006AI

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

EJS0057J

CHECK FUNCTION (FOR GASOLINE ENGINE)

Inspection Procedure

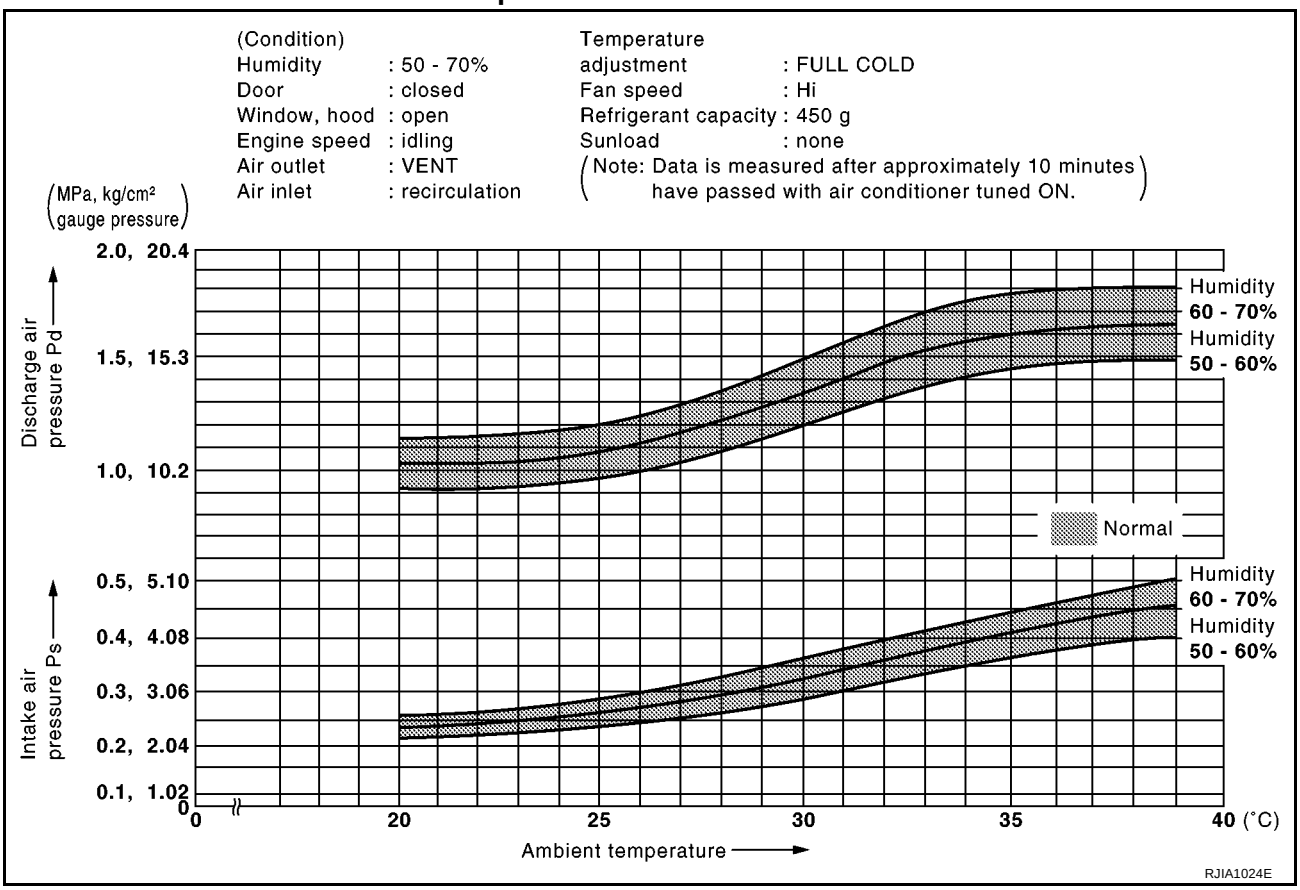
1. Connect manifold gauge to vehicle cooler system (service valve).
2. Attach a psychrometer to blower unit air inlet (under glove box). Attach a dry-bulb thermometer to right-center of ventilator grille.
3. Start and warm up the engine.
4. After warming-up engine, make sure engine speed is the specified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

Fan speed	**: HI**
Inlet	**: Recirculation (REC)**
Outlet	**: Ventilation (VENT)**
Predetermined temperature	**: FULL COLD**

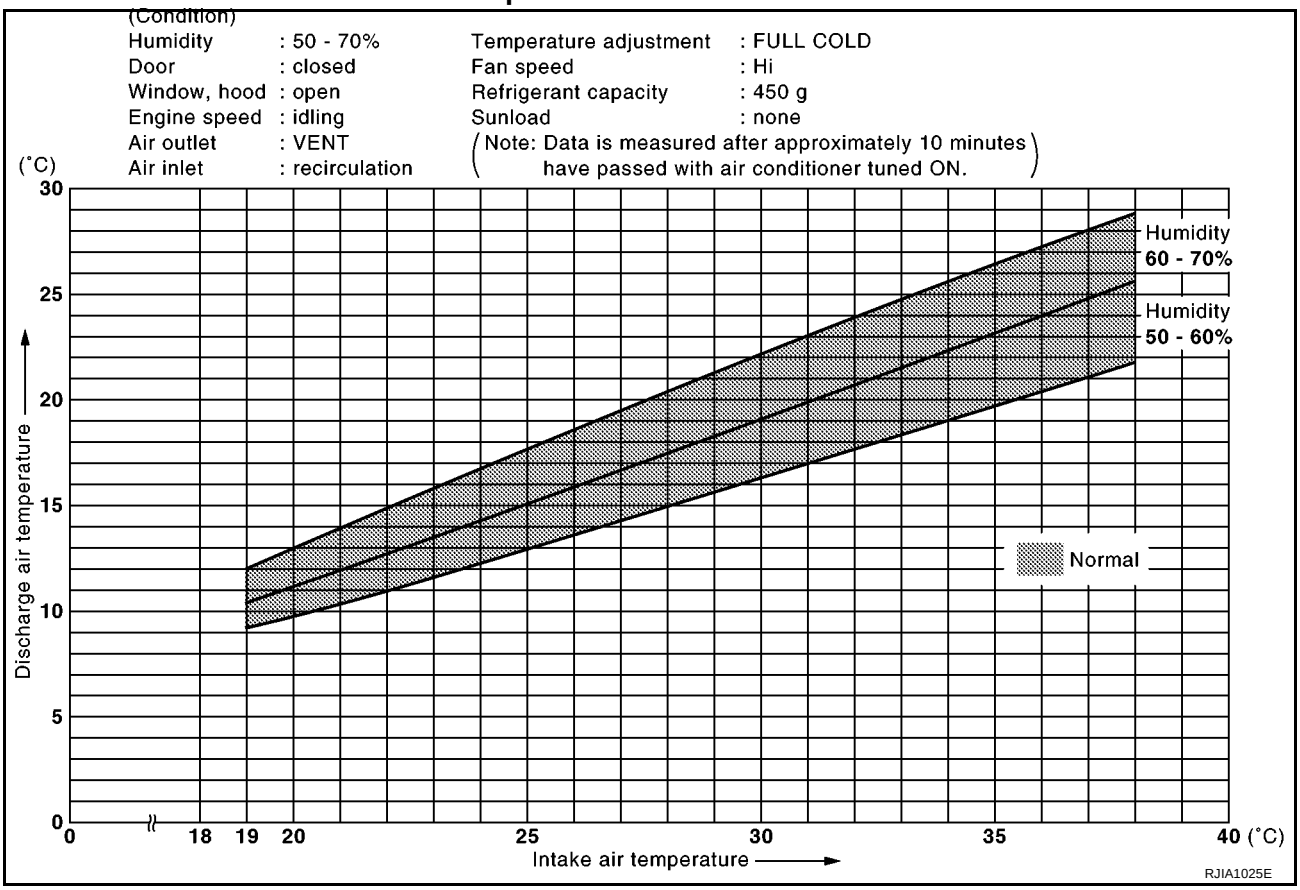
6. Fully open the hood and door windows, and close all the doors.
7. Keep this state until the cooler system becomes stable (after approximately 10 minutes).
8. Keep the engine speed at idle.
9. Measure the temperature and humidity at the air inlets, temperature at the air outlets, and the high-pressure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

Performance Curve

Ambient Temperature - Pressure Characteristics



Intake Air Temperature - Pressure Characteristics



DIAGNOSIS BY PRESSURE GAUGE

Connect a manifold gauge to the cooler cycle (service valve), and determine faulty parts and possible causes by pressure in the cooler 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 cooler 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
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 outlet and inlet pipe of the liquid tank or the liquid tank becomes frosted.	Liquid tank malfunction (strainer clogged)	Replace liquid tank
	Evaporator becomes frosted.	Evaporator fins are clogged or crushed.	Repair or replace.
		Insufficient airflow	Refer to MTC-32, "Blower Fan 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.

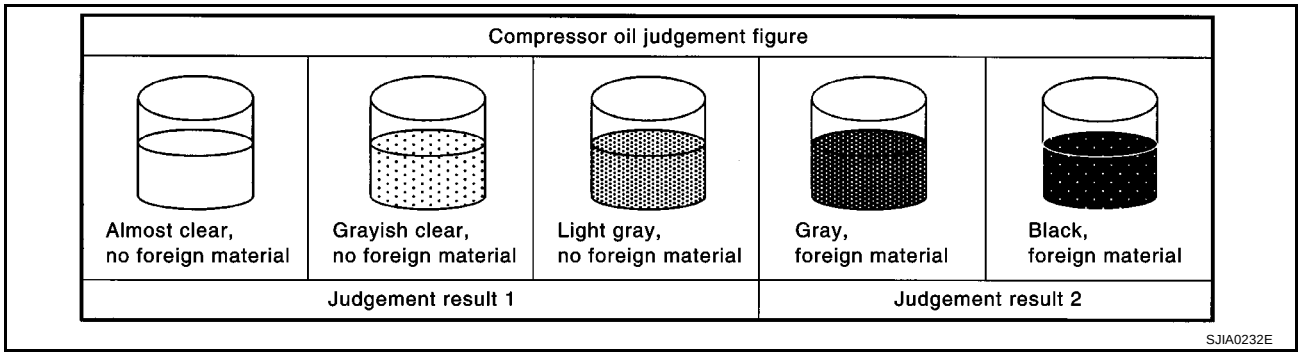
Symptom	Cycle status	Possible causes	Action
Occasionally high-pressure becomes low, and low-pressure becomes minus.	Sometimes evaporator outlet is not cold and sometimes frost forms on evaporator inlet.	Water mixed in cooler system. (Blockage caused by moisture freezing at the expansion valve.)	Discharge 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.	When compressor is stopped, pressure equalizes quickly and there is no temperature difference between compressor high-pressure pipes and low-pressure pipes.	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	Checklist	Inspection Method	Result	Action
Noise (rattling or rolling sound) from compressor unit when A/C is ON.	Cooler system internal pressure	Check with a manifold gauge.	Both high- and low-pressure sides are high. (Note 2)	Recharge with proper amount of refrigerant.
			High/low-pressures hunt. (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. Diagnostic result 2: Replace compressor and liquid tank.
Insufficient cooling (Note 1)	Compressor body	Check rotation of compressor. If seized or stuck, sample compressor oil and judge.		
	Cooler system internal pressure	Check with a manifold gauge. If the difference between high-pressure and low-pressure is small or almost the same, sample compressor oil and judge.		
Outlet air temperature rises temporarily while driving. (Note 2)	—	—	—	Replace compressor only.

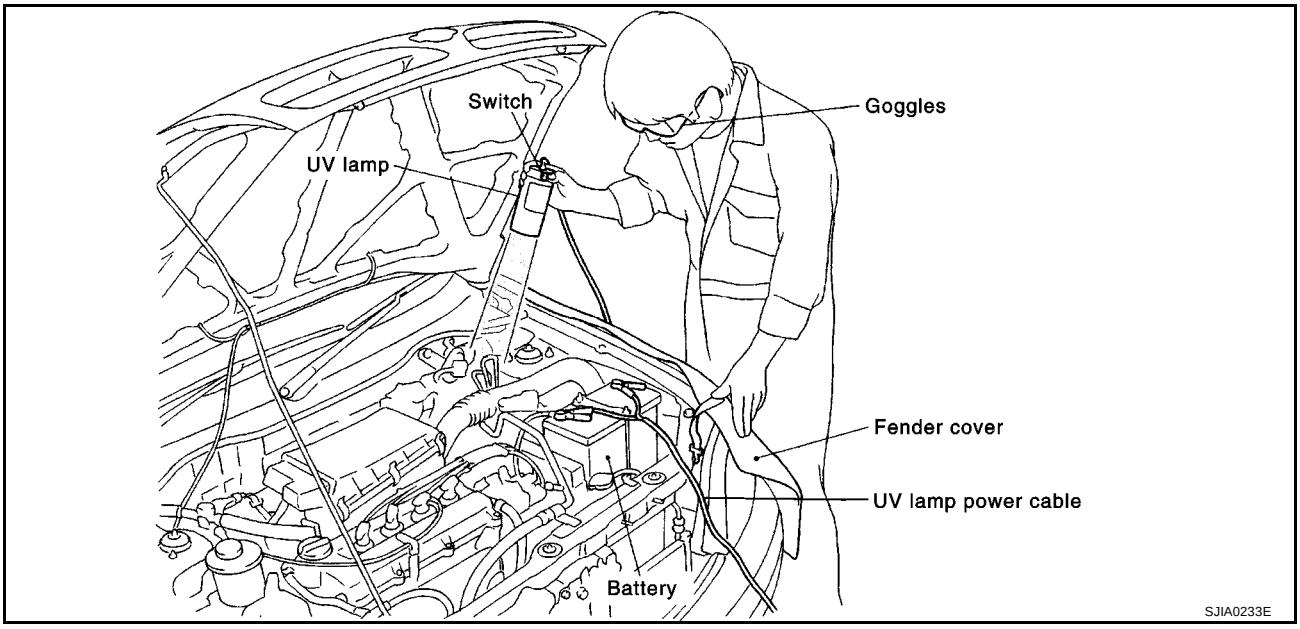
Note 1: First conduct inspection according to trouble diagnosis for each malfunction.
Note 2: Applicable only to variable-capacity compressor



Detecting Leaks With Fluorescent Indicator

EJS0057K

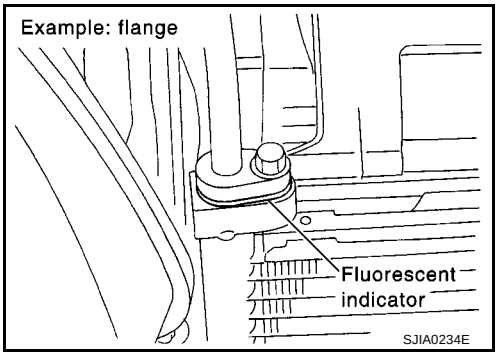
METHOD FOR DETECTING REFRIGERANT LEAKAGE



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 cooler 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.



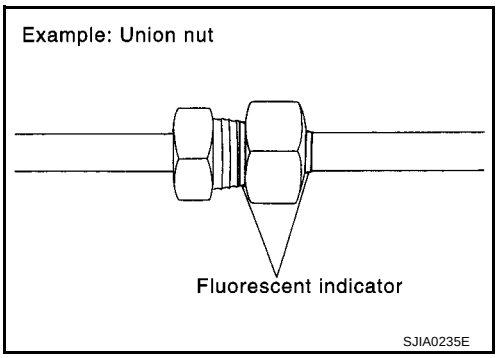
5. After finishing work, use a UV lamp to make sure no fluorescent indicator remains.

   CAUTION:

   - **Do not look directly into the UV lamp light source.**
   - **For continuous operating time of UV lamp and other details, follow the Owner's 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

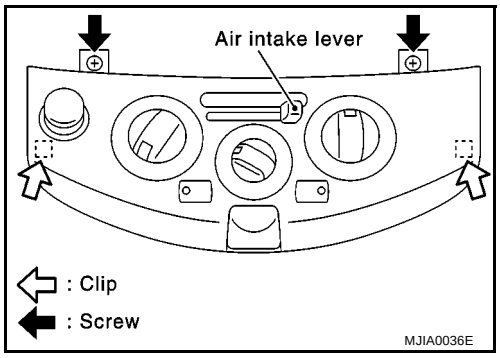
PFP:27500

Removal and Installation

EJS002GE

REMOVAL

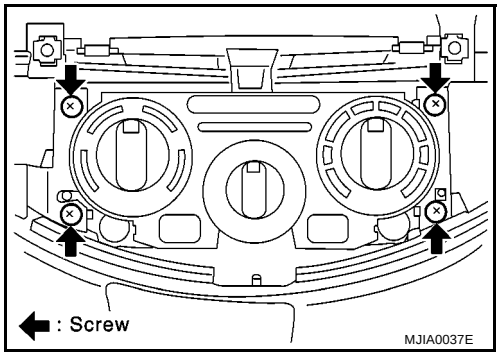
1. Remove cluster lid C. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Remove the air intake lever.
3. Remove the screws and clips, and then remove the air conditioner finisher.



4. Remove the air mix door cable, mode door cable, and intake door cable from the air conditioner unit.
5. Remove screws, and pull out controller.
6. Disconnect connector and remove controller.

CAUTION:

Adjust the door cables during installation. Refer to MTC-56, "Intake Door Cable Adjustment" , MTC-57, "Mode Door Cable Adjustment" and MTC-58, "Air Mix Door Cable Adjustment" .

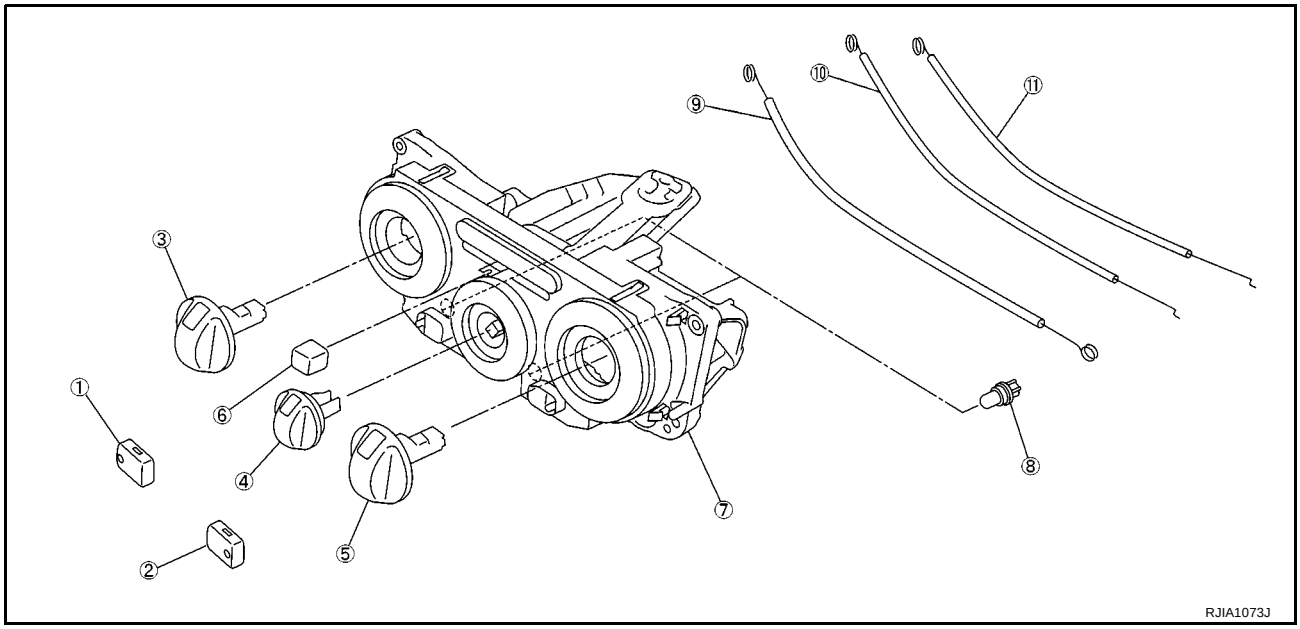


INSTALLATION

Install in the reverse order of removal.

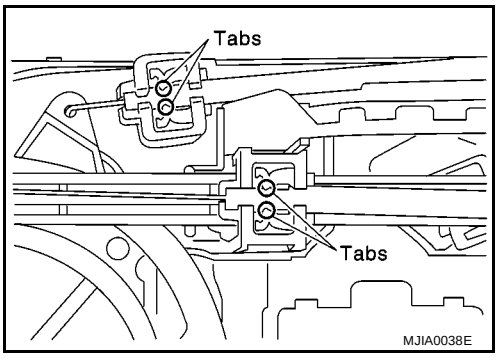
Disassembly and Assembly

EJS002GF



1. Rear window defogger switch
2. Air conditioner switch
3. Mode dial
4. Fan control dial
5. Temperature control dial
6. Air intake lever
7. Controller
8. Illumination bulb
9. Mode door cable
10. Intake door cable
11. Air mix door cable

NOTE:
Install the inner cable of each door cable to the corresponding lever, as shown in the figure. Press the outer cable until it hooks on the tabs and becomes fixed.



A/C UNIT ASSEMBLY

PFP:27210

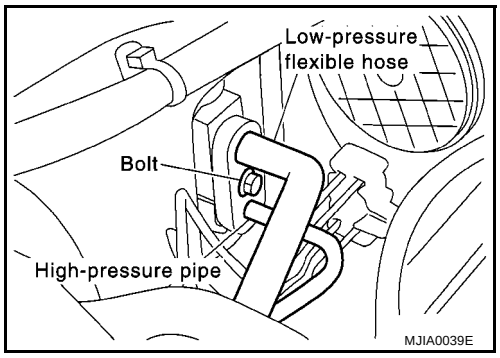
Removal and Installation

EJS002GG

REMOVAL

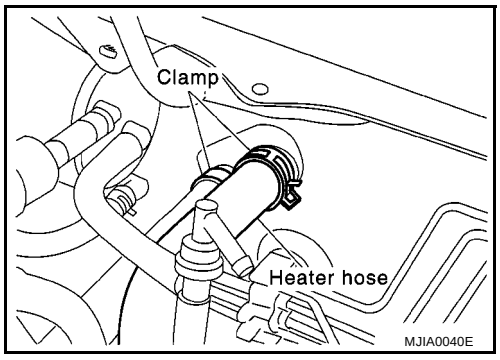
1. Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] to discharge refrigerant.
2. Drain engine coolant.
3. Disconnect the low-pressure flexible hose and high-pressure pipe from the evaporator.

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

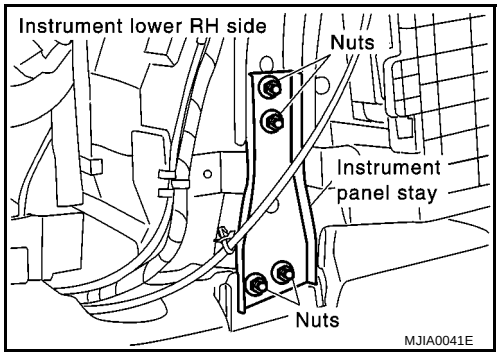


4. Pull out the heater hoses from the heater core.

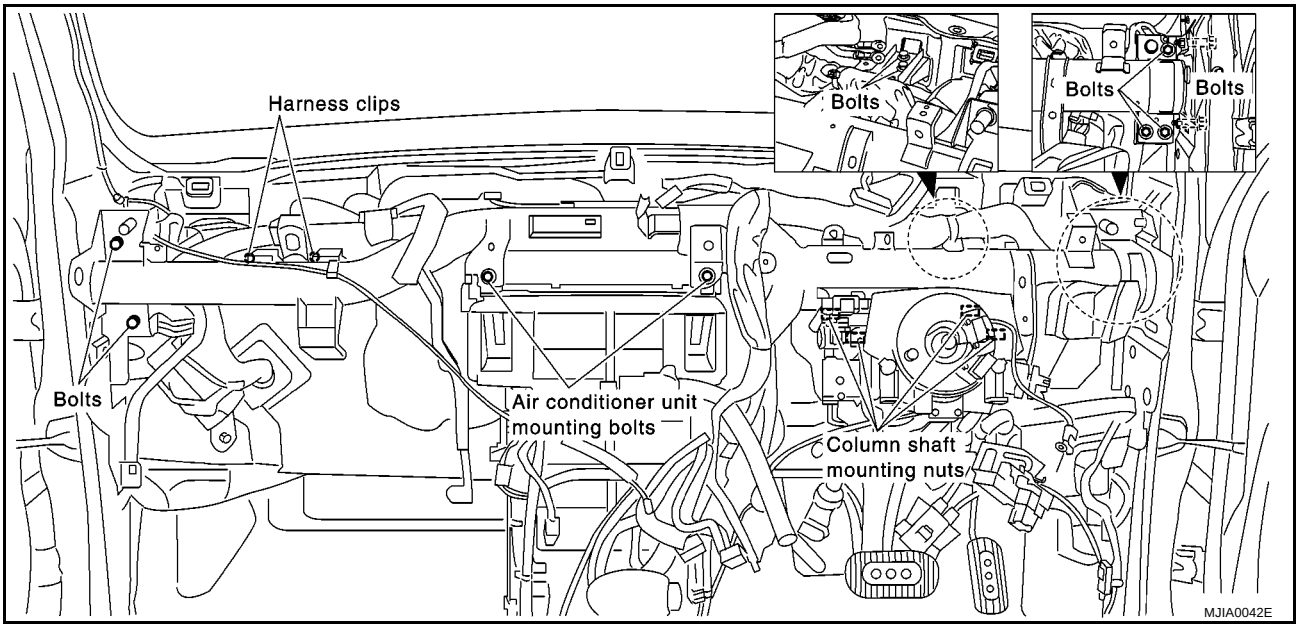
   CAUTION:
   - **Some coolant may spill when heater hoses are disconnected.**
   - **Close off the coolant inlet and outlet on the heater core (2 locations) with waste.**



5. Remove instrument panel. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
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 air conditioner mounting bolts, steering member mounting bolts, column shaft mounting bolts, and the harness clips.
9. Remove the BCM. Refer to BCS-30, "Removal and Installation of BCM" .
10. Remove the steering member, and then remove the air conditioner unit.

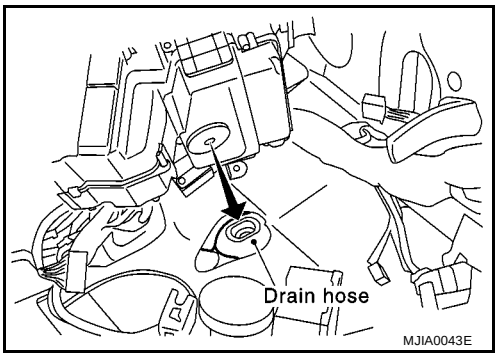
INSTALLATION

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 air conditioner unit.

   CAUTION:
   Confirm that the air conditioner drain and drain hose positions match up.

   Air conditioner 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 3-10 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)**

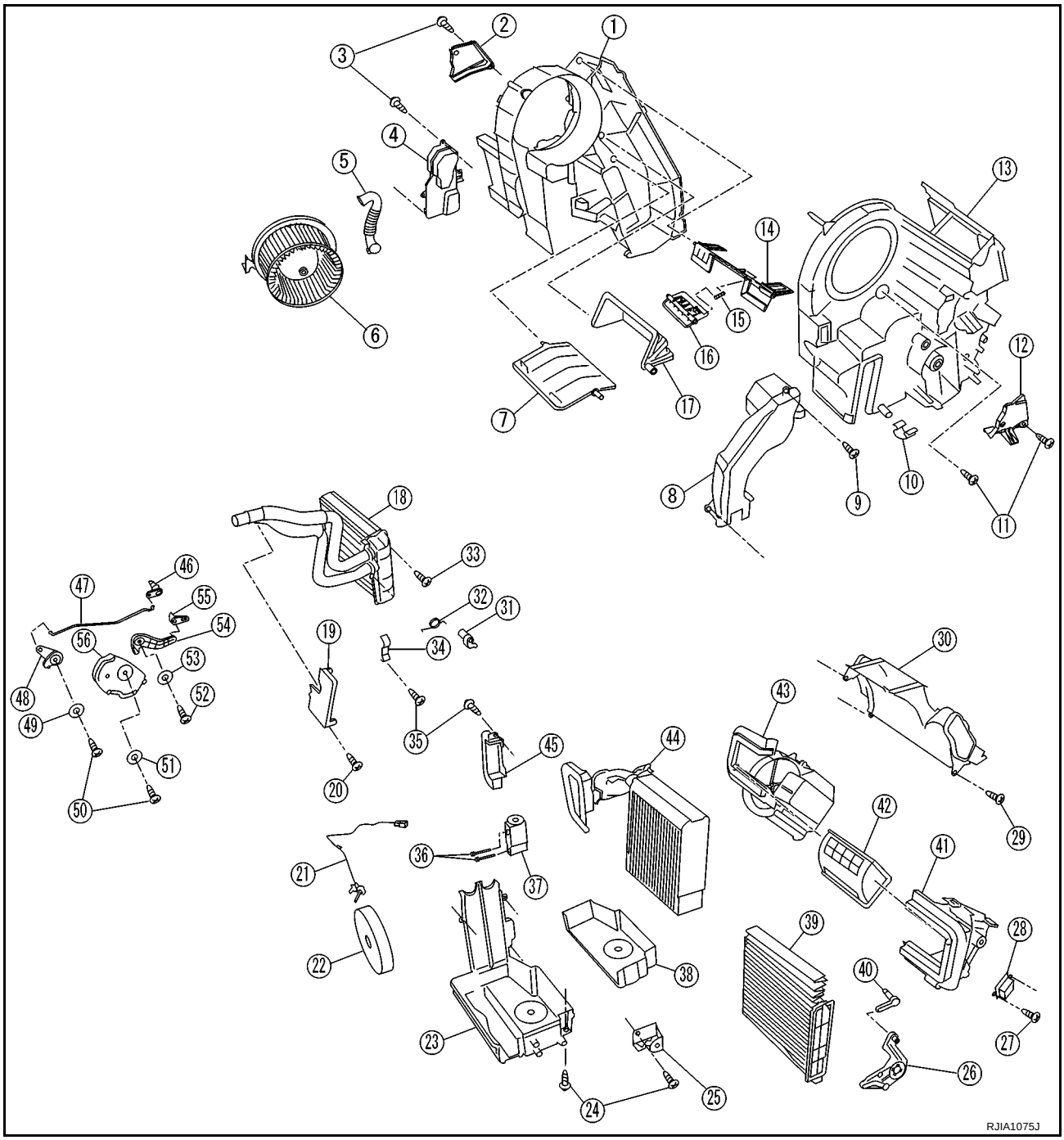
   Mounting bolts for the low-pressure flexible hoses and high-pressure pipes.

Tightening torque	**:2.9 - 5.9 N·m (0.30 - 0.60 kg-m, 26 - 52 in-lb)**

3. Fill engine coolant.
4. Charge refrigerant using refrigerant recovery unit [for HFC-134a(R-134a)].

Disassembly and Assembly

EJS002GH



1. Blower fan motor case (RH)	2. Cover (RH)	3. Screw
4. Foot duct (RH)	5. Cooling hose	6. Blower fan motor
7. Air mix door	8. Foot duct (LH)	9. Screw
10. Clips	11. Screw	12. Cover (LH)
13. Blower fan motor case (LH)	14. Ventilation door	15. Defroster rod
16. Deflator door	17. Foot door	18. Heater core
19. Heater pipe cover	20. Screw	21. Thermal control amplifier
22. Heater pipe packing	23. Lower blower fan motor case	24. Screw
25. Bracket	26. Intake door link	27. Screw
28. Blower fan resistor	29. Screw	30. Attachment case
31. Air mix door lever	32. Spring	33. Screw
34. Heater pipe clip	35. Screw	36. Bolt

37. Expansion valve
38. Insulator
39. Air conditioner filter
40. Intake lever
41. Intake case (LH)
42. Intake door
43. Intake case (RH)
44. Evaporator
45. Expansion valve cover
46. Ventilation/ Deflator lever
47. Ventilation/ Deflator rod
48. Ventilation/ Deflator link
49. Washer
50. Screw
51. Washer
52. Screw
53. Washer
54. Foot link
55. Foot lever
56. Main link

HEATER CORE

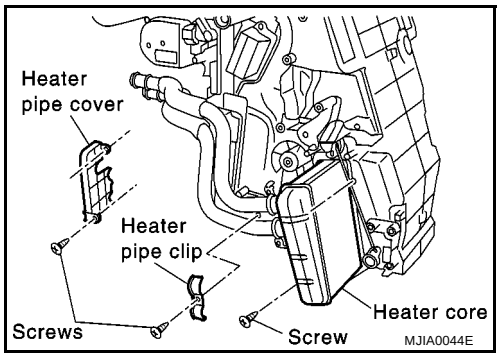
PFP:27140

Removal and Installation

EJS002GI

REMOVAL

1. Remove the air conditioner unit. Refer to MTC-48, "A/C UNIT ASSEMBLY" .
2. Remove the foot duct (LH), screws, and heater pipe cover.
3. Remove the main link and ventilation/defroster link.
4. Remove the heater pipe clip, and then pull out the heater core from air conditioner unit.



INSTALLATION

Install in the reverse order of removal.

BLOWER MOTOR

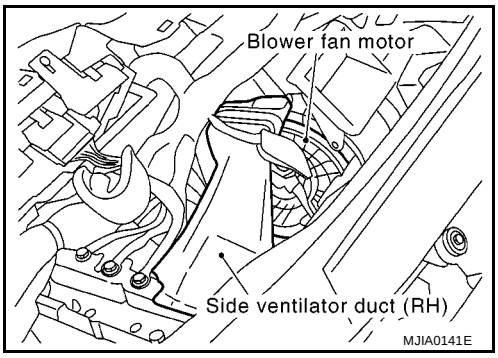
PFP:27226

Removal and Installation

EJS002GJ

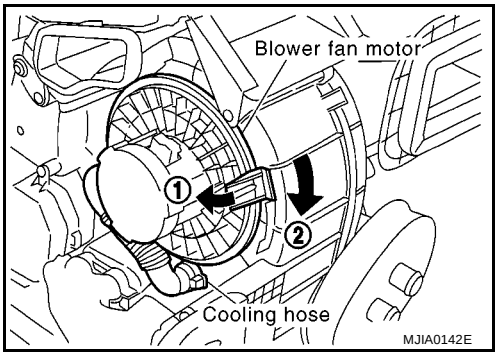
REMOVAL

1. Remove instrument panel assembly. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Remove the side ventilator duct (RH). Refer to MTC-62, "SIDE VENTILATOR DUCT" .



3. Disconnect the cooling hose, and remove the blower fan motor.

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



INSTALLATION

Install in the reverse order of removal.

CAUTION:
Firmly fasten the blower fan motor assembly flange fastening hooks in the air conditioner unit.

BLOWER FAN RESISTOR

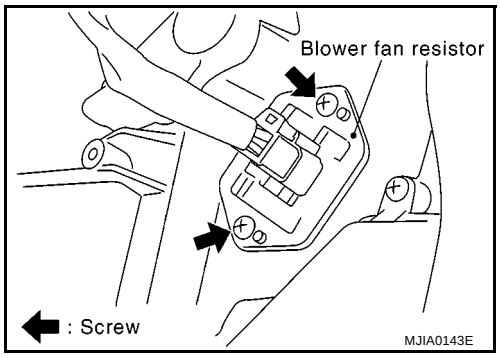
PFP:27150

Removal and Installation

EJS002GL

REMOVAL

1. Remove the glove box cover assembly. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Remove the blower fan resistor.



INSTALLATION

Install in the reverse order of removal.

AIR CONDITIONER FILTER

PFP:27277

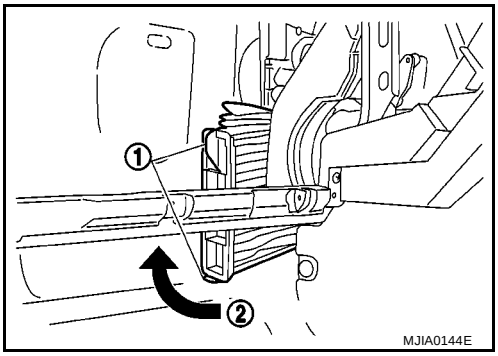
Removal, Replacement and Installation

EJS002JJ

REMOVAL

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

1. Remove the glove box cover assembly. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Compress the air conditoner filter downward while sliding it to the left side of the vehicle as shown in the figure 1.
3. Turn the bottom of the air conditoner filter upward, and then remove it as shown in the figure 2.

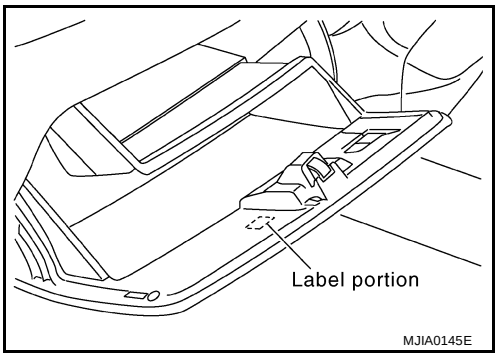


REPLACEMENT

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

Air conditoner filter Replacement interval : Once a year or every 12,000 km (7,500 miles)

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.

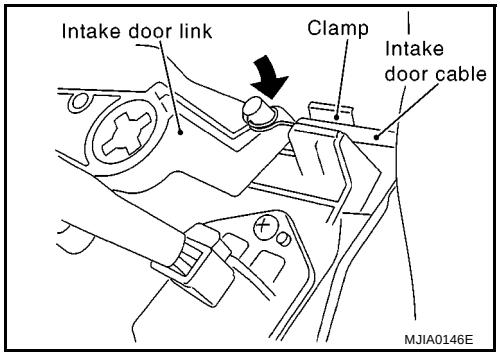
INTAKE DOOR

PFP:27245

Intake Door Cable Adjustment

EJS002GO

1. Remove the glove box cover assembly. Refer to IP-8, "P. Glove Box Cover Assembly" .
2. Remove the outer cable of intake door cable from the clamp.
3. Set the intake air control lever to “RECIRCULATION”.
4. Push the intake door link in the direction shown by the arrow while carefully pulling the outer cable to the controller side and attaching the clamp.
5. Operate the intake air control lever and check if the intake door cable moves smoothly.



CAUTION:

When clamping the outer cable, do not move the inner cable.

MODE DOOR

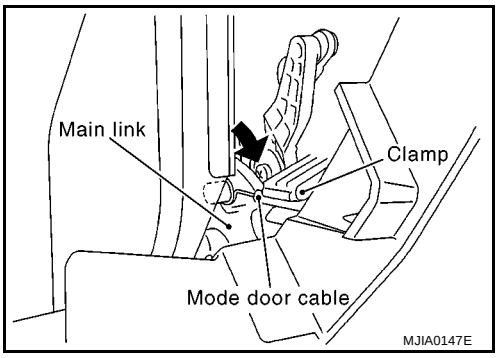
PFP:27181

Mode Door Cable Adjustment

EJS002HO

1. Remove the instrument panel stay cover. Refer to IP-8, "N. Instrument Panel Stay Cover" .
2. Remove the outer cable of mode door cable from the clamp.
3. Set mode dial to “ventilation” position.
4. Push the main link in the direction shown by the arrow, then carefully pull outer cable to the controller side, and install the clamp.
5. Operate the mode dial to insure that the inner cable moves smoothly.

CAUTION:
When clamping the outer cable, do not move the inner cable.



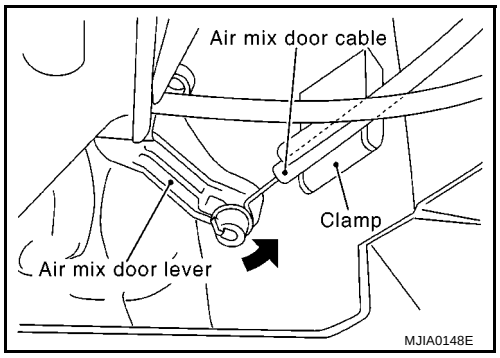
AIR MIX DOOR

PFP:27180

Air Mix Door Cable Adjustment

EJS002HP

1. Remove the instrument panel stay cover. Refer to IP-8, "N. Instrument Panel Stay Cover" .
2. Remove the outer cable of air mix door cable from the clamp.
3. Set temperature control dial to “full cold” position.
4. Push the air mix door lever in the direction shown by arrow and then carefully pull the outer cable toward controller side, and install the clamp.
5. Operate the temperature control dial to insure that the inner cable moves smoothly.



CAUTION:

When clamping the outer cable, do not move the inner cable.

INTAKE SENSOR

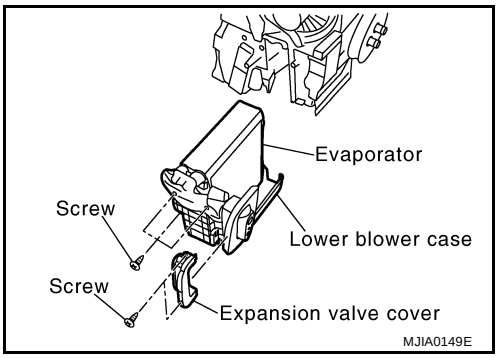
PFP:27723

Removal and Installation

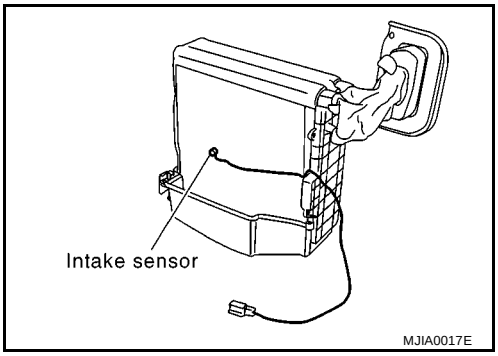
EJS002GR

REMOVAL

1. Use recovery/recycling recharging equipment [for HFC-134a(R134a)] to discharge refrigerant.
2. Remove the air conditioner unit. Refer to MTC-48, "A/C UNIT ASSEMBLY" .
3. Remove the air conditioner filter and foot duct (RH). Refer to MTC-55, "AIR CONDITIONER FILTER" and MTC-60, "DUCTS AND GRILLES" .
4. Remove the lower blower fun motor case and expansion valve cover.



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



INSTALLATION

Install in the reverse order of removal.

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 sensor, install the intake sensor thermistor in the same position as the removed intake sensor.**
- **When removing and installing the thermal amplifier, do not rotate the thermistor's insertion part.**
- **After charging with refrigerant, check for refrigerant leaks.**

High-pressure flexible hose and high-pressure pipe mounting bolts

Tightening torque : 2.9 - 5.9 N·m (0.30 - 0.60 kg-m, 26 - 52 in-lb)

DUCTS AND GRILLES

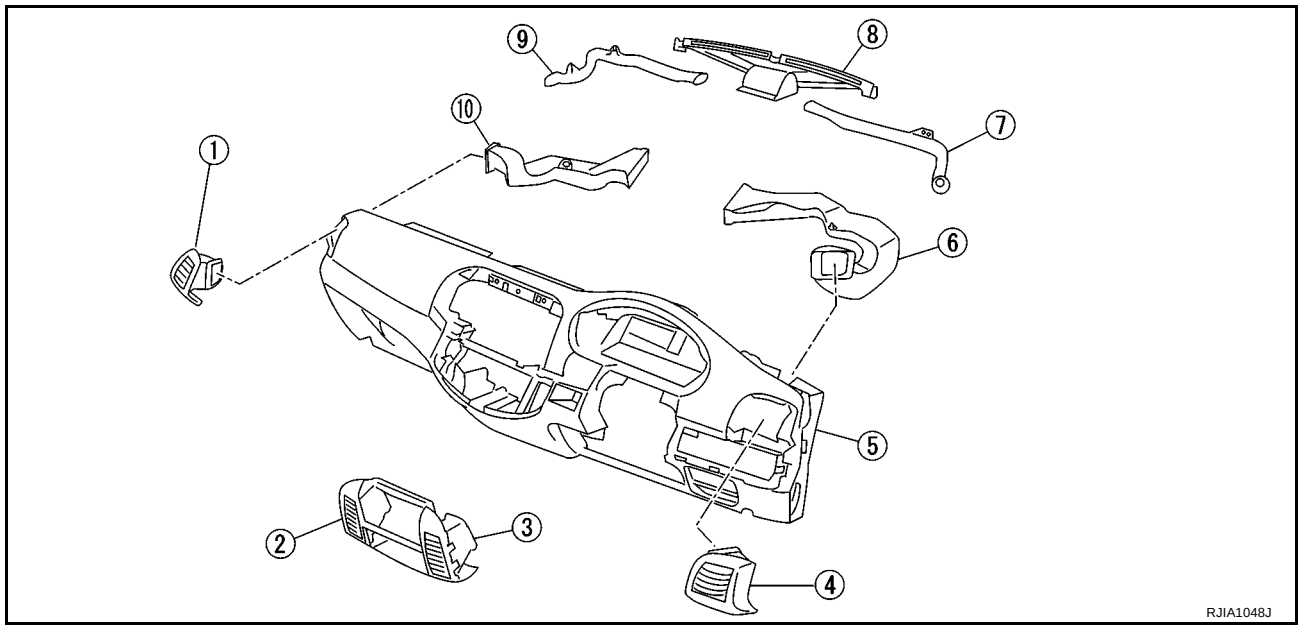
PFP:27860

Removal and Installation

EJS002GT

COMPONENT PARTS LOCATION

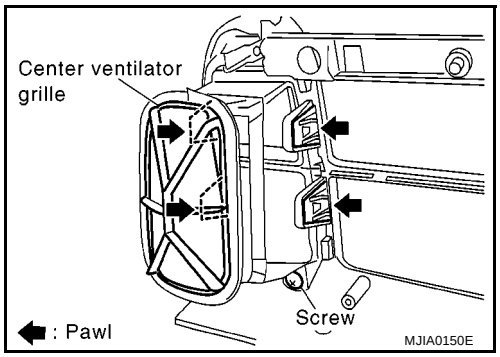
NOTE:
Following illustration is for RHD model. The layout for LHD model is symmetrically opposite.



1. Side ventilator grille (LH)
2. Central ventilator grille (LH)
3. Central ventilator grille (RH)
4. Side ventilator grille (RH)
5. Instrument panel assembly
6. Side ventilator duct (RH)
7. Side defroster duct (RH)
8. Defroster nozzle
9. Side defroster duct (LH)
10. Side ventilator duct (LH)

CENTRAL VENTILATOR GRILLE

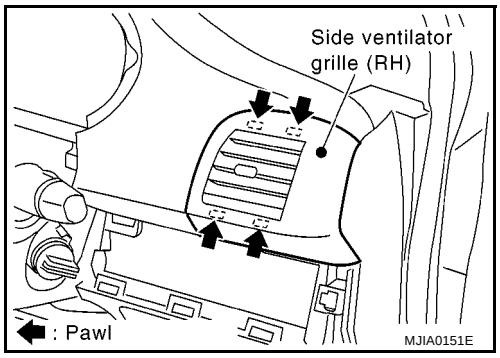
1. Remove cluster lid C. Refer to IP-7, "L. Cluster Lid C" .
2. Remove the audio. Refer to AV-15, "Removal and Installation of Audio Unit" .
3. Remove the center ventilator grille (LH/RH).



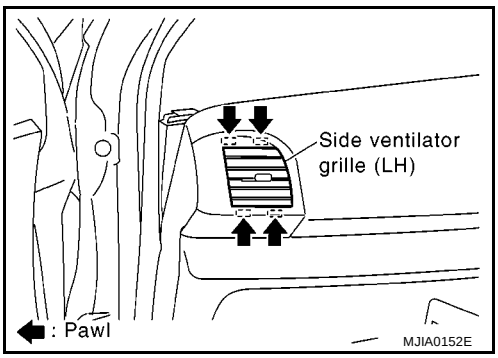
SIDE VENTILATOR GRILLE

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 (RH) hooks from the back side of the instrument panel, and then remove the side ventilator grille (RH).
4. Remove the glove box cover assembly. Refer to IP-8, "P. Glove Box Cover Assembly" .



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

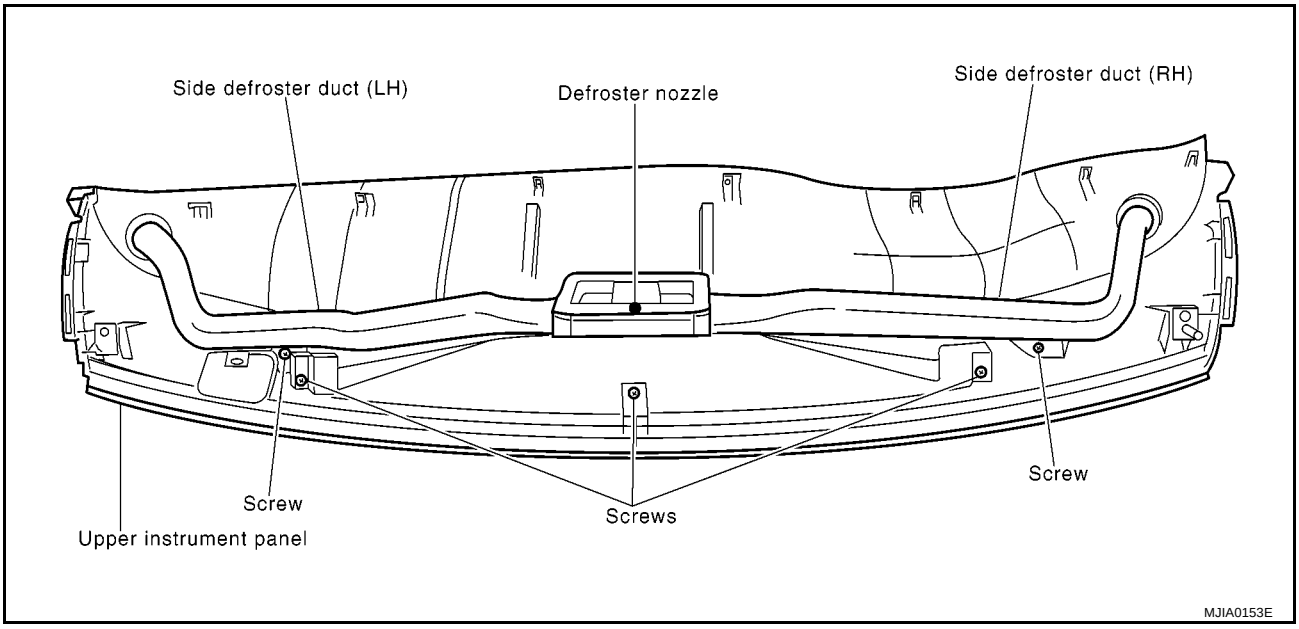


DEFROSTER NOZZLE AND DUCT

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" .



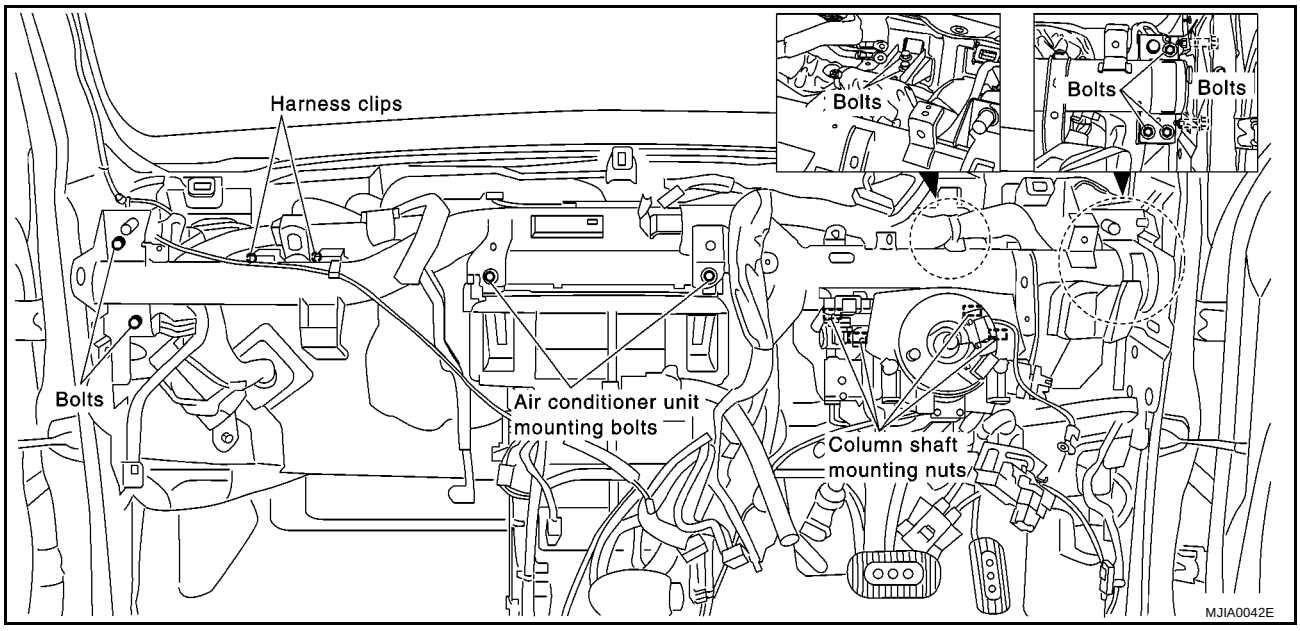
2. Remove the side defroster ducts (LH/RH) and defroster nozzles from the upper instrument panel.

SIDE VENTILATOR DUCT

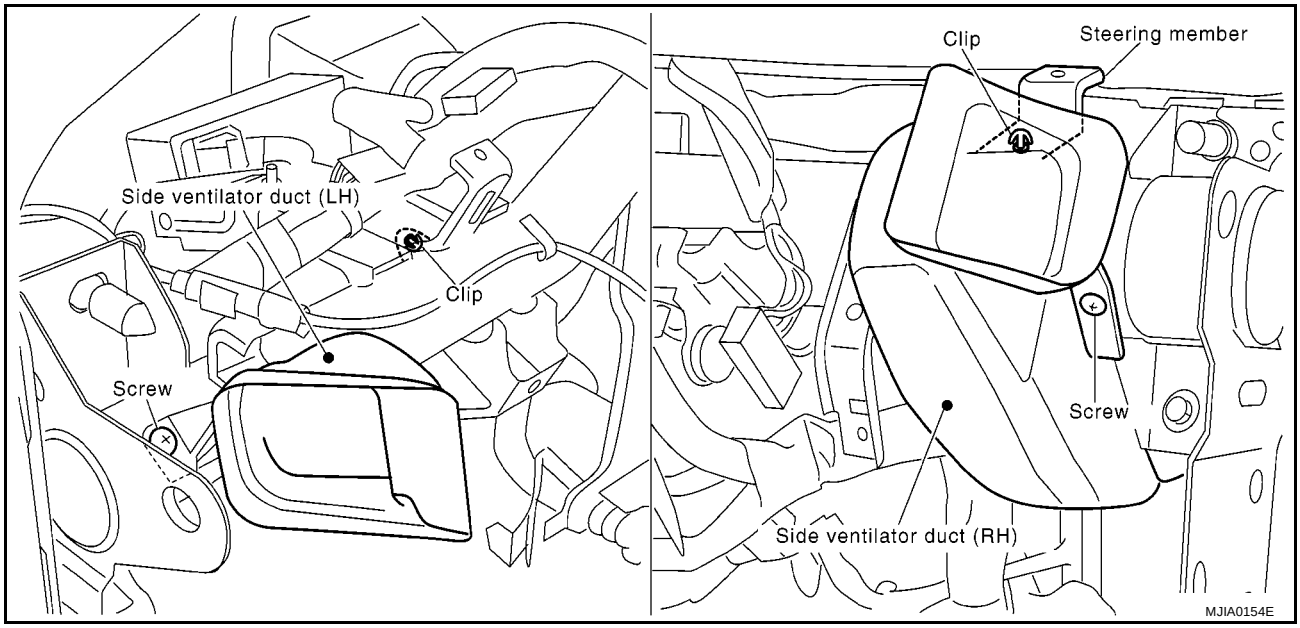
NOTE:

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 (LH).
3. Remove instrument panel. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
4. Remove the BCM. Refer to BCS-30, "Removal and Installation of BCM" .
5. Remove the air conditioner mounting bolts, steering member mounting bolts, column shaft mounting bolts, and the harness clips.



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

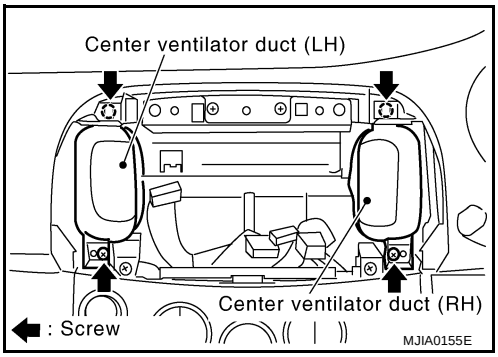


Steering member mounting nut and bolt

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

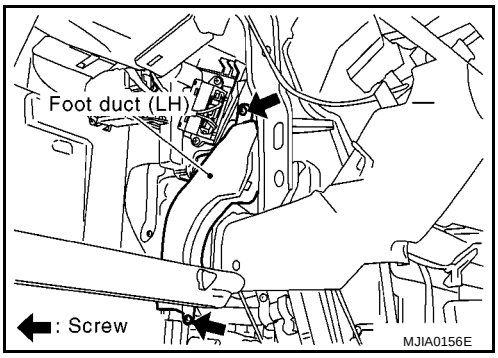
CENTER VENTILATOR DUCT

1. Remove cluster lid “C”. Refer to IP-7, "L. Cluster Lid C" .
2. Remove the screws and then remove the center ventilator ducts (LH/RH).

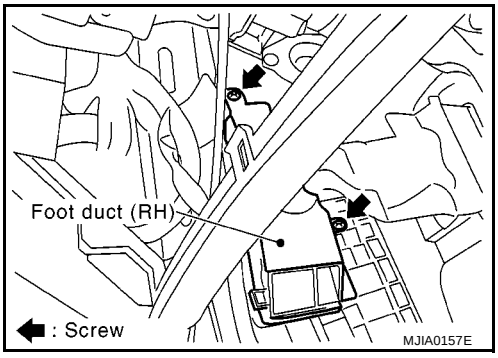


FOOT DUCT

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



3. Remove the instrument panel under tray. Refer to IP-6, "E. Instrument Panel Under Tray" .
4. Remove the screws and thermal control amplifier connector, and then remove the foot duct (RH).



REFRIGERANT LINES

PFP:92600

HFC-134a (R-134a) Service Procedure

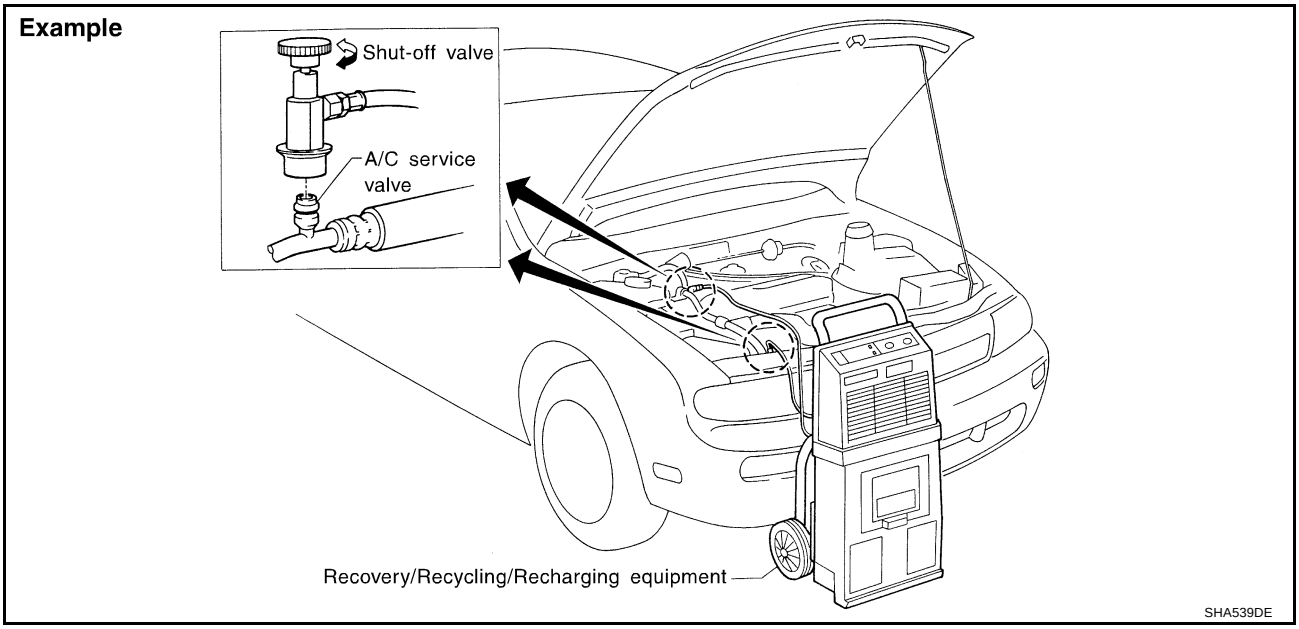
EJS002HN

SETTING OF SERVICE TOOLS AND EQUIPMENT

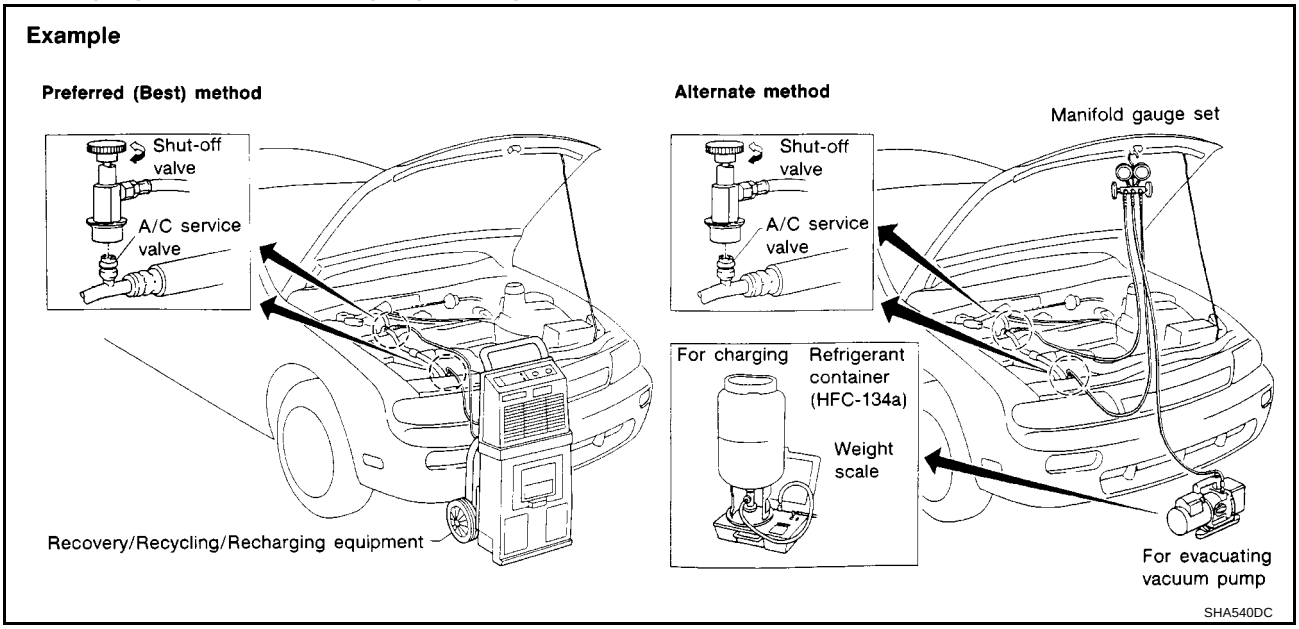
Discharging Refrigerant

WARNING:

Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.



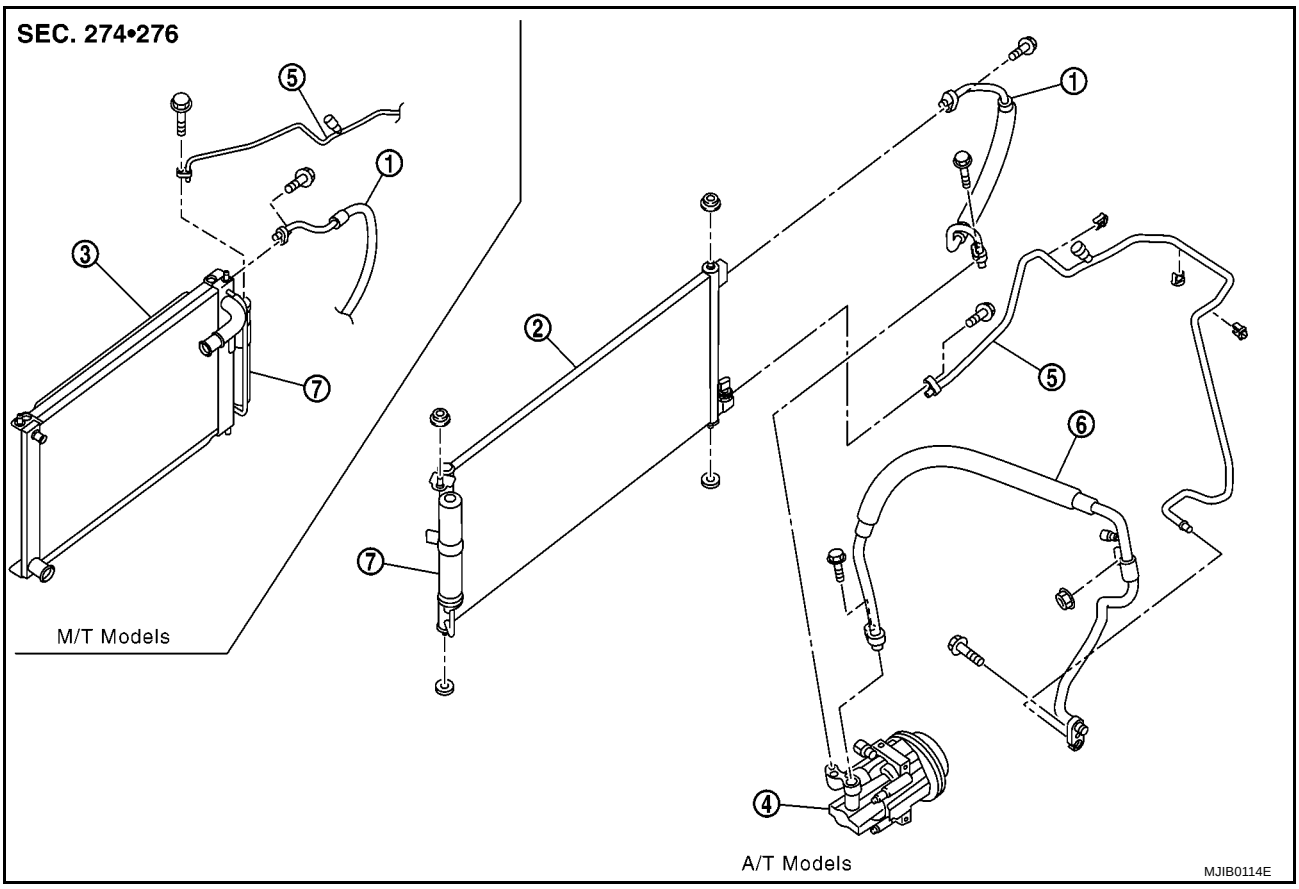
Evacuating System and Charging Refrigerant



Component Parts Location

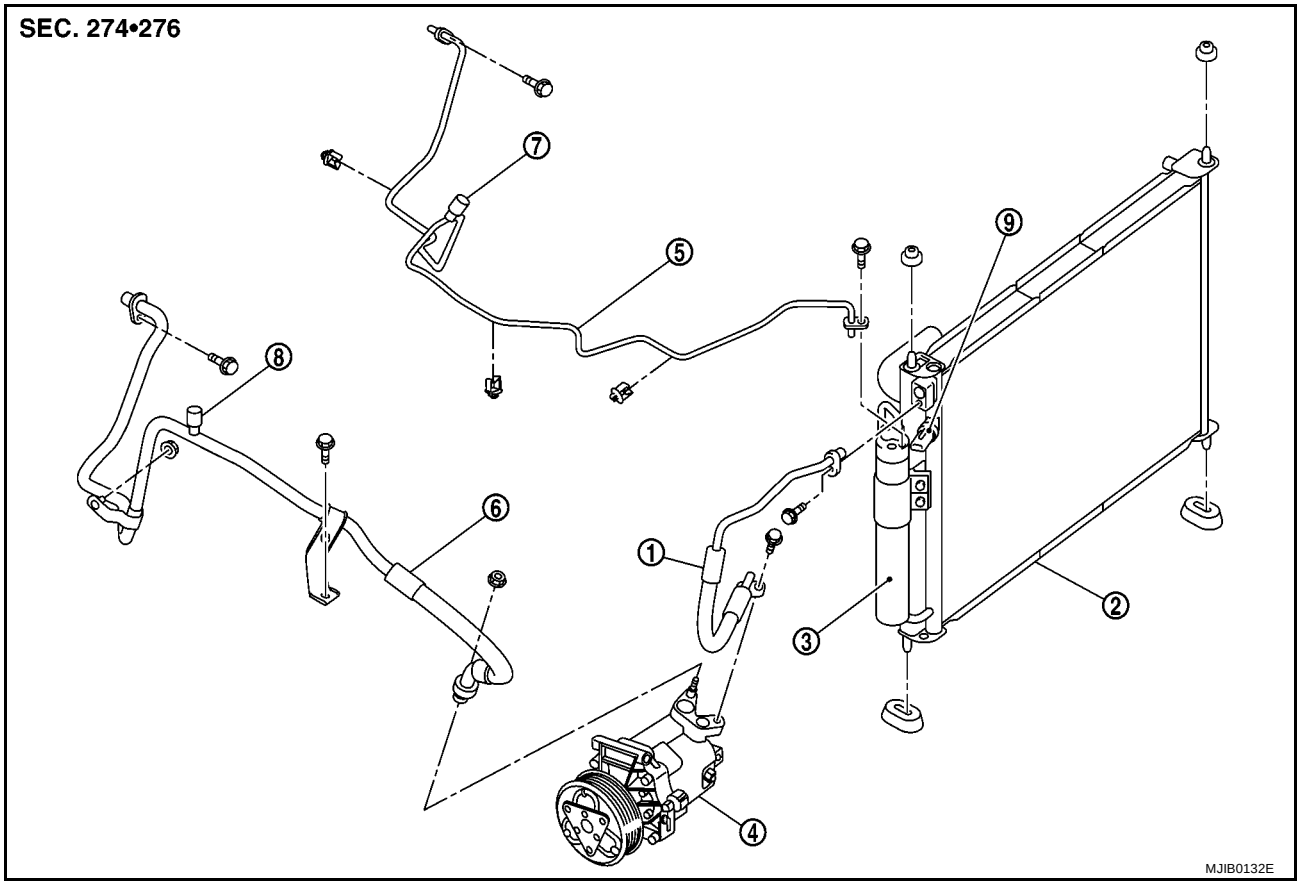
EJS002GU

CR ENGINE MODELS



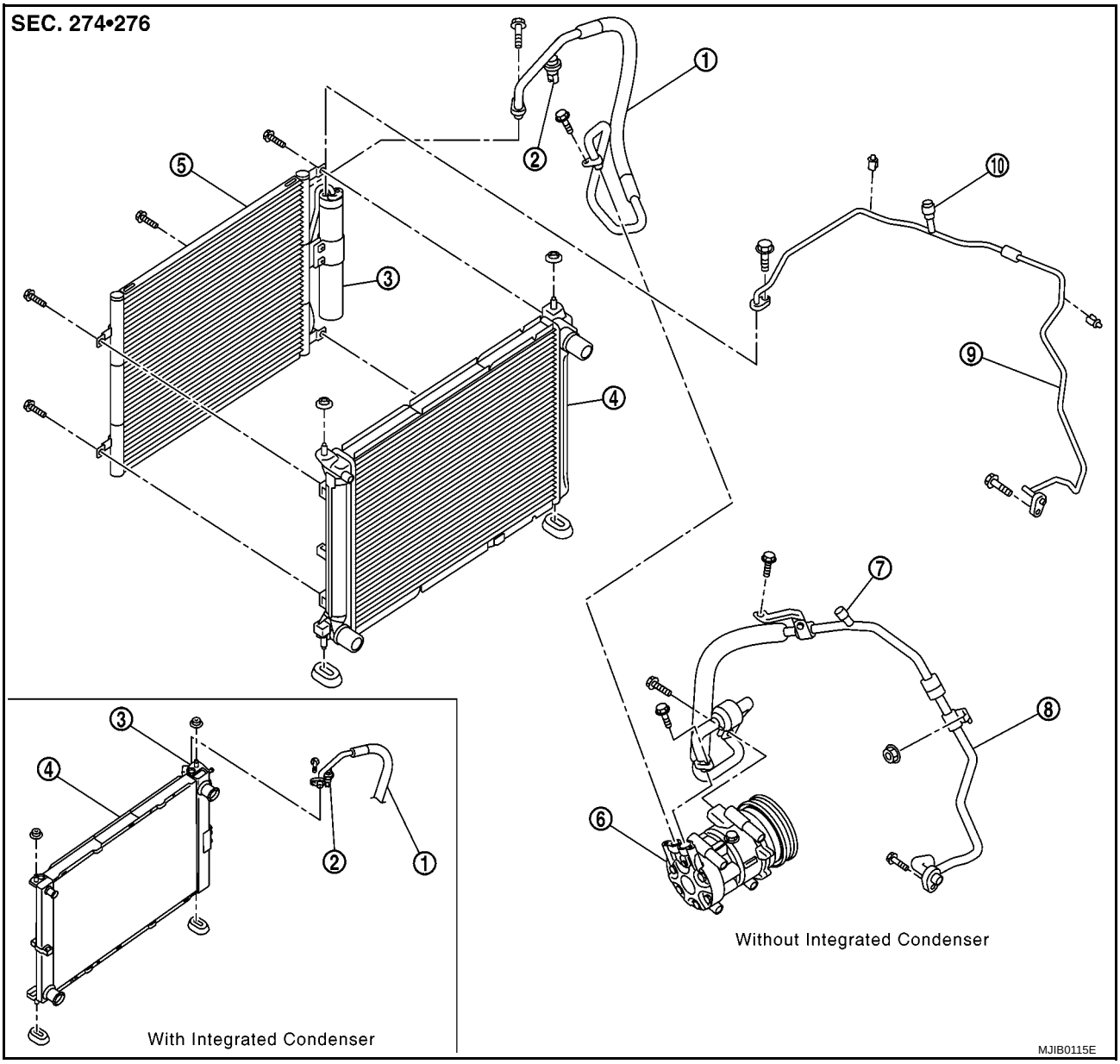
1. High-pressure flexible hose
2. Condenser
3. Condenser (Radiator)
4. Compressor
5. High-pressure pipe
6. Low-pressure flexible hose
7. Liquid tank

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



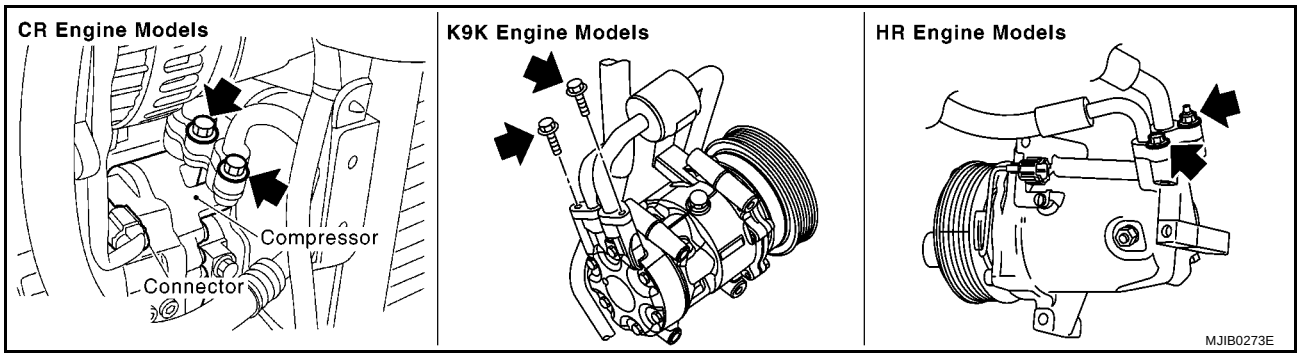
1. High-pressure flexible hose
2. Refrigerant pressure sensor
3. Liquid tank
4. Radiator (Condenser)
5. Condenser
6. Compressor
7. Service valve (Low pressure)
8. Low-pressure flexible hose
9. High-pressure pipe
10. Service valve (High pressure)

Removal and Installation for Compressor

EJS002GV

REMOVAL

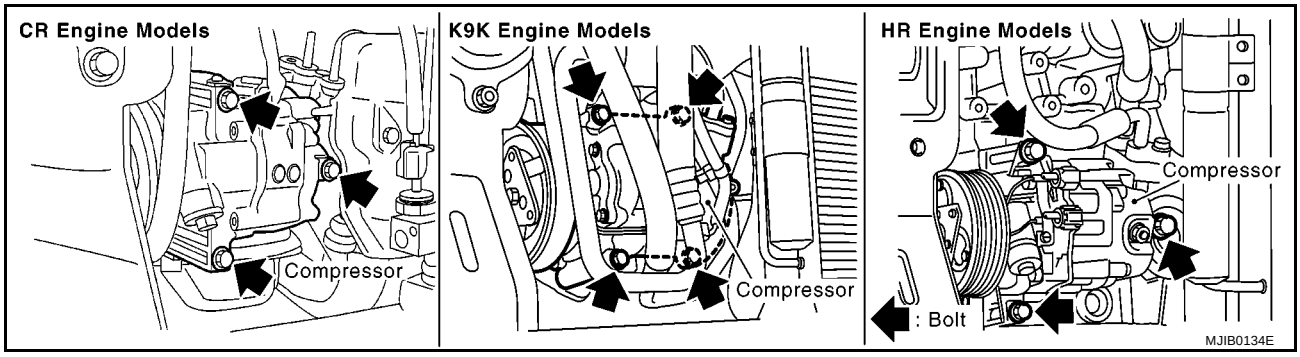
1. Use recovery/recycling recharging equipment [for HFC-134a (R134a)] to discharge refrigerant.
2. Remove air duct (fresh air intake side). Refer to EM-18, "AIR CLEANER AND AIR DUCT" .
3. Disconnect compressor connector.
4. Remove the high-pressure and low-pressure flexible hose mounting bolts, and disconnect 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

Install in the reverse order of removal.

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 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, 6 - 14 ft-lb)
Low-pressure flexible hose mounting bolt
Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 6 - 14ft-lb)

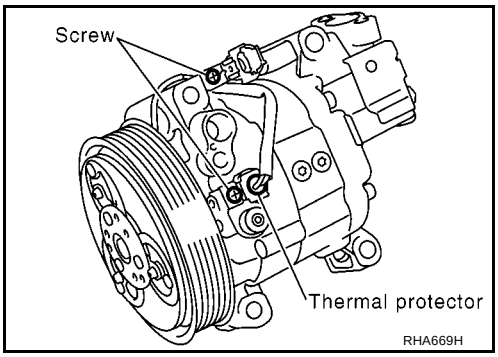
Removal and Installation for Compressor Clutch (CR Engine Models)

EJS002HA

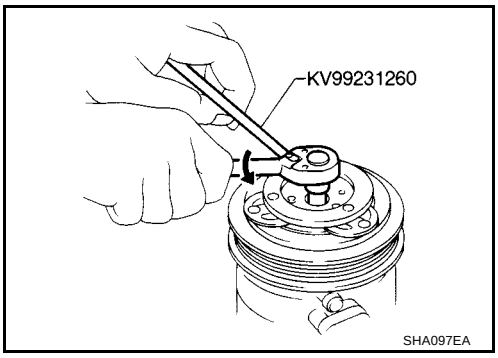
REMOVAL

Overhaul (KC59G Compressor)

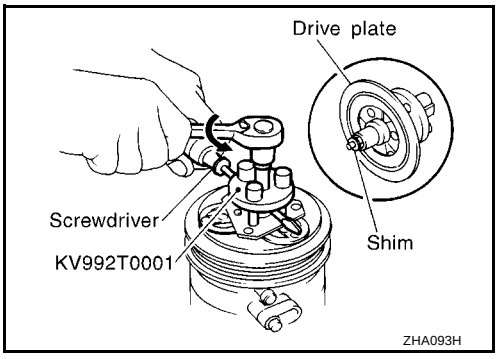
1. Remove the two screws holding the connector bracket, thermal protector to the compressor.



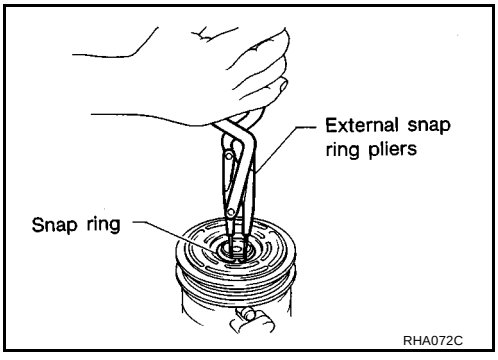
2. When removing center bolt, hold clutch disc with clutch disc wrench.



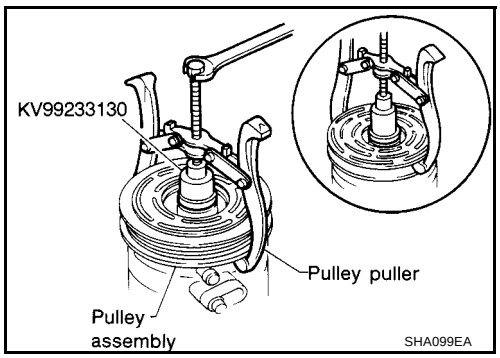
3. Remove the drive plate using the clutch disc puller.
4. Insert holder's three pins into the drive plate. Rotate the holder clockwise to hook it onto the plate.
5. Tighten the center bolt to remove the drive plate.
6. While tightening the center bolt, insert a screwdriver between two of the pins (as shown in the figure) to prevent rotation.
7. After removing the drive plate, remove the shims from either the drive shaft or the drive plate.



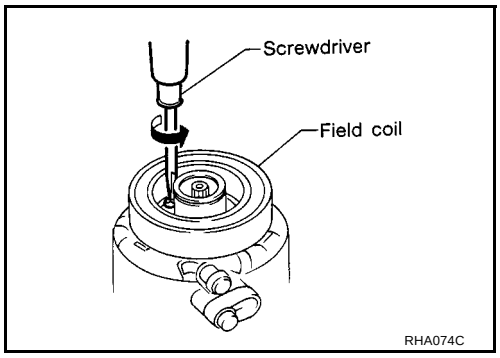
8. Remove the snap ring using external snap ring pliers.



9. Remove the pulley assembly with the puller using a commercially available pulley puller. (Position the center of the puller on the end of the drive shaft)
   For pressed pulleys:
   To prevent deformation of the pulley groove, the puller claws should be hooked under (not into) the pulley groove.
   For machine lathed pulleys:
   Align the pulley puller groove with the pulley groove, and then remove the pulley assembly.

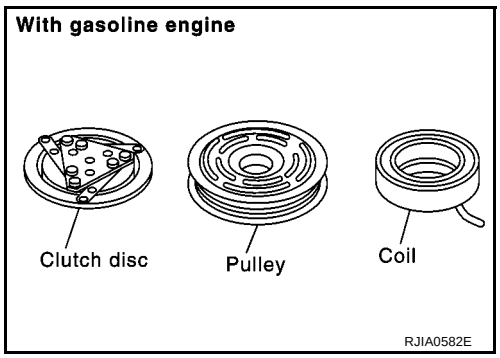


10. Remove the field coil harness clip using a screwdriver.
11. Then remove the three field coil fixing screws and remove the field coil.

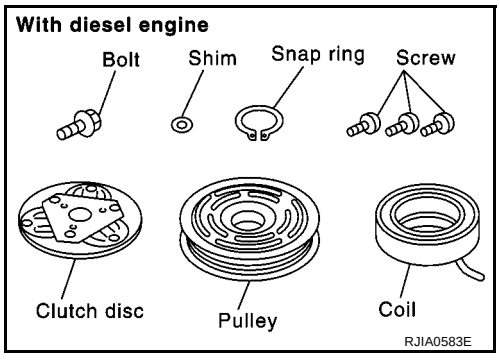


Inspection

Clutch disc
If the contact surface shows signs of damage due to excessive heat, replace clutch disc and pulley.



Pulley
Check the appearance of the pulley assembly. If the contact surface of pulley sows signs of excessive grooving, replace clutch disc and pulley. The contact surfaces of the pulley assembly should be cleaned with a suitable solvent before reinstallation.



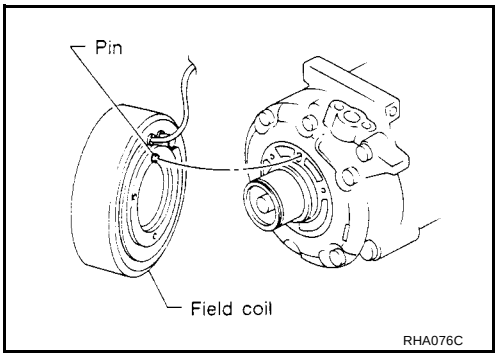
Coil

Check coil for loose connection or cracked insulation.

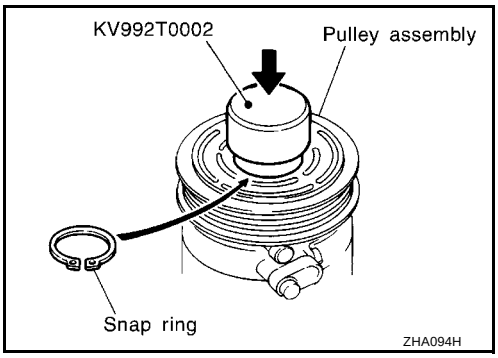
INSTALLATION

KC59G Compressor

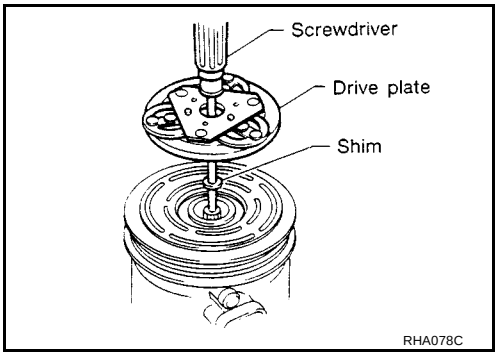
1. Install the field coil.
   Be sure to align the coil's pin with the hole in the compressor's front head.
2. Install the field coil harness clip using a screwdriver.



3. Install the pulley assembly using the installer and a hand press, and then install the snap ring using snap ring pliers.



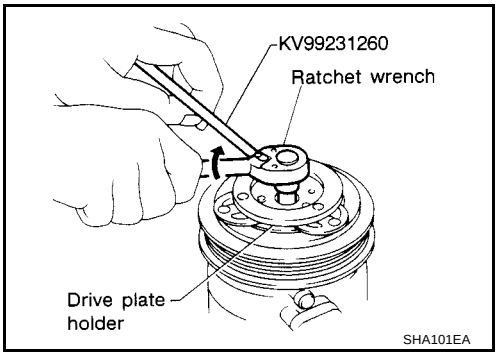
4. Install the drive plate on the drive shaft, together with the original shim(s). Press the clutch disc down by hand.



5. Using the holder to prevent clutch disc rotation.

   Tightening torque : 12 - 15 N-m (1.2 - 1.5 kg-m, 9 - 10 ft-lb)

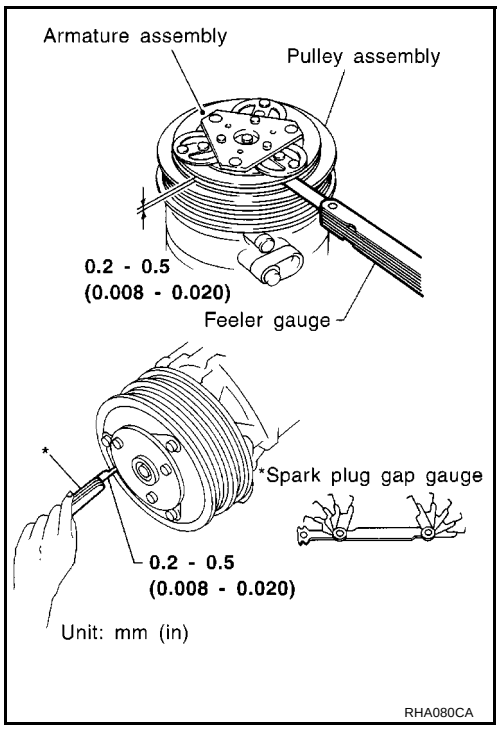
   After tightening the bolt, check that the pulley rotates smoothly.



6. Check clearance around the entire periphery of clutch disc.

   Disc to pulley clearance : 0.2 - 0.5 mm (0.008 - 0.020 in)

   If the specified clearance is not obtained, replace adjusting spacer and readjust.



Break-In Operation

When replacing compressor clutch assembly, always carry out the break-in operation. This is done by engaging and disengaging the clutch about thirty times. Break-in operation raises the level of transmitted torque.

Removal and Installation for Pipe and Hose

EJS0057L

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

Install in the reverse order of removal.

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 (0.30 - 0.60 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 (0.30 - 0.60 kg-m, 26 - 52 in-lb)

Low-pressure flexible hose mounting bolts (compressor side)

Tightening torque : 7.8 - 19.6 N·m (0.80 - 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

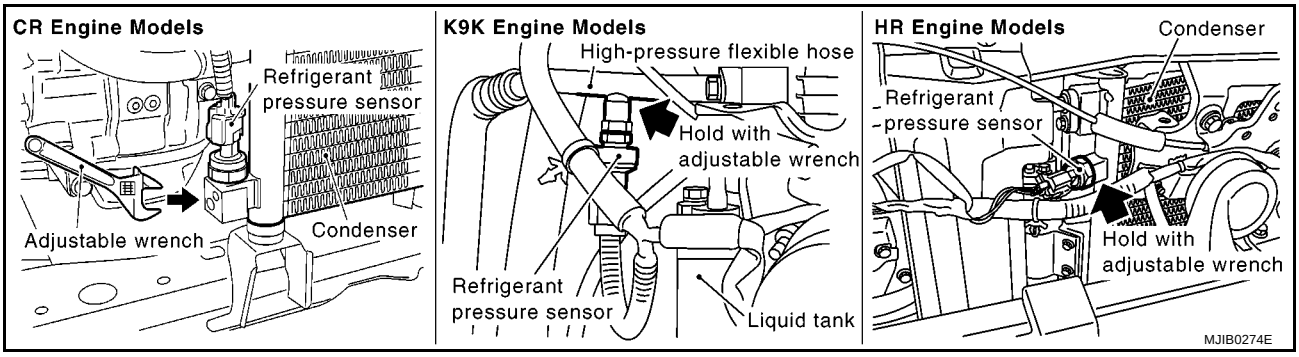
Tightening torque : 7.8 - 19.6 N·m (0.80 - 1.9 kg-m, 69 - 173 in-lb)

Removal and Installation for Refrigerant Pressure Sensor

EJS002GZ

REMOVAL AND INSTALLATION

1. Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] to discharge refrigerant.



2. Remove the front bumper and air guide (RH). Refer to EI-5, "FRONT BUMPER" .
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 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 - 1.2 kg-m, 87 - 103 in-lb)

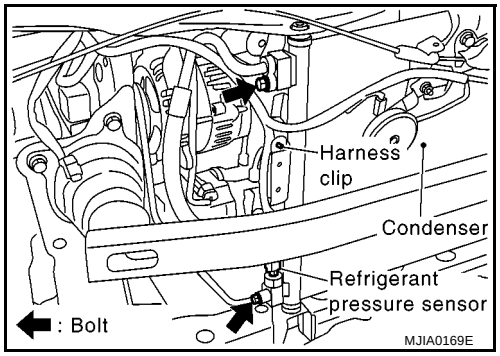
Removal and Installation for Condenser (Models without Integrated Condenser)

EJS002H0

REMOVAL

1. Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] 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 and high-pressure pipe from the condenser.

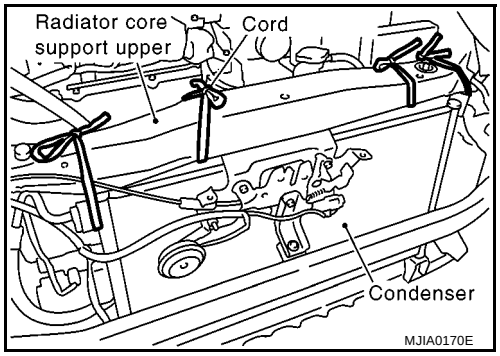
   CAUTION:
   Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.
4. Disconnect the refrigerant pressure sensor connector, and then remove the harness clip.



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

Install in the reverse order of removal.

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 (0.80 - 1.9 kg-m, 69 - 173 in -lb)
High-pressure pipe mounting bolt
Tightening torque : 2.9 - 5.9 N·m (0.30 - 0.60 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)

EJS0057M

REMOVAL

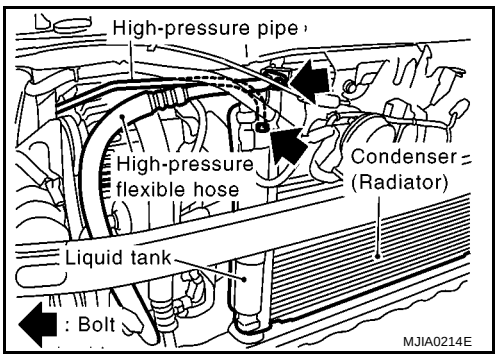
1. Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] to discharge refrigerant.
2. Remove the front bumper and air guide (RH). Refer to EI-5, "FRONT BUMPER" .

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

Install in the reverse order of removal.

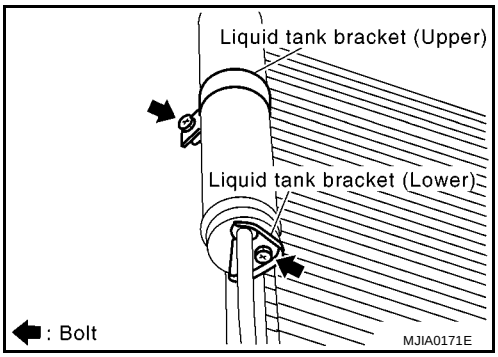
CAUTION:
- **Replace O-rings on the high-pressure pipe and high-pressure flexible hose with new ones. Apply compressor lubricant to O-rings when installing them.**
- **When charging refrigerant, check for refrigerant leaks.**

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

EJS002H1

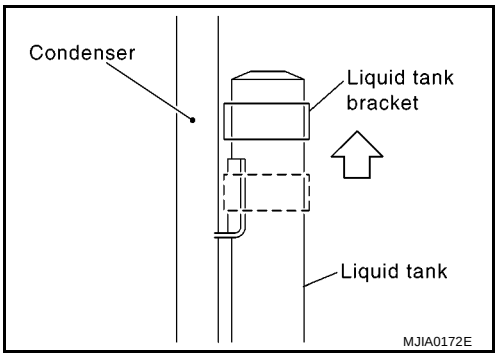
REMOVAL

1. Use recovery/recycling recharging equipment [for HFC-134a (R143a)] to discharge refrigerant.
2. Remove condenser. Refer to MTC-74, "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 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.

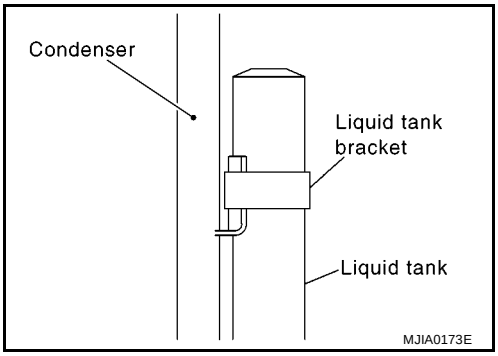
CAUTION:
Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.



INSTALLATION

Install the liquid tank and liquid tank bracket in 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 bolts

Tightening torque : 2.94 - 3.82 N·m (0.30 - 0.38 kg-m, 26 - 33 in-lb)

Liquid tank bracket (lower) mounting bolts

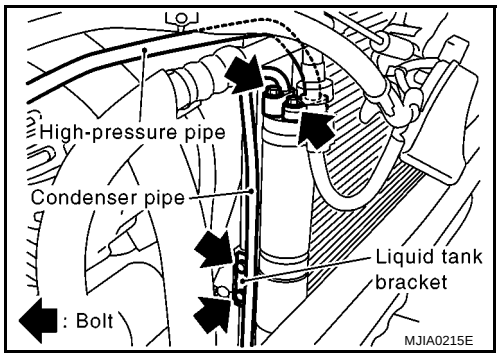
Tightening torque : 5.0 - 6.47 N·m (0.51 - 0.65 kg-m, 45 - 57 in-lb)

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

EJS0057N

REMOVAL

1. Use recovery/recycling recharging equipment [for HFC-134a (R143a)] 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 liquid tank bracket in 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

EJS002H2

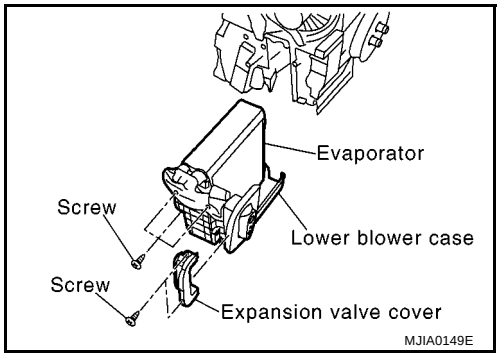
REMOVAL

1. Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] to discharge refrigerant.
2. Remove the air conditioner unit. Refer to MTC-48, "A/C UNIT ASSEMBLY" .

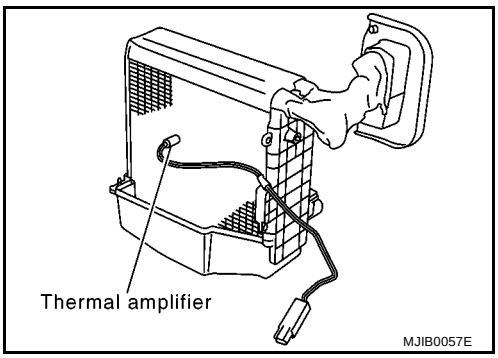
CAUTION:

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 and foot duct (RH). Refer to MTC-55, "AIR CONDITIONER FILTER" and MTC-63, "FOOT DUCT" .
4. Remove the lower blower case and expansion valve cover.



5. Slide the evaporator and door blower case downward, and remove the thermal amplifier.
6. Remove the evaporator from the lower blower case.



INSTALLATION

Install in the reverse order of removal.

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 thermal amplifier thermistor in the same position as the removed thermal amplifier.**
- **When removing and installing the thermal amplifier, do not rotate the thermistor's 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)

Removal and Installation for Expansion Valve

EJS002H3

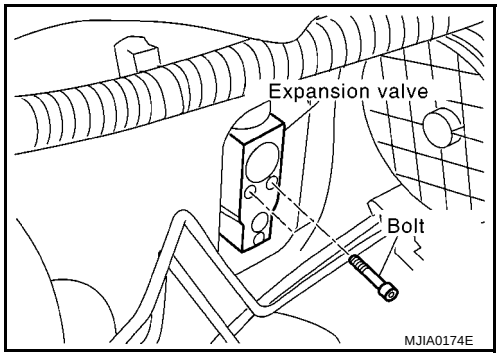
REMOVAL

1. Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] 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 bolts from the expansion valve, and then remove the expansion valve.



INSTALLATION

Install in the reverse order of removal.

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 (0.30 - 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 (0.30 - 0.60 kg-m, 26 - 52 in-lb)

Checking for Refrigerant Leaks

EJS002HJ

Perform a visual inspection of all refrigeration parts, fittings, hoses and components for signs of A/C lubricant leakage, damage and corrosion. A/C lubricant leakage may indicate an area of refrigerant leakage. Allow extra inspection time in these areas when using either an electronic refrigerant leak detector or fluorescent dye leak detector.

If dye is observed, confirm the leak with an electronic refrigerant leak detector. It is possible a prior leak was repaired and not properly cleaned.

When searching for leaks, do not stop when one leak is found but continue to check for additional leaks at all system components and connections.

When searching for refrigerant leaks using an electronic leak detector, move the probe along the suspected leak area at 1 to 2 inches per second and no further than 1/4 inch from the component.

CAUTION:

Moving the electronic leak detector probe slower and closer to the suspected leak area will improve the chances of finding a leak.

Checking System for Leaks Using the Fluorescent Leak Detector

EJS002HK

1. Check A/C system for leaks using the UV lamp and safety goggles (J-42220) in a low sunlight area (area without windows preferable). Illuminate all components, fittings and lines. The dye will appear as a bright green/yellow area at the point of leakage. Fluorescent dye observed at the evaporator drain opening indicates an evaporator core assembly (tubes, core or expansion valve) leak.
2. If the suspected area is difficult to see, use an adjustable mirror or wipe the area with a clean shop rag or cloth, with the UV lamp for dye residue.
3. After the leak is repaired, remove any residual dye using dye cleaner (J-43872) to prevent future misdiagnosis.
4. Perform a system performance check and verify the leak repair with an approved electronic refrigerant leak detector.

NOTE:
Other gases in the work area or substances on the A/C components, for example, anti-freeze, windshield washer fluid, solvents and lubricants, may falsely trigger the leak detector. Make sure the surfaces to be checked are clean.
Clean with a dry cloth or blow off with shop air.
Do not allow the sensor tip of the detector to contact with any substance. This can also cause false readings and may damage the detector.

Dye Injection

EJS002HL

(This procedure is only necessary when recharging the system or when the compressor has seized and was replaced.)

1. Check A/C system static (at rest) pressure. Pressure must be at least 345 kPa (50 psi).
2. Pour one bottle (1/4 ounce / 7.4 cc) of the A/C refrigerant dye into the injector tool (J-41459).
3. Connect the injector tool to the A/C LOW PRESSURE side service fitting.
4. Start engine and switch A/C ON.
5. When the A/C operating (compressor running), inject one bottle (1/4 ounce / 7.4 cc) of fluorescent dye through the low-pressure service valve using dye injector tool J-41459 (refer to the manufacture's operating instructions).
6. With the engine still running, disconnect the injector tool from the service fitting.

CAUTION:
Be careful the A/C system or replacing a component, pour the dye directly into the open system connection and proceed with the service procedures.

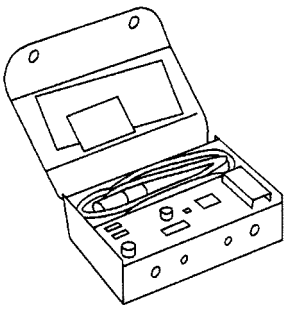
7. Operate the A/C system for a minimum of 20 minutes to mix the dye with the system oil. Depending on the leak size, operating conditions and location of the leak, it may take from minutes to days for the dye to penetrate a leak and become visible.

Electronic Refrigerant Leak Detector

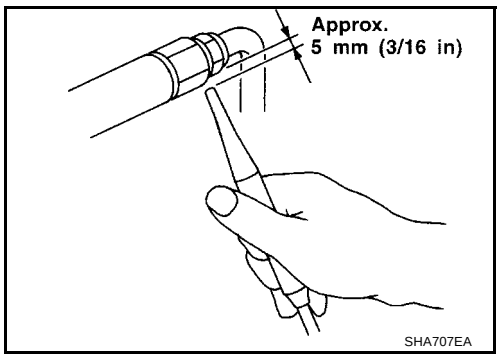
EJS002HM

PRECAUTIONS FOR HANDLING LEAK DETECTOR

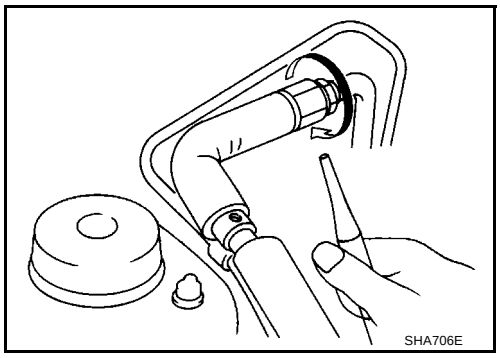
When performing a refrigerant leak check, use an A/C leak detector or equivalent. Ensure that the instrument is calibrated and set properly per the operating instructions.
The leak detector is a delicate device. In order to use the leak detector properly, read the operating instructions and perform any specified maintenance.


A/C leak detector SHA705EB

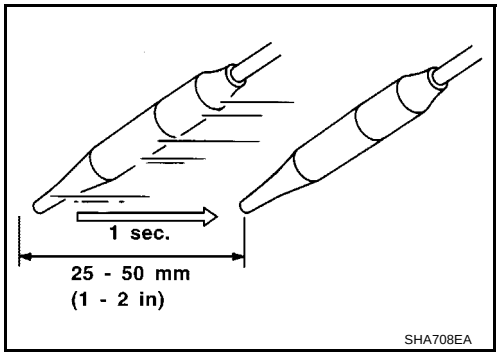
1. Position probe approximately 5 mm (3/16 in) away from point to be checked.



2. When testing, circle each fitting completely with probe.



3. Move probe along component approximately 25 to 50 mm (1 to 2 in)/sec.



CHECKING PROCEDURE

To prevent inaccurate or false readings, make sure there is no refrigerant vapor, shop chemicals, or cigarette smoke in the vicinity of the vehicle. Perform the leak test in calm area (low air/wind movement) so that the leaking refrigerant is not dispersed.

1. Turn engine OFF.
2. Connect a suitable A/C manifold gauge set to the A/C service ports.
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.52 kg/cm^2 , 50 psi) above 16°C (61°F). If less than specification, recover/evacuate and recharge the system with the specified amount of refrigerant.

NOTE:
At temperatures below 16°C (61°F), leaks may not be detected since the system may not reach 345 kPa (3.54 kg/cm^2 , 50 psi).

4. Conduct the leak test from the high side (compressor discharge a to evaporator inlet g) to the low side (evaporator drain hose h to shaft seal k). Refer to MTC-20, "Component Parts Location" \. Perform a leak check for the following areas carefully. Clean the component to be checked and move the leak detected probe completely around the connection/component.
   Compressor
   Check the fitting of high and low pressure hoses, relief valve and shaft seal.
   Liquid tank
   Check the refrigerant pressure sensor or dual pressure switch.
   Service valves
   Check all around the service valves. Ensure service valve caps are secured on the service valves (to prevent leaks).

NOTE:
After removing A/C manifold gauge set from service valves, wipe any residue from valves to prevent any false readings by leak detector.

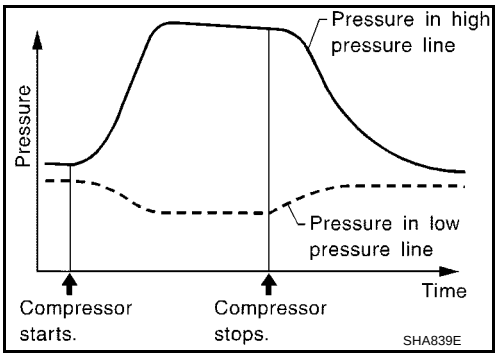
Cooling unit (Evaporator)
With engine OFF, turn blower fan on “High” for at least 15 seconds to dissipate any refrigerant trace in the cooling unit. Wait a minimum of 10 minutes accumulation time (refer to the manufacturer's recommended procedure for actual wait time) before inserting the leak detector probe into the drain hose.
Keep the probe inserted for at least 10 seconds. Use caution not to contaminate the probe tip with water or dirt that may be in the drain hose.

5. If a leak detector detects a leak, verify at least once by blowing compressed air into area of suspected leak, then repeat check as outlined above.
6. Do not stop when one leak is found. Continue to check for additional leaks at all system components.
If no leaks are found, perform steps 7 - 10.
7. Start engine.
8. Set the heater A/C control as follows;

a. A/C switch: ON
b. Face mode
c. Intake position: Recirculation
d. Max cold temperature
e. Fan speed: High

9. Run engine at 1,500 rpm for at least 2 minutes.
10. Turn engine off and perform leak check again following steps 4 through 6 above.

Refrigerant leaks should be checked immediately after stopping the engine. Begin with the leak detector at the compressor. The pressure on the high pressure side will gradually drop after refrigerant circulation stops and pressure on the low pressure side will gradually rise, as shown in the graph. Some leaks are more easily detected when pressure is high.



11. Before connecting ACR4 to vehicle, check ACR4 gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover refrigerant from equipment lines and then check refrigerant purity.
12. Discharge A/C system using approved refrigerant recovery equipment. Repair the leaking fitting or component as necessary.
13. Evacuate and recharge A/C system and perform the leak test to confirm no refrigerant leaks.
14. Conduct A/C performance test to ensure system works properly.

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Compressor

EJS002H4

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)	96 (5.86)	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

EJS002H5

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

EJS002H6

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

EJS002H7

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

EJS002H8

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).