

SECTION MTC

MANUAL AIR CONDITIONER

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PRECAUTIONS

PRECAUTIONS

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

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The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. 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 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)

PRECAUTIONS

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

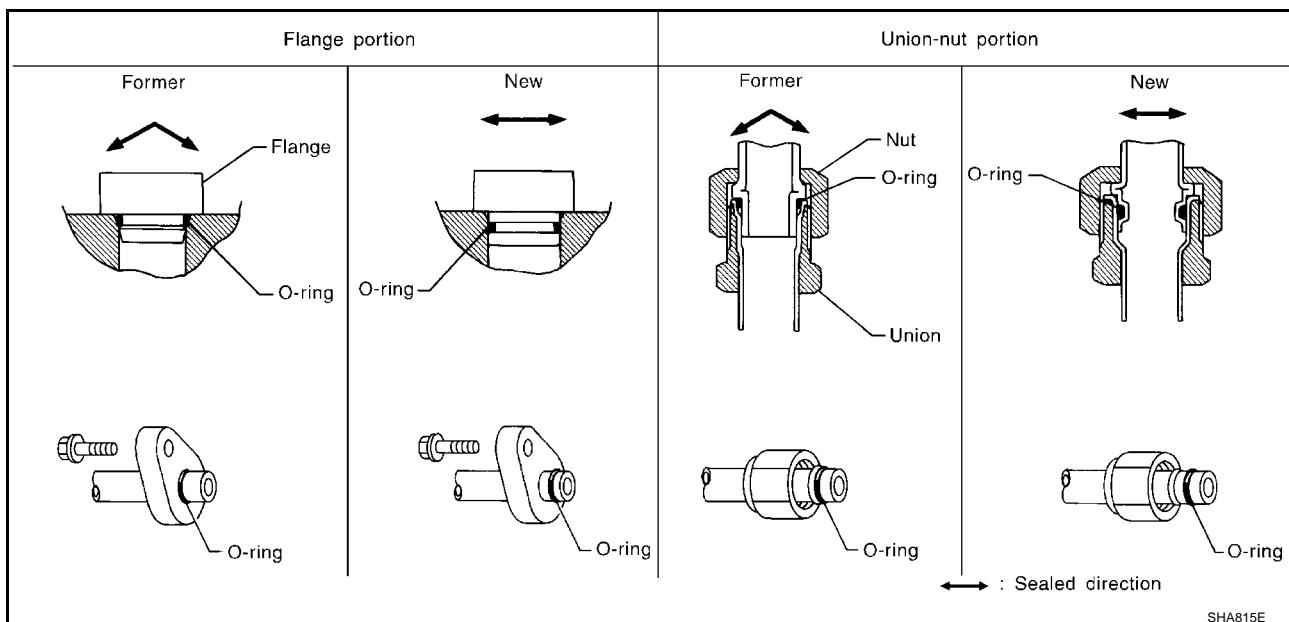
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A new type refrigerant connection has been introduced to all refrigerant lines except the following location.

- 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.



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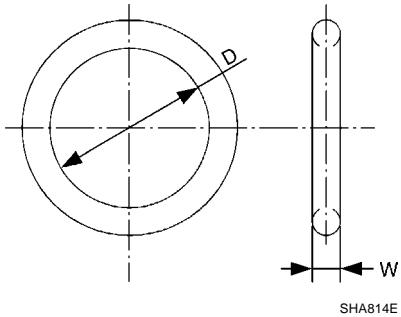
PRECAUTIONS

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



Connec- tion type	O-ring size	Part number	D mm (in)	W mm (in)
New	8	92471 N8210	6.8 (0.268)	1.85 (0.0728)
Former		92470 N8200	6.07 (0.2390)	1.78 (0.0701)
Former	10	J2476 89956	9.25 (0.3642)	1.78 (0.0701)
New		92472 N8210	10.9 (0.429)	2.43 (0.0957)
Former	12	92475 71L00	11.0 (0.433)	2.4 (0.094)
New		92473 N8210	13.6 (0.535)	2.43 (0.0957)
Former	16	92475 72L00	14.3 (0.563)	2.3 (0.091)
New		92474 N8210	16.5 (0.650)	2.43 (0.0957)
Former	19	92477 N8200	17.12 (0.6740)	1.78 (0.0701)

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

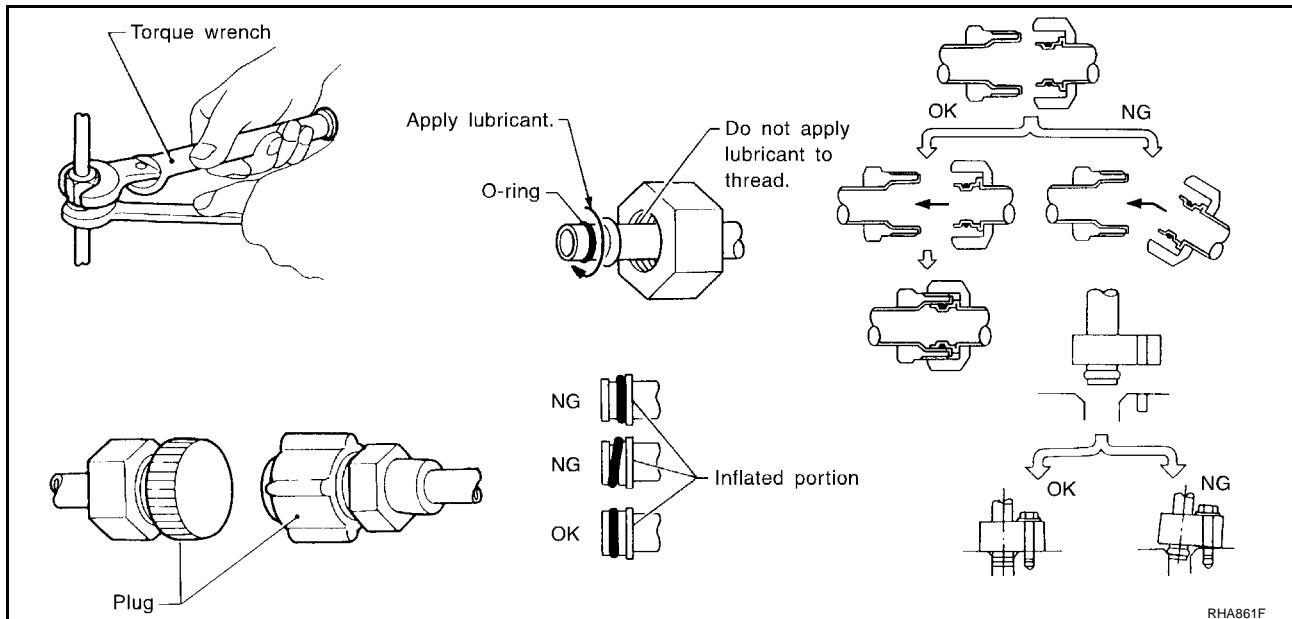
- O-ring must be closely attached to dented portion of tube.
- When replacing the O-ring, be careful not to damage O-ring and tube.
- Connect tube until you hear it click, then tighten the nut or bolt by hand until snug. Make sure that the O-ring is installed to tube correctly.

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- 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.



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Precautions for Servicing Compressor

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- 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 RECOVERY/RECYCLING EQUIPMENT

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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.

PRECAUTIONS

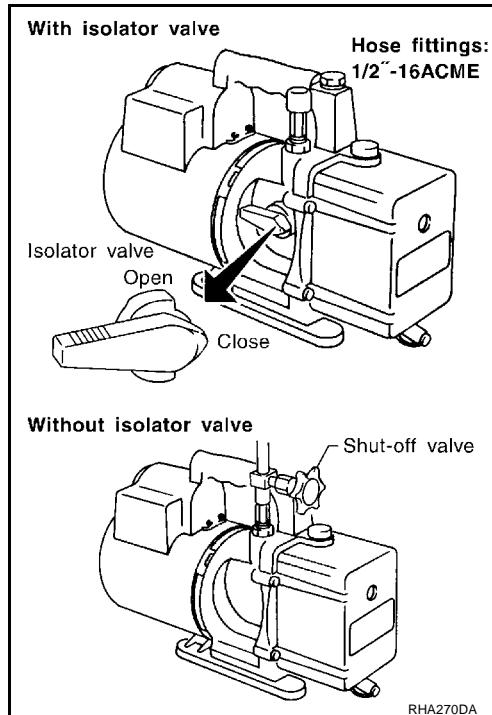
VACUUM PUMP

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.

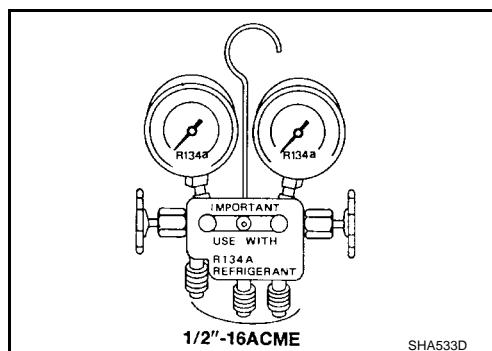
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has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



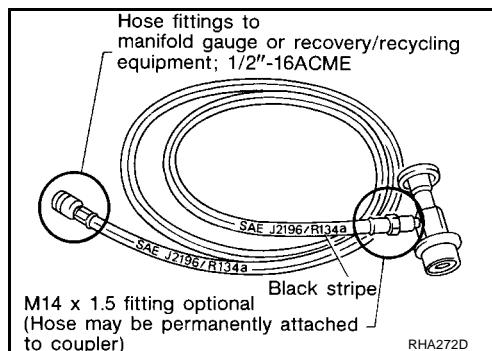
MANIFOLD GAUGE SET

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.

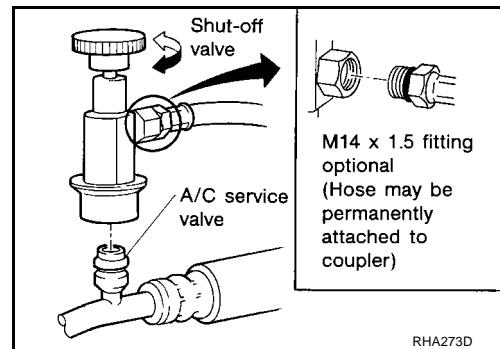


PRECAUTIONS

SERVICE COUPLERS

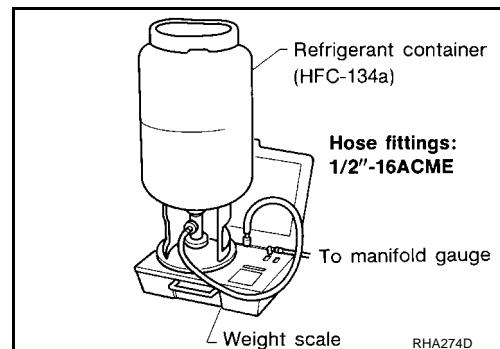
Never attempt to connect HFC-134a (R-134a) service couplers to an CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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.

PRECAUTIONS

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.

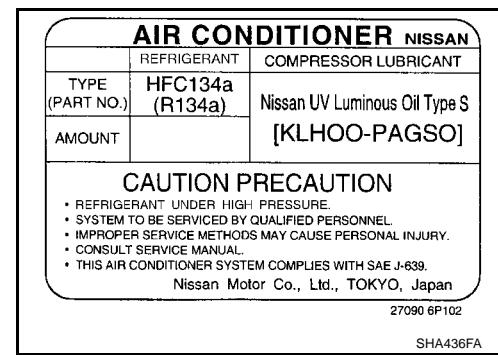
IDENTIFICATION

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.



Wiring diagram and Trouble Diagnosis

EJS002G1

When you read wiring diagrams, refer to the followings:

- [GI-14, "How to Read Wiring Diagrams"](#) in GI section.
- [PG-5, "Wiring Diagram — POWER —"](#) in EL section.

When you perform trouble diagnosis, refer to the followings:

- [GI-10, "How to Follow Trouble Diagnoses"](#) in GI section.
- [GI-24, "How to Perform Efficient Diagnosis for an Electrical Incident"](#) in GI section.

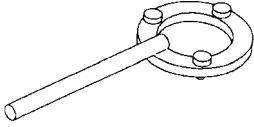
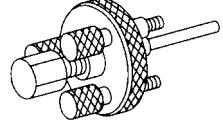
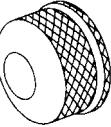
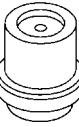
PREPARATION

PREPARATION

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Special Service Tools

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

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

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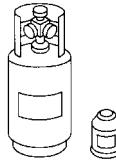
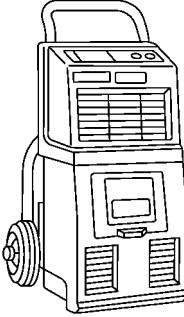
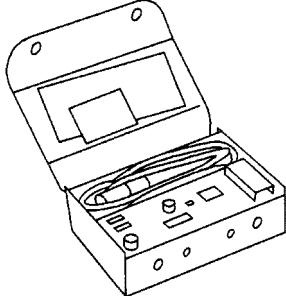
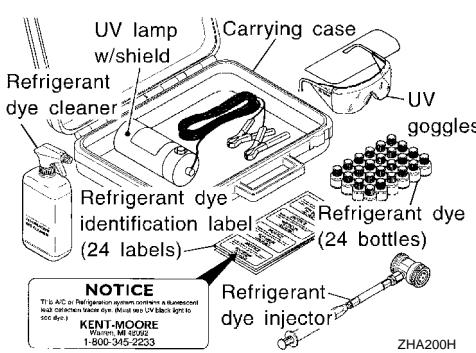
Never mix HFC-134a (R-134a) refrigerant and/or its specified lubricant with CFC-12 (R-12) refrigerant and/or its lubricant.

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

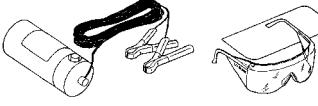
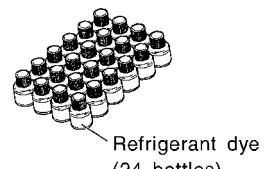
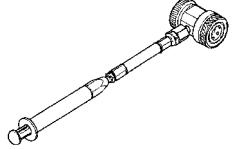
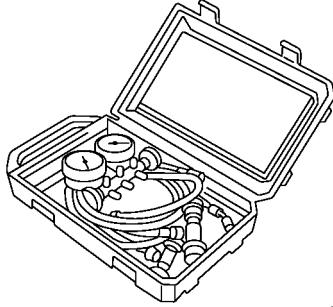
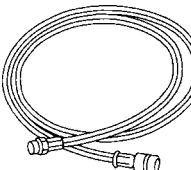
Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and/or lubricant) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerants/lubricant.

Adapters that convert one size fitting to another must never be used: refrigerant/lubricant contamination will occur and compressor malfunction will result.

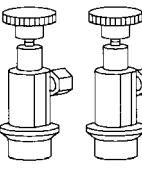
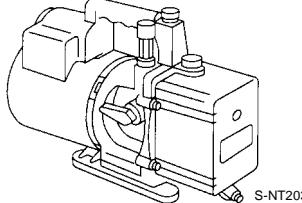
PREPARATION

Tool number Tool name	Description	
HFC-134a (R-134a) refrigerant	 <p>Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size ● large container 1/2" -16 ACME</p> <p>S-NT196</p>	A B C
KC59G: KLH00-PAGR0 Nissan A/C System Oil Type R	 <p>KC59G: 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.)</p> <p>S-NT197</p>	D E
Recovery/Recycling Recharging equipment (ACR4)	 <p>Function: Refrigerant Recovery and Recycling and Recharging</p> <p>RJIA0195E</p>	F G H I
Electrical leak detector	 <p>A/C leak detector</p> <p>SHA705EB</p>	J K L MTC
(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	 <p>UV lamp w/shield Carrying case UV goggles Refrigerant dye cleaner Refrigerant dye identification label (24 labels) Refrigerant dye (24 bottles) Refrigerant dye injector</p> <p>ZHA200H</p>	M K L MTC

PREPARATION

Tool number Tool name	Description
(J-42220) UV lamp and UV safety goggles	 SHA438F <p>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</p>
(J-41447) HFC-134a (R-134a) Fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)	 SHA439F <p>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.)</p>
(J-41459) HFC-134a (R-134a) Dye injector Use with J-41447, 1/4 ounce bottle	 SHA440F <p>For injecting 1/4 ounce of fluorescent leak detection dye into A/C system.</p>
(J-43872) Refrigerant dye cleaner	 SHA441F <p>For cleaning dye spills.</p>
Manifold gauge set (with hoses and couplers)	 RJIA0196E <p>Identification: <ul style="list-style-type: none"> ● The gauge face indicates HFC-134a (R-134a). Fitting size: Thread size ● 1/2" -16 ACME </p>
Service hoses <ul style="list-style-type: none"> ● High side hose ● Low side hose ● Utility hose 	 S-NT201 <p>Hose color: <ul style="list-style-type: none"> ● 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: <ul style="list-style-type: none"> ● 1/2" -16 ACME </p>

PREPARATION

Tool number Tool name	Description	
Service couplers ● High side coupler ● Low side coupler	 <p>Hose fitting to service hose: ● M14 x 1.5 fitting is optional or permanently attached.</p>	A B C
Refrigerant weight scale	 <p>For measuring of refrigerant Fitting size: Thread size ● 1/2" -16 ACME</p>	D E
Vacuum pump (Including the isolator valve)	 <p>Capacity: ● Air displacement:4 CFM ● Micron rating:20 microns ● Oil capacity:482 g (17 oz.) Fitting size: Thread size ● 1/2" -16 ACME</p>	F G H

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REFRIGERATION SYSTEM

REFRIGERATION SYSTEM

PFP:KA990

Refrigerant Cycle

EJS002GB

REFRIGERANT FLOW

Refrigerant basically circulates through compressor, condenser, liquid tank and evaporator and returns to compressor. Vaporization of refrigerant is controlled by expansion valve.

Refrigerant System Protection

EJS002GC

REFRIGERANT-PRESSURE SENSOR

- Refrigerant system is protected from significant high-pressure or low-pressure by refrigerant pressure sensor attached to condenser.
- If unexpected pressures are detected in the cooler system (approx. 2.74 MPa (approx. 27.9 kg/cm²) or more or 0.14 MPa (approx. 1.4 kg/cm²) or less, the compressor is stopped by the refrigerant pressure sensor.)

Note: Values in the () indicate gauge pressure.

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.

MTC

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-32, "CHECK FUNCTION"](#) .

LUBRICANT

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	$35+\alpha \text{ cm}^3$
Condenser	$15+\alpha \text{ cm}^3$
Liquid tank	$5+\alpha \text{ cm}^3$

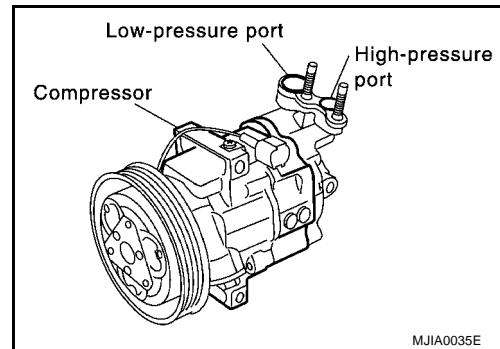
CAUTION:

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

Ex. Lubricant amount to be added to evaporator and liquid tank (cm^3) = $35 + 5 + \alpha$

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 compressor³)
= 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.



MJIA0035E

TROUBLE DIAGNOSIS

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.

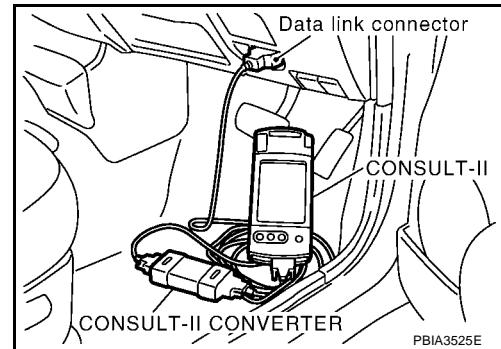
BCM trouble diagnosis item	Inspection Item, Diagnosis Mode	Description
Air conditioner	Data monitor	Displays BCM input data in real time.

CONSULT-II BASIC OPERATION

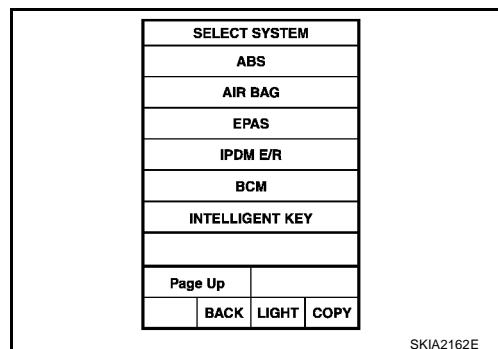
CAUTION:

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.

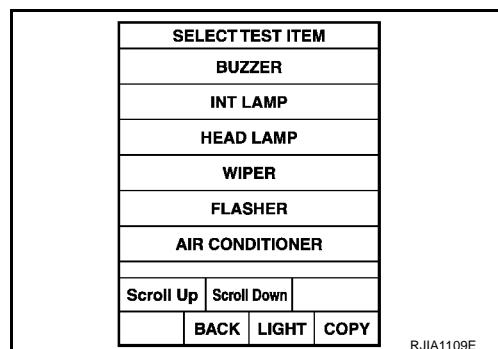
1. Turn ignition switch OFF.
2. Connect CONSULT-II and CONSULT-II CONVERTER to the data link connector.
3. Turn ignition switch ON.
4. Touch "START (NISSAN BASED VHCL)".



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.



TROUBLE DIAGNOSIS

DATA MONITOR

Operation Procedure

1. Touch "Air Conditioner" on the "SELECT TEST ITEM" screen.
2. Touch "DATA MONITOR" on the "SELET DIAG MODE" screen.
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".

DATA MONITOR	
MONITOR	
IGN ON SW	ON
FAN ON SIG	ON
AIR COND SW	ON
THERMO AMP	ON
	RECORD
MODE	BACK
	LIGHT
	COPY

RJIA1112E

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

DIAGNOSIS CHART BY SYMPTOM

EJS002FF

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-25, "Blower Fan Motor System" .
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	<ul style="list-style-type: none"> ● Improper air mix door lever installation ● Air mix door system malfunction (damage, locking, etc.) ● Air mix door cable inoperative ● Refer to MTC-50, "Air Mix Door Cable Adjustment" .
Inaccurate temperature control	With the fan setting dial and A/C switch ON, check operation of the magnetic clutch.	Magnetic clutch harness	Refer to MTC-27, "Magnetic Clutch System" .
No cold air comes out. (Normal airflow amount)	<ul style="list-style-type: none"> ● Check refrigerant level. ● Performance check 	Cooler system	<ul style="list-style-type: none"> ● Refer to MTC-32, "CHECK FUNCTION" in "Cooling malfunction". ● Refer to MTC-34, "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	<ul style="list-style-type: none"> ● Poor engine coolant ● Blockage of heater hose or heater core

TROUBLE DIAGNOSIS

Symptom	Operation inspection	Suspect systems	Possible causes
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	<ul style="list-style-type: none"> ● Improper installation of mode door lever ● Mode door system malfunction (damage, locking, etc.) ● Mode door cable inoperative ● Refer to MTC-49, "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	<ul style="list-style-type: none"> ● Improper installation of intake door lever ● Intake door system malfunction (damage, locking, etc.) ● Intake door cable inoperative ● Refer to MTC-48, "Intake Door Cable Adjustment" .

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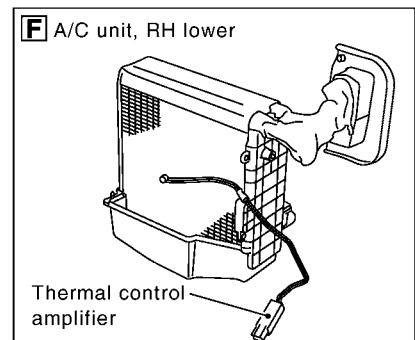
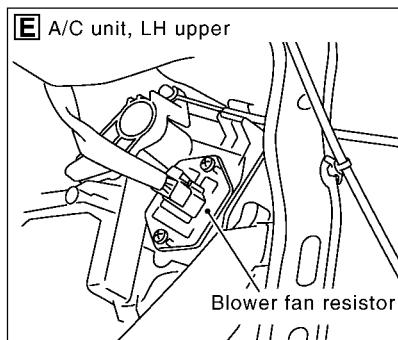
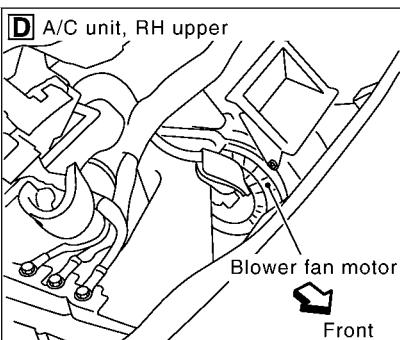
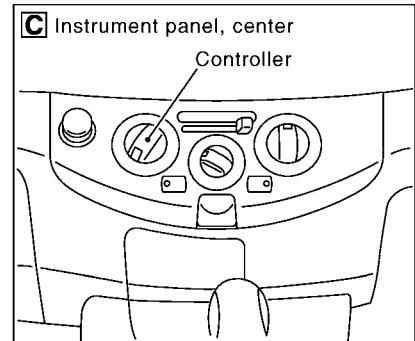
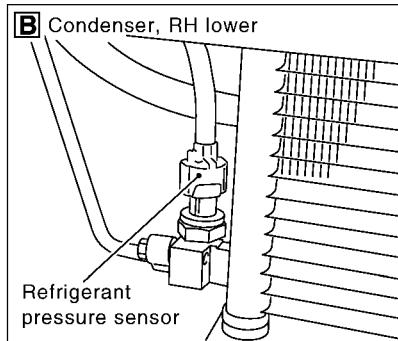
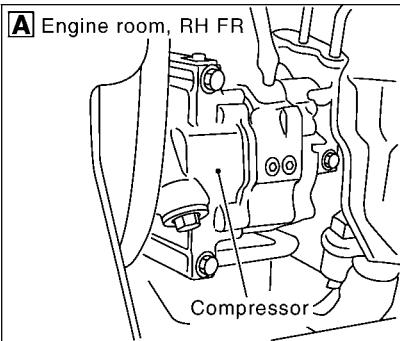
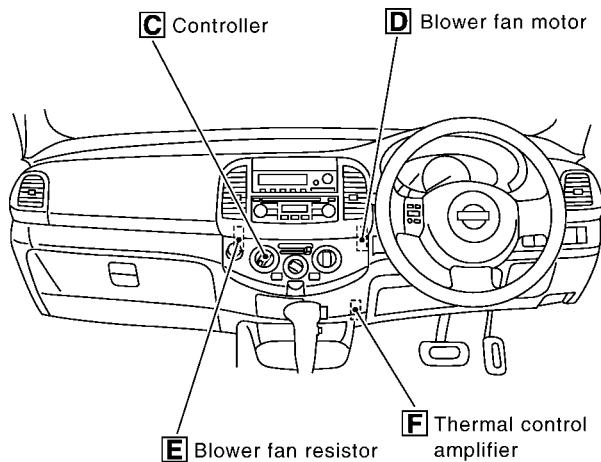
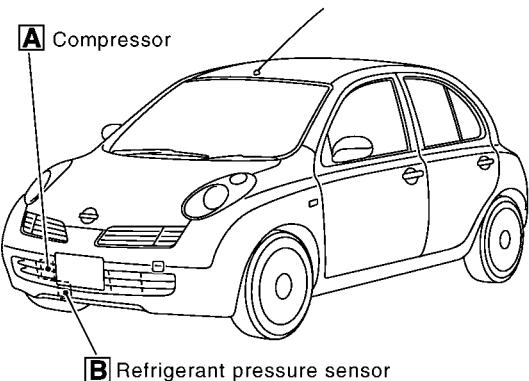
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TROUBLE DIAGNOSIS

Component Parts Location

EJS002FG



MJIA0175E

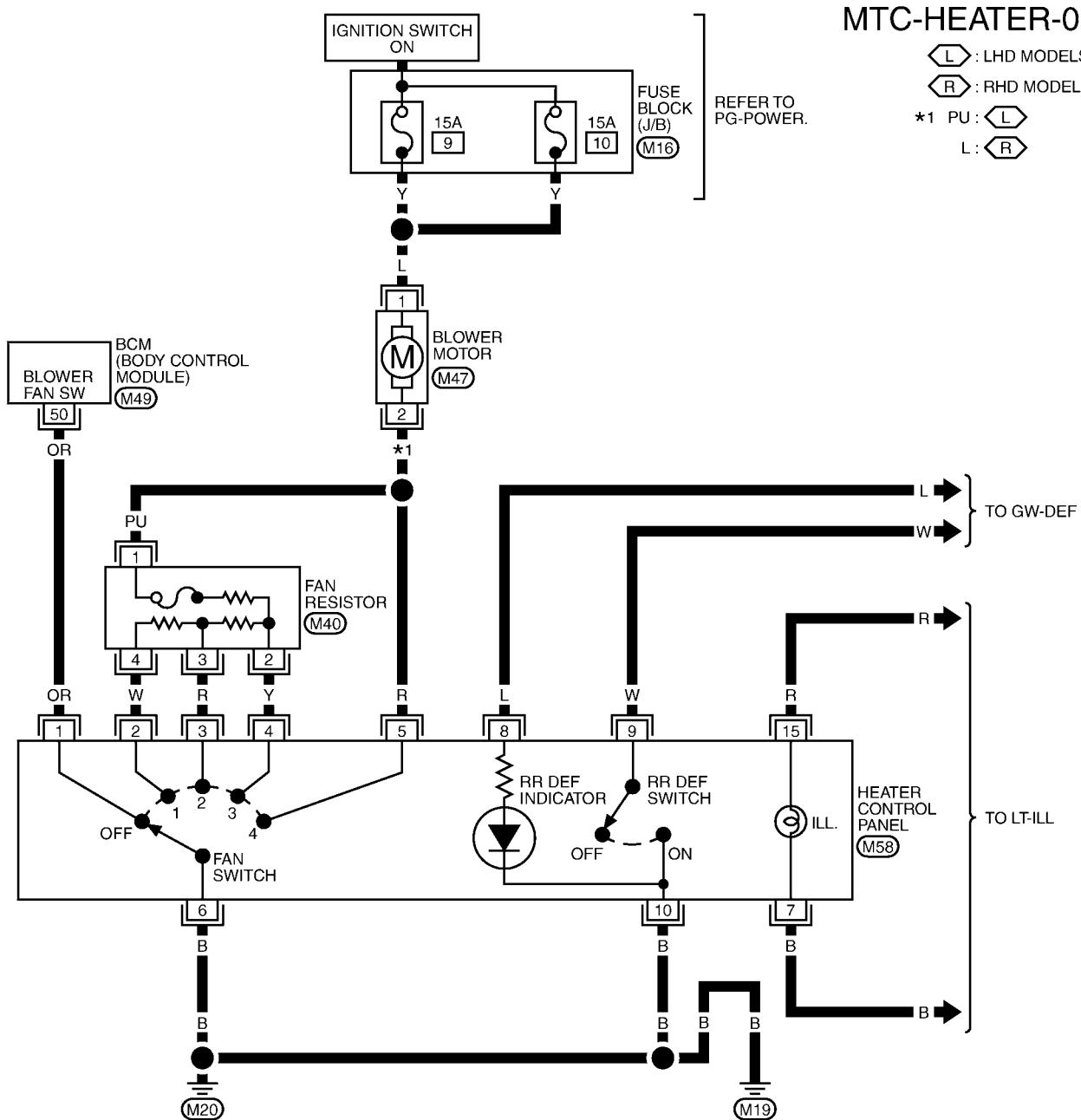
TROUBLE DIAGNOSIS

Wiring Diagram-HEATER

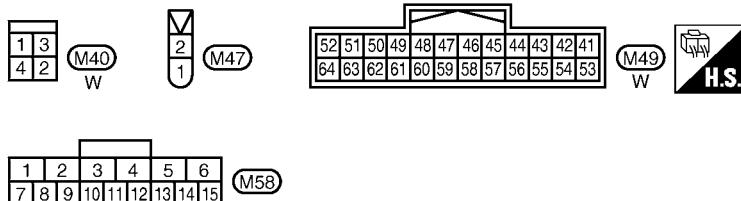
EJS002FH

MTC-HEATER-01

(L) : LHD MODELS
 (R) : RHD MODELS
 *1 PU : (L)
 L : (R)



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

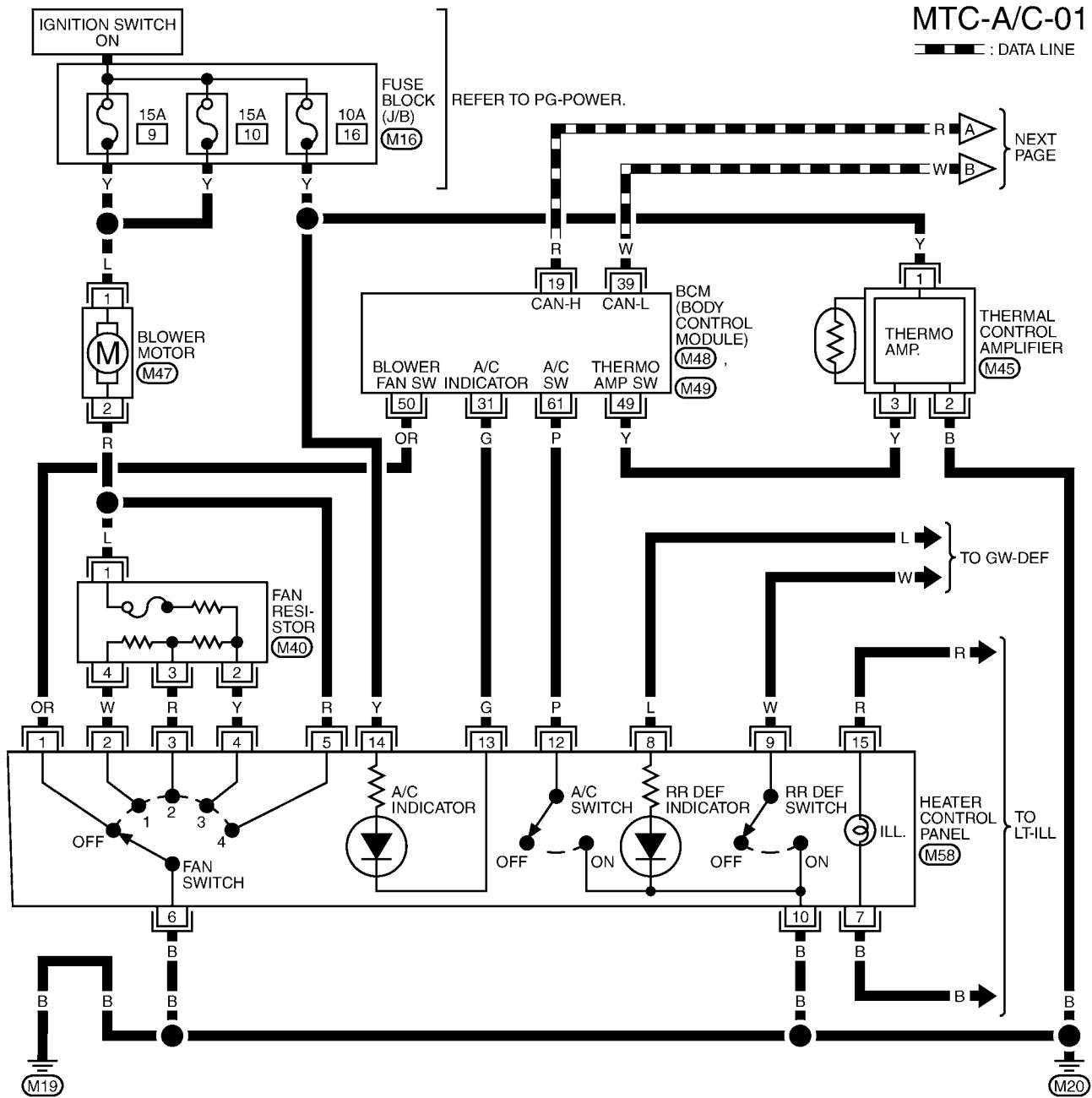


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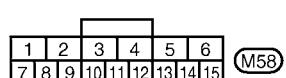
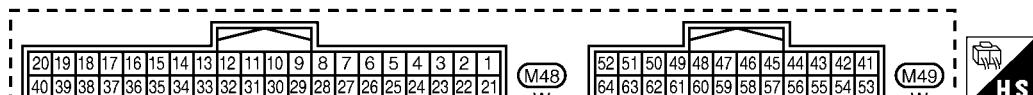
TROUBLE DIAGNOSIS

Wiring Diagram

EJS002FN



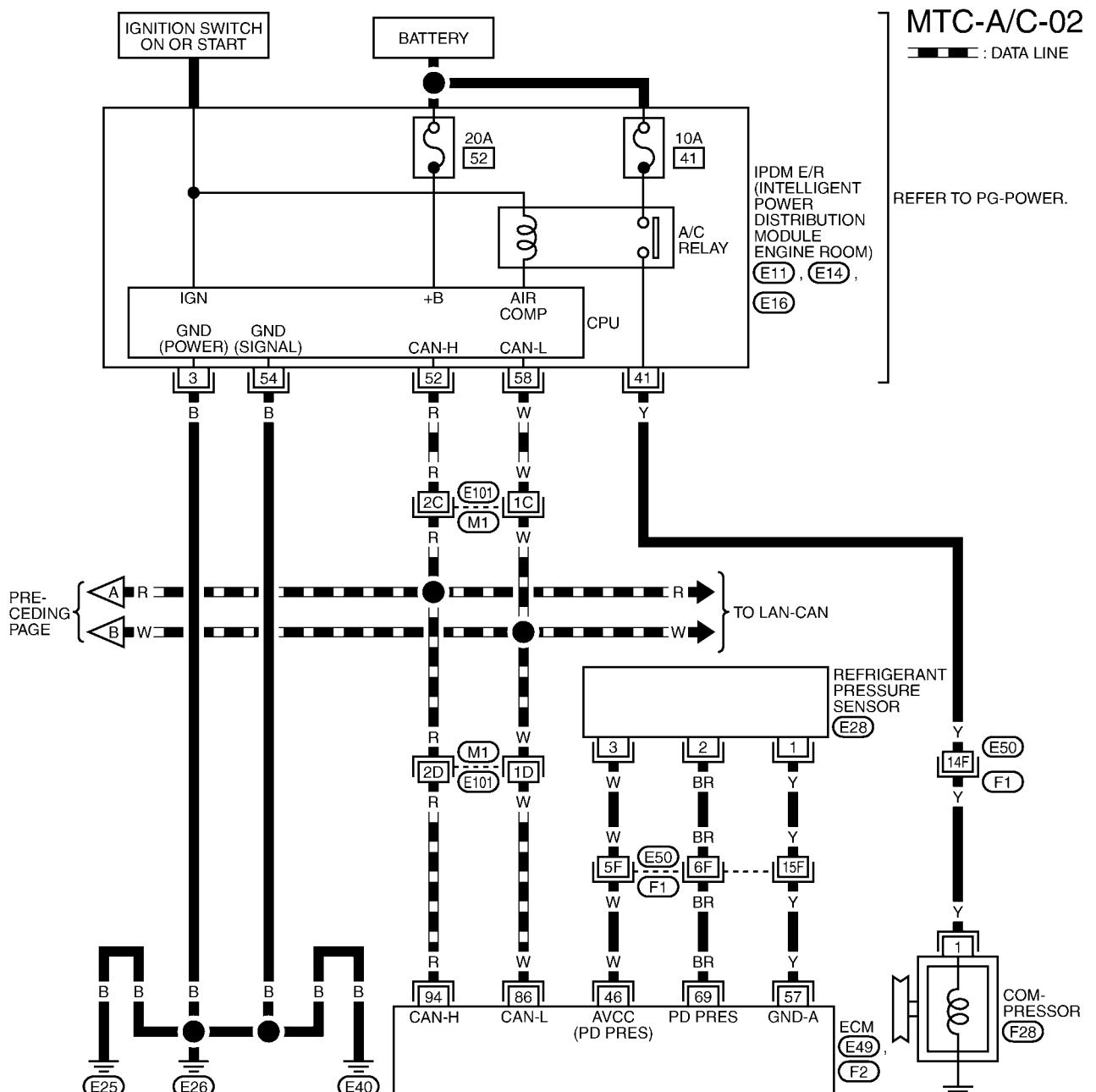
REFER TO THE FOLLOWING.
M16 -FUSE BLOCK-
JUNCTION BOX (J/B)



TROUBLE DIAGNOSIS

Wiring Diagram

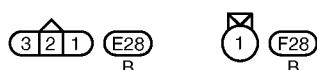
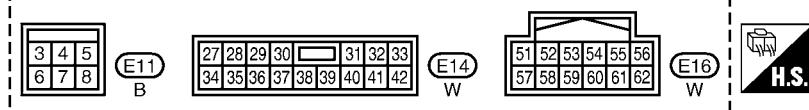
EJS002FO



REFER TO THE FOLLOWING.

M1 , **F1** -SUPER MULTIPLE
JUNCTION (SMJ)

E49, F2 -ELECTRICAL UNITS



TROUBLE DIAGNOSIS

Function Inspection

EJS002FI

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-25, "Blower Fan Motor System"](#) , [MTC-27, "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-27, "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-49, "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-48, "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-50, "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-18, "DIAGNOSIS CHART BY SYMPTOM"](#) and perform appropriate diagnosis.

NG >> Air mix door system malfunction: Refer to [MTC-50, "Air Mix Door Cable Adjustment"](#) .

TROUBLE DIAGNOSIS

Blower Fan Motor System INSPECTION PROCEDURE

EJS002FJ

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.

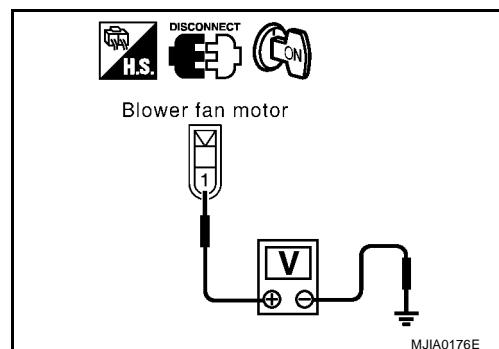
2. CHECK POWER SUPPLY CIRCUIT

Remove blower fan motor connector, turn ignition switch ON, and check voltage between terminal 1 and ground.

Connector terminal	Voltage
Blower fan motor	
1	Ground
	Battery voltage

OK or NG

OK >> GO TO 3.
NG >> GO TO 10.



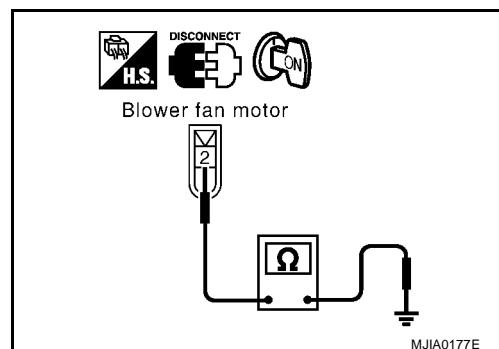
3. CHECK CIRCUIT CONTINUITY

1. Turn the fan setting dial (fan switch) to any position except OFF.
2. Check continuity between blower fan motor terminal 2 and ground.

Connector terminal	Continuity
Blower fan motor	
2	Ground
	Yes

Does continuity exist?

YES >> GO TO 4.
NO >> Disconnect the blower fan resistor connector, and GO TO 5.



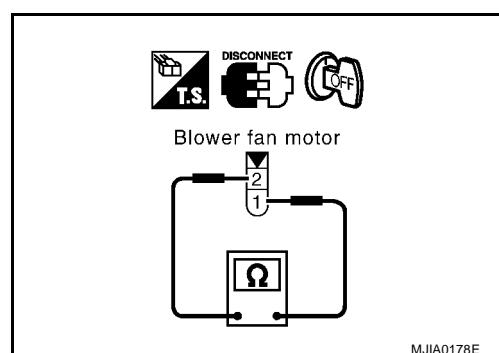
4. CHECK BLOWER FAN MOTOR

Check continuity between blower fan motor terminals 1 and 2.

Connector terminal	Continuity
Blower fan motor	
1	2
	Yes

Does continuity exist?

YES >> End of trouble diagnosis
NO >> Replace the blower fan motor.



TROUBLE DIAGNOSIS

5. CHECK CIRCUIT CONTINUITY

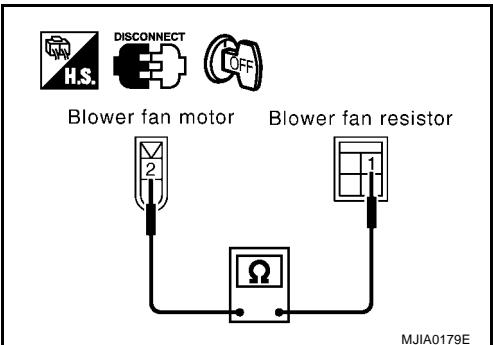
Check continuity between blower fan motor terminal 2 and blower fan resistor terminal 1.

Connector terminal		Continuity
Blower fan motor	Blower fan Resistor	
2	1	Yes

Does continuity exist?

YES >> GO TO 6.

NO >> Repair harness or connector.



6. CHECK BLOWER FAN RESISTOR

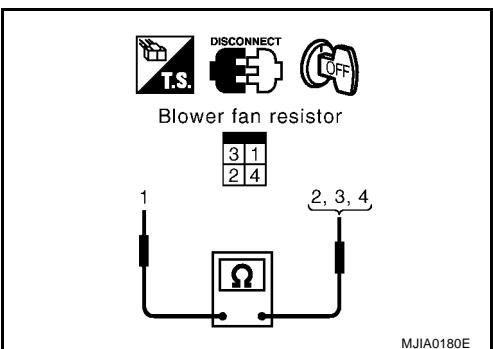
Disconnect blower fan resistor connector, and check continuity between blower fan resistor terminals 1 and 2, 3, 4.

Connector terminal		Continuity
Blower fan resistor		
1	2	Approx. 0.32Ω
	3	Approx. 1.4Ω
	4	Approx. 2.7Ω

Does continuity exist?

YES >> GO TO 7.

NO >> Replace blower fan resistor.



7. CHECK FAN SWITCH

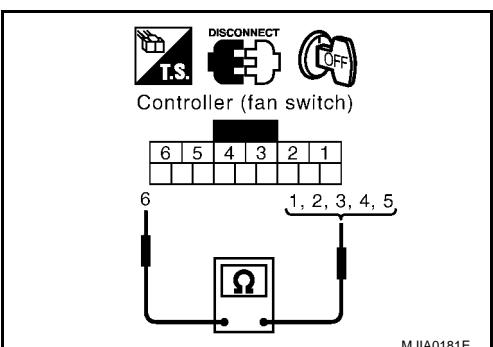
Disconnect controller connector, and check continuity between controller terminals 1 and 2, 3, 4, 5, 6.

Connector terminal		Condition	Continuity
Controller			
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.

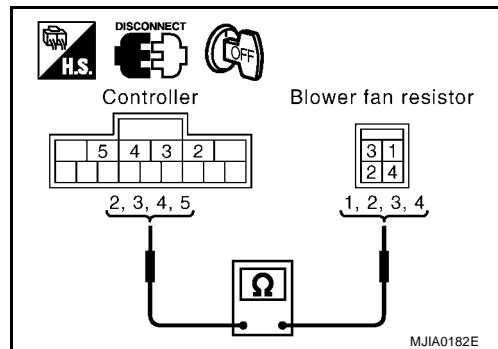


TROUBLE DIAGNOSIS

8. CHECK CIRCUIT CONTINUITY

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

Connector terminal		Continuity
Controller	Blower fan Resistor	
5	1	Yes
4	2	
3	3	
2	4	



Does continuity exist?

YES >> GO TO 9.

NO >> Repair harness or connector.

9. CHECK FAN SWITCH GROUND CIRCUIT

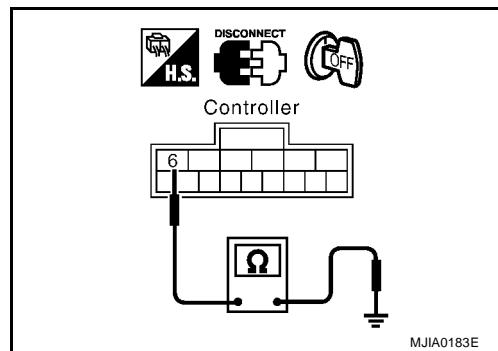
Check continuity between controller terminal 6 and ground.

Connector terminal		Continuity
Controller	Ground	Yes
6		

Does continuity exist?

YES >> End of trouble diagnosis

NO >> Repair harness or connector.



Magnetic Clutch System INSPECTION PROCEDURE

EJS002FK

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-29, "Auto Active Test"](#) .

OK or NG

OK >> GO TO 5.

NG >> GO TO 2.

2. CHECK MAGNETIC CLUTCH VOLTAGE

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

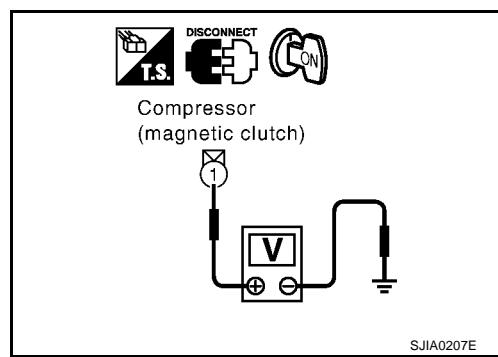
Connector terminal		Voltage
Compressor	Ground	Battery voltage
1		

OK or NG

OK >> GO TO 4.

NG >> After Checking the Fuse (#41), GO TO 3. For the Fuse Block Layout, Refer to [PG-4, "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.



TROUBLE DIAGNOSIS

3. CHECK CIRCUIT CONTINUITY

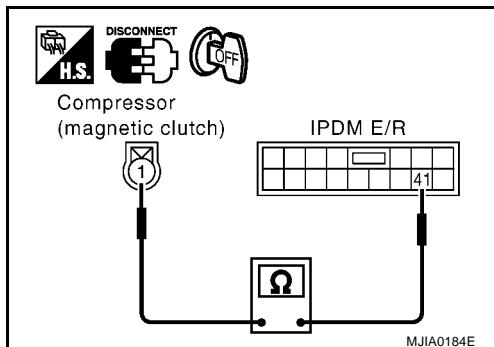
Disconnect the IPDM E/R connector, and check continuity between compressor terminal 1 and IPDM E/R terminal 41.

Connector terminal	Continuity
Compressor	
1	IPDM E/R
1	41
	Yes

Does continuity exist?

YES >> GO TO 4.

NO >> Repair harness or connector.



4. CHECK MAGNETIC CLUTCH

Check continuity between compressor terminal 1 and ground.

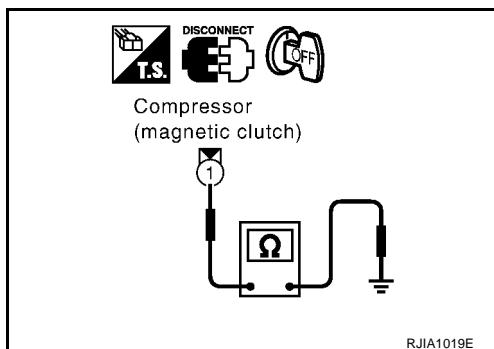
Connector terminal	Continuity
Compressor	
1	Ground
1	Yes

Does continuity exist?

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.

NO >> Replace magnetic clutch.



5. CHECK REFRIGERANT PRESSURE SENSOR

Check refrigerant pressure sensor. Refer to [MTC-14, "REFRIGERANT-PRESSURE SENSOR"](#).

OK or NG

OK >> Connect compressor and IPDM E/R connectors, then GO TO 6.

NG >> Repair or replace parts according to the inspection results.

6. 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

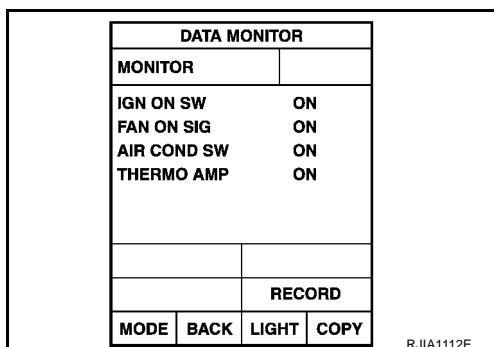
- GO TO 7.

OK or NG

OK >> GO TO 19.

NG >>

- Blower fan switch malfunction: GO TO 7.
- A/C switch malfunction: GO TO 11.
- Thermal amplifier malfunction: GO TO 15.



TROUBLE DIAGNOSIS

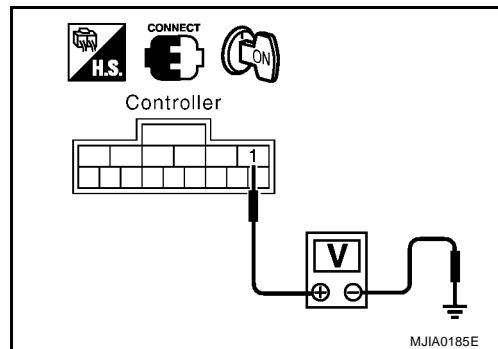
7. CHECK FAN ON SIGNAL

Check voltage between controller terminal 1 and ground.

Connector terminal	Condition	Voltage
Controller 1	Fan: ON	Approx. 12V
	Fan: OFF	Approx. 1V

OK or NG

OK >> GO TO 11.
NG >> GO TO 8.



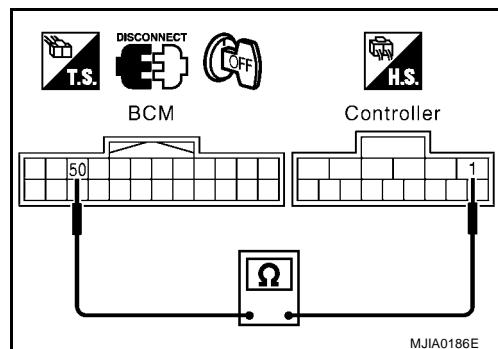
8. CHECK CIRCUIT CONTINUITY

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

Connector terminal	Continuity	
BCM	Controller	
50	1	Yes

Does continuity exist?

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



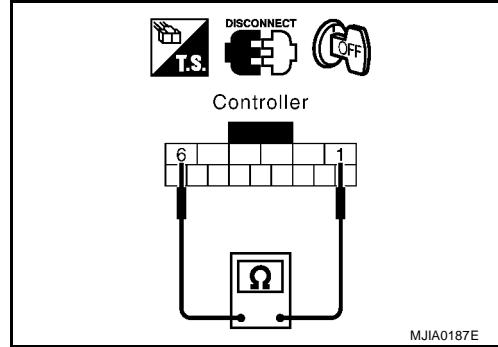
9. CHECK FAN SWITCH

Check continuity between controller terminals 1 and 6.

Connector terminal	Condition	Continuity
Controller		
1	6	Fan: OFF

Does continuity exist?

YES >> GO TO 10.
NO >> Replace controller.



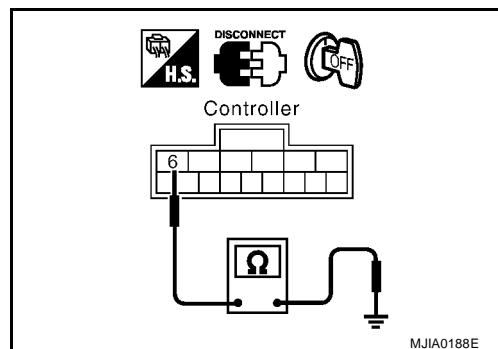
10. CHECK GROUND CIRCUIT

Check continuity between controller terminal 6 and ground.

Connector terminal	Continuity
Controller	
6	Ground

Does continuity exist?

OK >> Connect controller connector, and GO TO 11.
NG >> Repair harness or connector.



TROUBLE DIAGNOSIS

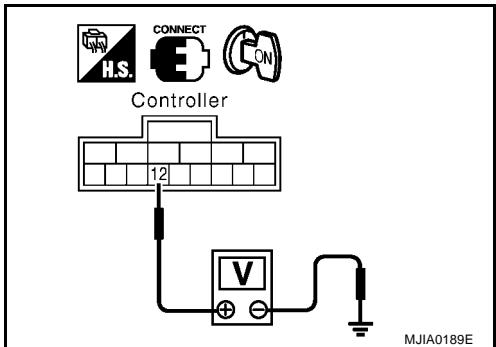
11. CHECK AIR CONDITIONER SIGNAL

Check voltage between controller terminal 12 and ground.

Connector terminal	Voltage
Controller 12	Ground Battery voltage

OK or NG

OK >> GO TO 12.
NG >> GO TO 14.



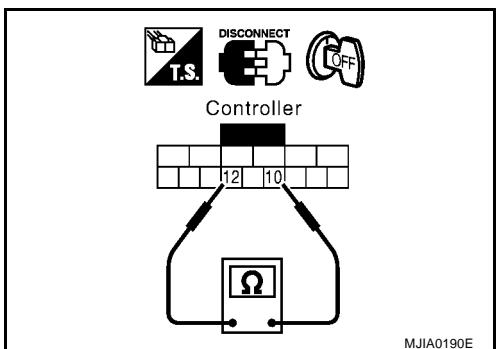
12. CHECK A/C SWITCH

Check continuity between controller terminals 10 and 12.

Connector terminal	Condition	Continuity	
Controller 10	12	A/C switch: Only during operation	Yes

OK or NG

OK >> GO TO 13.
NG >> Replace controller.



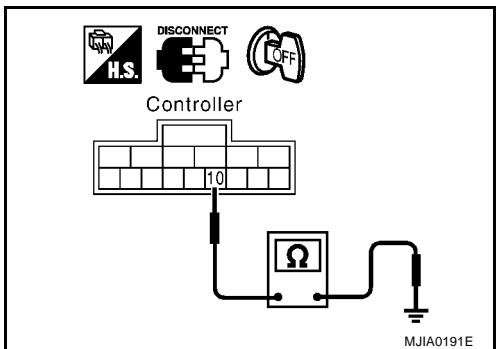
13. CHECK CIRCUIT CONTINUITY

Check continuity between controller terminal 10 and ground.

Connector terminal	Continuity	
Controller 10	Ground	Yes

Does continuity exist?

YES >> GO TO 15.
NO >> Repair harness or connector.



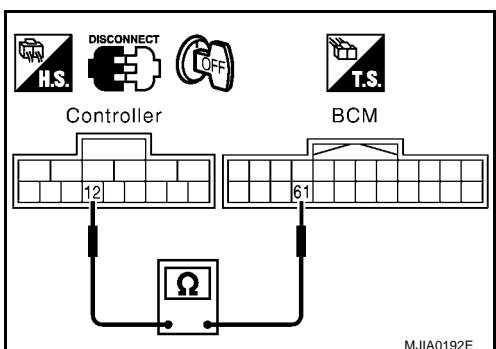
14. CHECK CIRCUIT CONTINUITY

Disconnect BCM connector and check continuity between controller terminal 12 and BCM terminal 61.

Connector terminal	Continuity	
Controller 12	BCM 61	Yes

Does continuity exist?

YES >> Replace BCM.
NO >> Repair harness or connector.



TROUBLE DIAGNOSIS

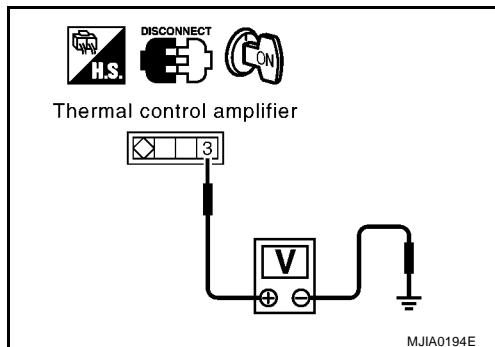
15. CHECK 1: THERMAL CONTROL AMPLIFIER POWER SUPPLY CIRCUIT

Disconnect thermal control amplifier connector, turn ignition switch ON, and check voltage between thermal control amplifier terminal 3 and ground.

Connector terminal	Voltage
Thermal control amplifier	
3	Ground
	Approx. 12V

OK or NG

OK >> GO TO 16.
NG >> GO TO 18.



16. CHECK 2: THERMAL CONTROL AMPLIFIER POWER SUPPLY CIRCUIT

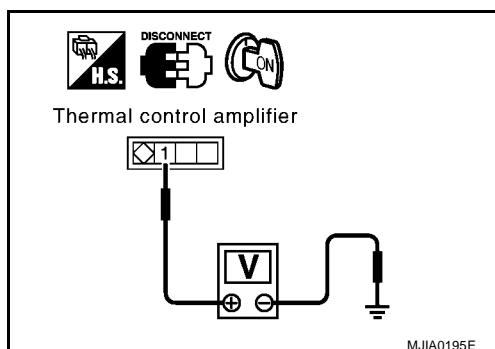
Check voltage between thermal control amplifier terminal 1 and ground.

Connector terminal	Voltage
Thermal control amplifier	
1	Ground
	Battery voltage

OK or NG

OK >> GO TO 17.
NG >> Check fuse (#16). For the Fuse Block Layout, Refer to [PG-4, "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.



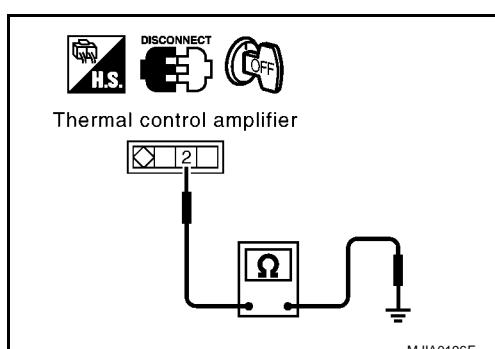
17. CHECK CIRCUIT CONTINUITY

Check continuity between thermal control amplifier terminal 2 and ground.

Connector terminal	Continuity
Thermal control amplifier	
2	Ground
	Yes

Does continuity exist?

YES >> Replace thermal control amplifier.
NO >> Repair harness or connector.



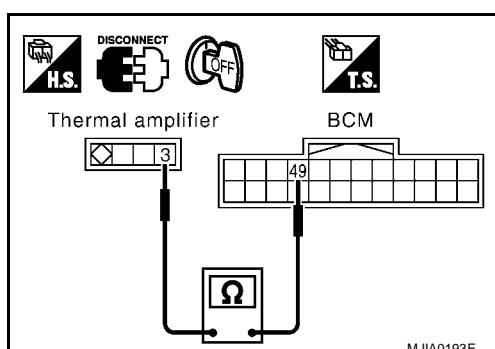
18. CHECK CIRCUIT CONTINUITY

Disconnect BCM connector, and check continuity between thermal control amplifier terminal 3 and BCM terminal 49.

Connector terminal	Continuity
Thermal control amplifier	
3	BCM
	49
	Yes

Does continuity exist?

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



19. 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-16, "CAN Communication Inspection With CONSULT-II \(Self-Diagnosis\)"](#) and [LAN-5, "CAN Communication Unit"](#) .

OK or NG

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

Insufficient Cooling

CHECK FUNCTION

EJS002FL

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.

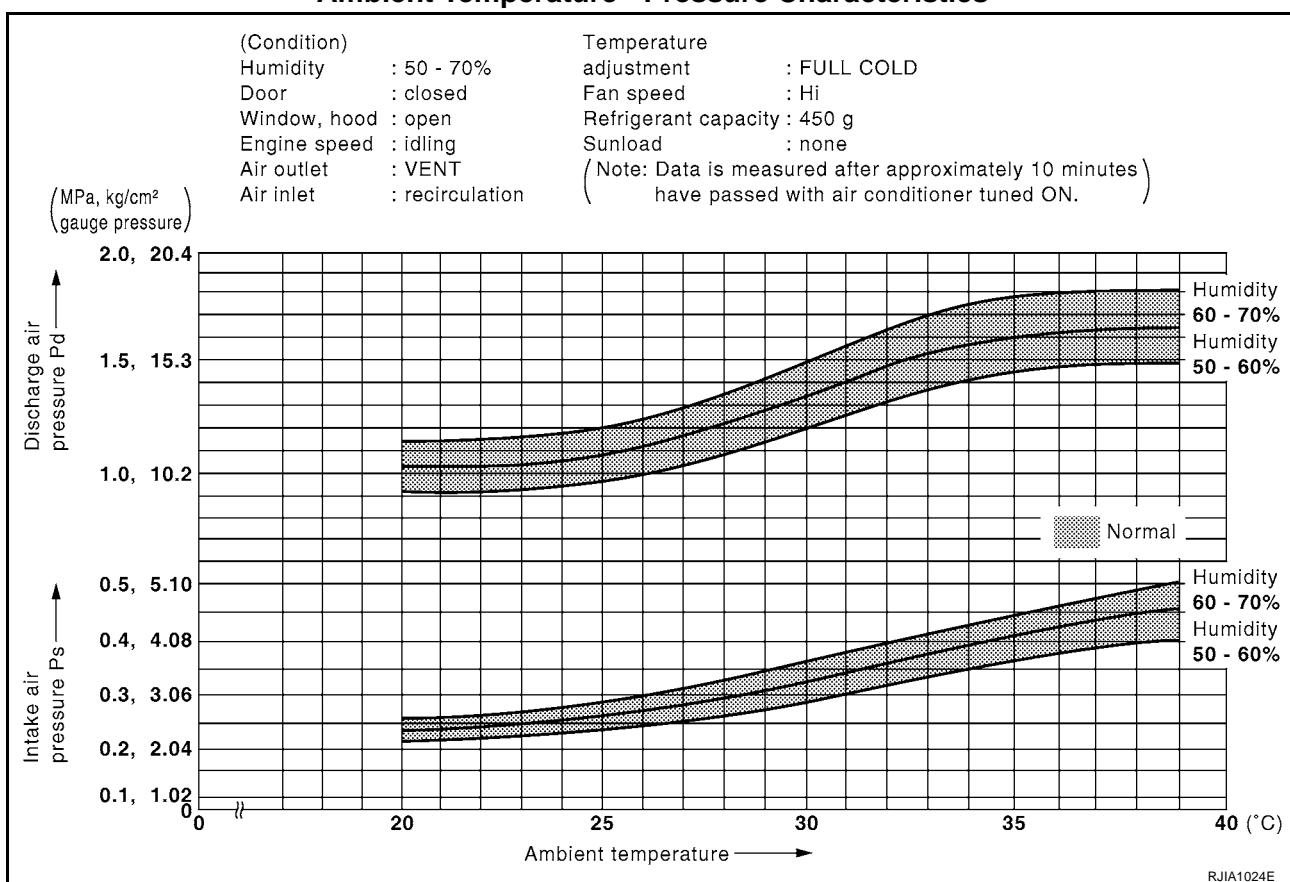
Fan speed	: HI
Inlet	: Recirculation (REC)
Outlet	: Ventilation (VENT)
Predetermined temperature	: FULL COLD

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.

TROUBLE DIAGNOSIS

Performance Curve

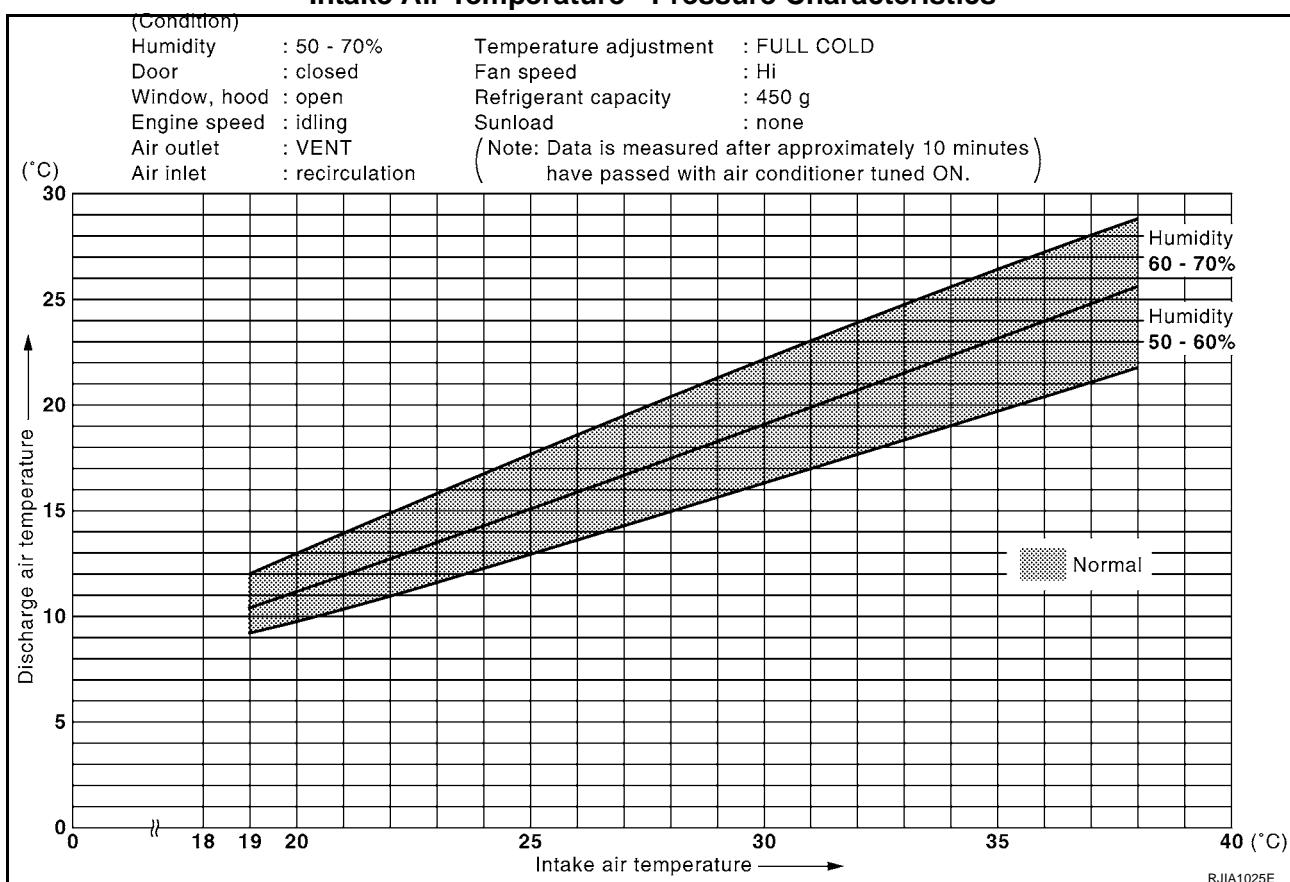
Ambient Temperature - Pressure Characteristics



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Intake Air Temperature - Pressure Characteristics



TROUBLE DIAGNOSIS

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 <ul style="list-style-type: none"> ● Operation malfunction of radiator and condenser fan ● Improper installation of air guide ● Clogged condenser or dirty fins 	<ul style="list-style-type: none"> ● 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. <ul style="list-style-type: none"> ● 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-25, "Blower Fan Motor System" .
	Some temperature difference occurs between high-pressure and low-pressure pipes of the compressor.	Insufficient refrigerant amount	<ul style="list-style-type: none"> ● Check for refrigerant leaks. ● Discharge refrigerant completely, evacuate again, and recharge with proper amount of refrigerant.

TROUBLE DIAGNOSIS

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) <ul style="list-style-type: none">● Damage or breakage of valve● Gasket worn or damaged	Replace compressor.

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TROUBLE DIAGNOSIS

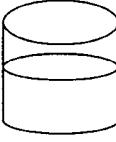
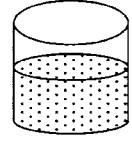
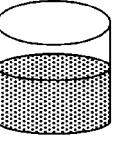
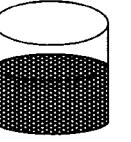
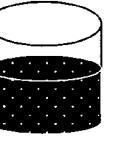
DIAGNOSIS OF COMPRESSOR

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.
	Check compressor oil condition.		High/low-pressure hunt. (Note 2)	Replace compressor only.
Insufficient cooling (Note 1)	Compressor body	Check rotation of compressor. If seized or stuck, sample compressor oil and judge.	Refer to the criteria shown in compressor lubricant.	Diagnostic Result 1: Replace compressor only.
	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.		Diagnostic result 2: Replace compressor and liquid tank.
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

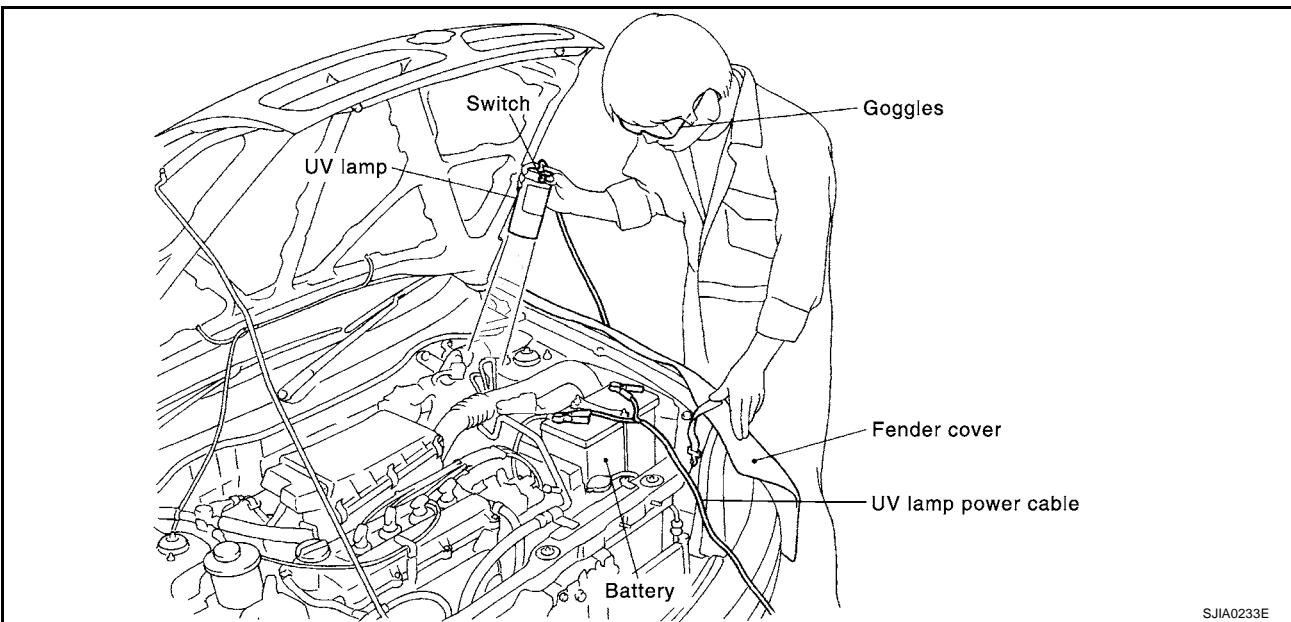
Compressor oil judgement figure					
	Almost clear, no foreign material		Grayish clear, no foreign material		Light gray, no foreign material
	Gray, foreign material		Black, foreign material		
Judgement result 1			Judgement result 2		
SJIA0232E					

TROUBLE DIAGNOSIS

Detecting Leaks With Fluorescent Indicator METHOD FOR DETECTING REFRIGERANT LEAKAGE.

EJS002JL

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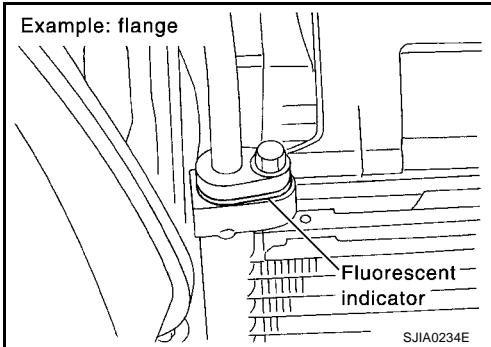


SJIA0233E

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.



SJIA0234E

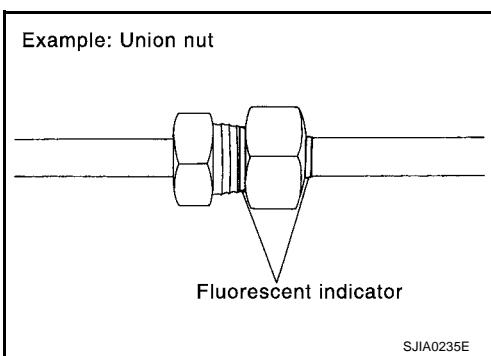
5. After finishing work, use a UV lamp to make sure no fluorescent indicator remains.

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.



SJIA0235E

CONTROL UNIT

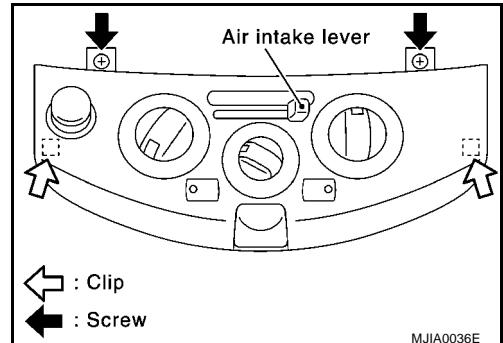
CONTROL UNIT

PFP:27500

Removal and Installation

REMOVAL

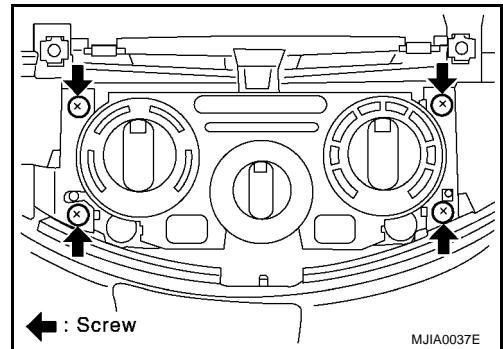
1. Remove cluster lid "C". Refer to [IP-4, "INSTRUMENT PANEL ASSEMBLY"](#).
2. Remove the air intake lever.
3. Remove the screws and clips, and then remove the air conditioner finisher.



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.

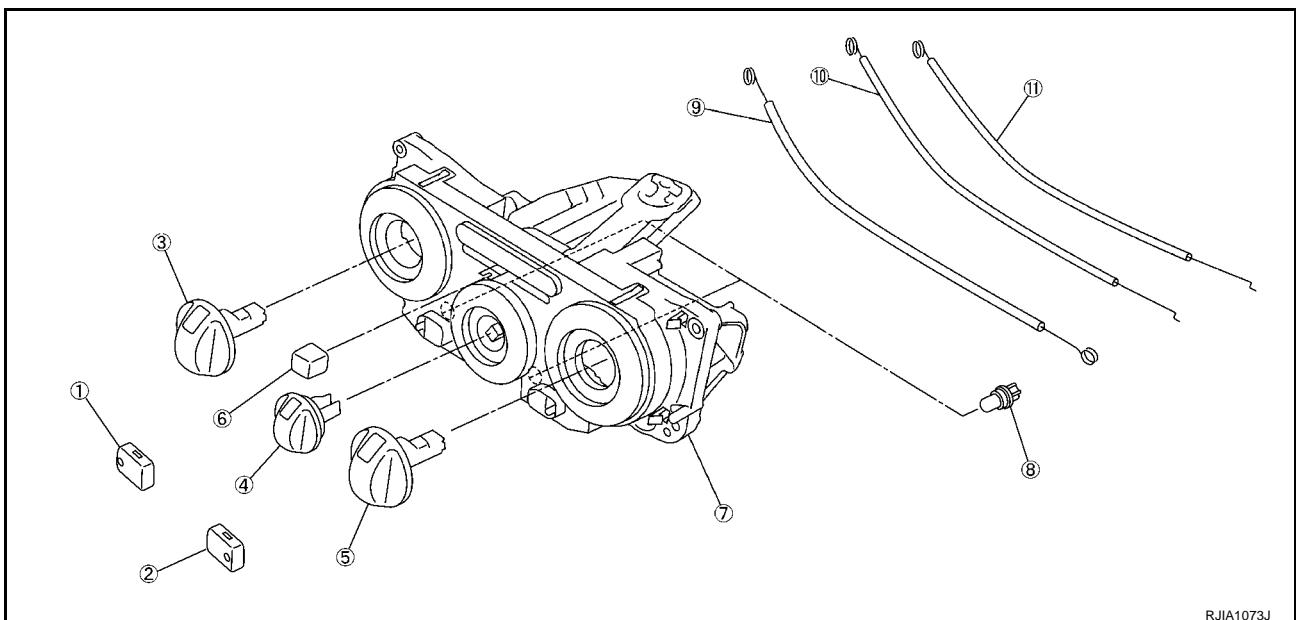
CAUTION:

Adjust the door cables during installation. Refer to [MTC-48, "Intake Door Cable Adjustment"](#), [MTC-49, "Mode Door Cable Adjustment"](#) and [MTC-50, "Air Mix Door Cable Adjustment"](#).



Disassembly and Assembly

EJS002GF



RJIA1073J

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	

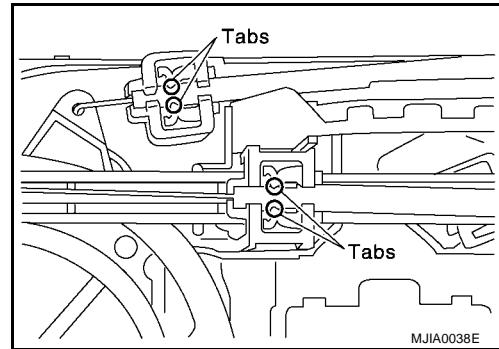
INSTALLATION

Install in the reverse order of removal.

CONTROL UNIT

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.



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A/C UNIT ASSEMBLY

PFP:27210

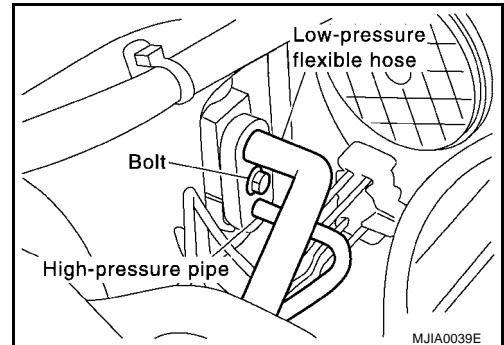
Removal and Installation

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:

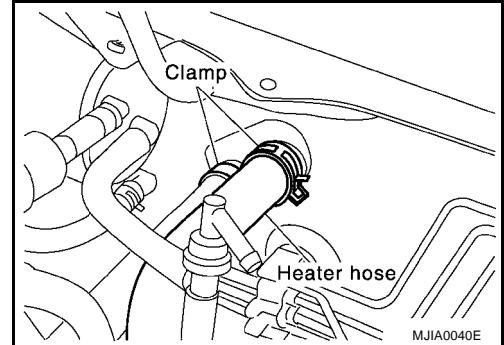
Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.



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

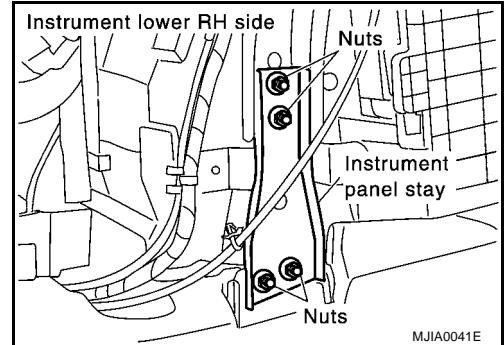
CAUTION:

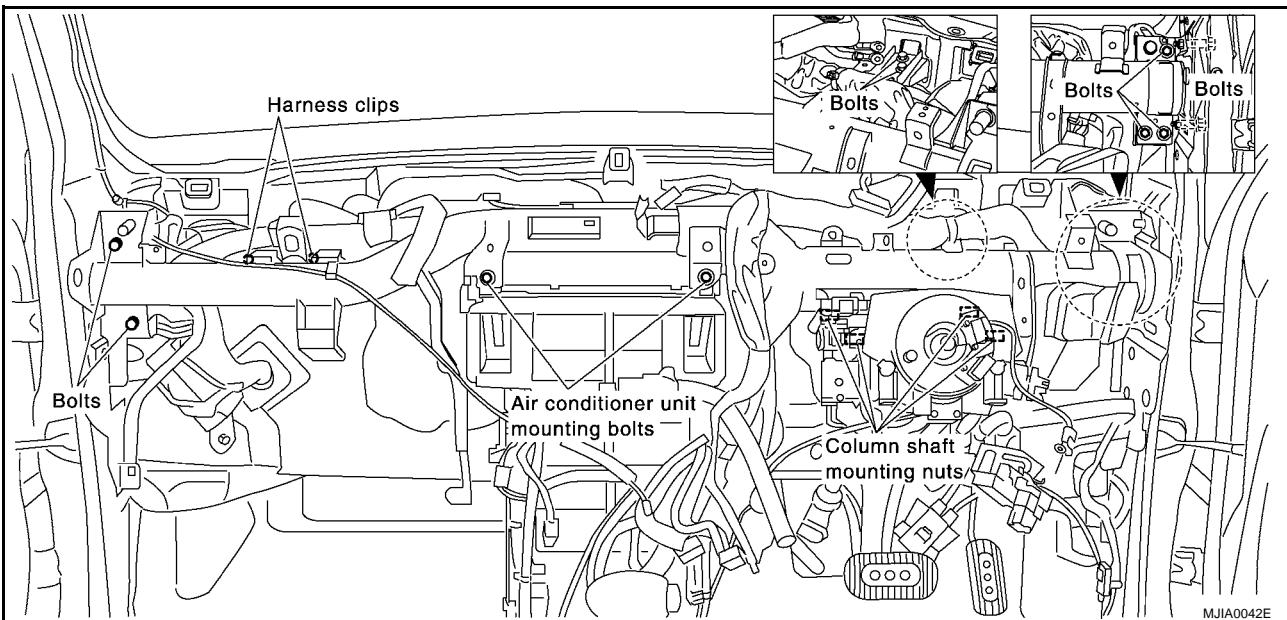
- Some coolant may spill when heater hoses are disconnected.
- Close off the coolant inlet and outlet on the heater core (2 locations) with waste.



5. Remove instrument panel. Refer to [IP-4, "INSTRUMENT PANEL ASSEMBLY"](#) .

6. Remove the vehicle harness clips and then remove the instrument panel stay.





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-17, "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.

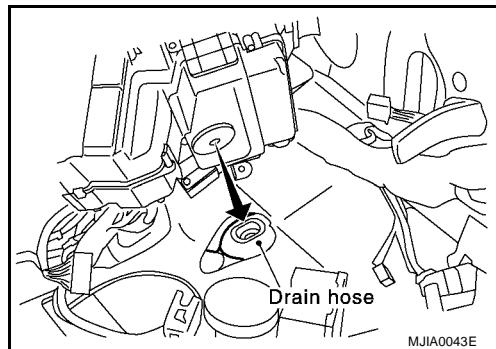
1. Install the air conditioner unit.

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)].

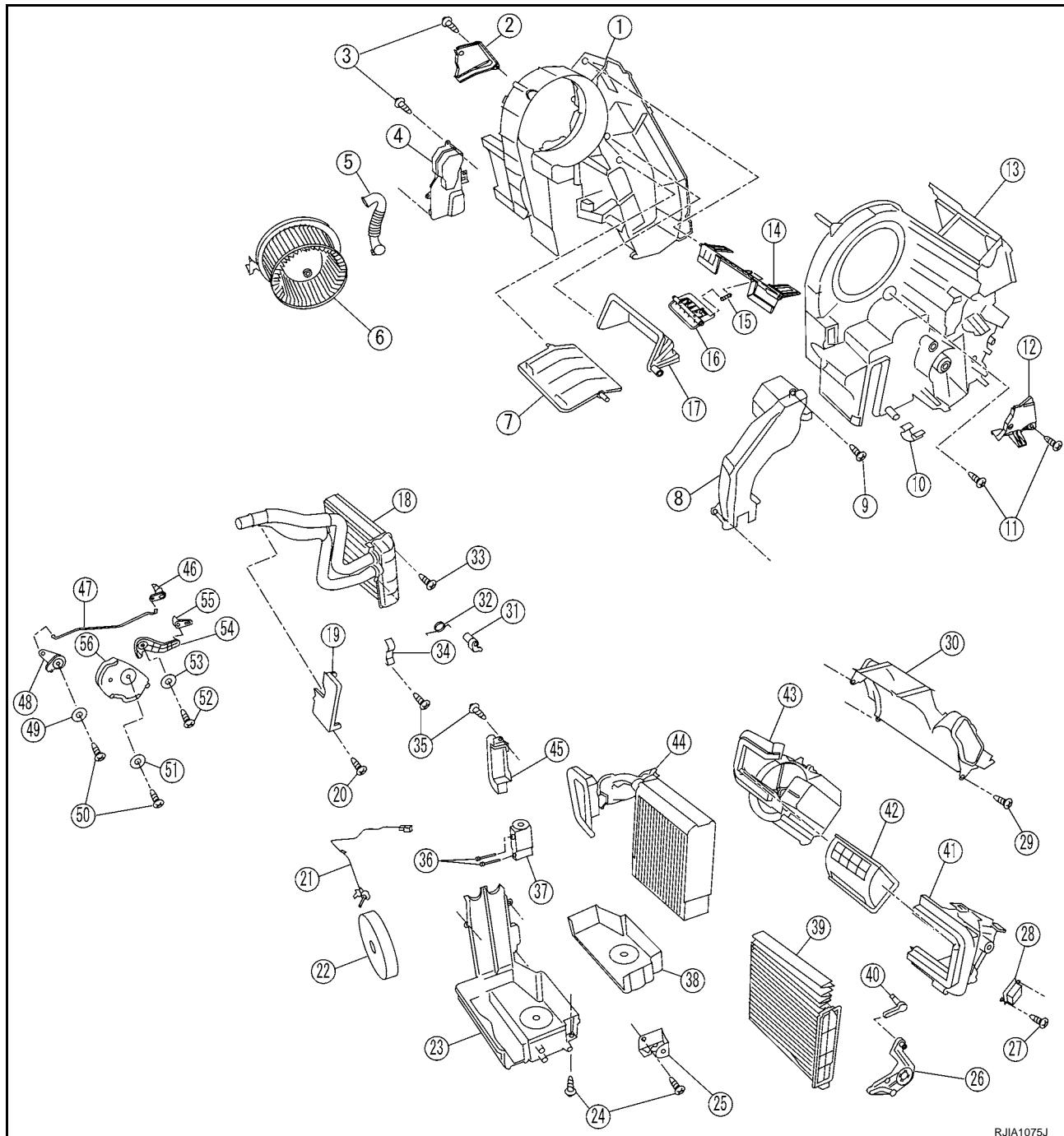
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A/C UNIT ASSEMBLY

Disassembly and Assembly

EJS002GH



RJIA1075J

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

A/C UNIT ASSEMBLY

37. Expansion valve	38. Insulator	39. Clean 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	

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HEATER CORE

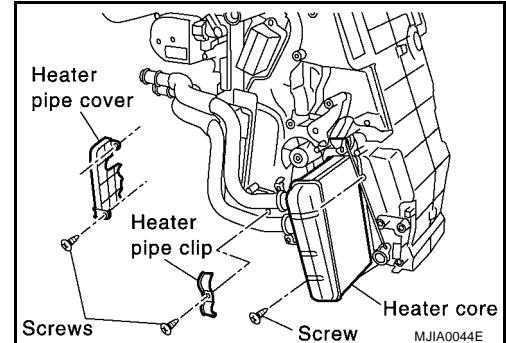
HEATER CORE

PFP:27140

Removal and Installation REMOVAL

EJS002GI

1. Remove the air conditioner unit. Refer to [MTC-40, "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.

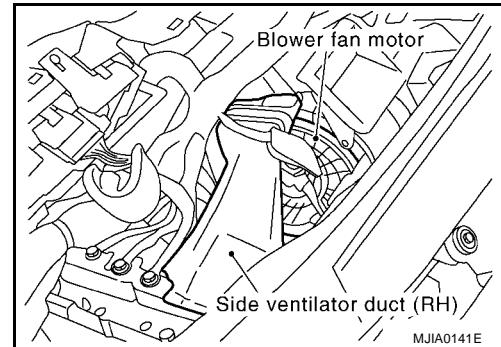
BLOWER MOTOR

PFP:27226

Removal and Installation

REMOVAL

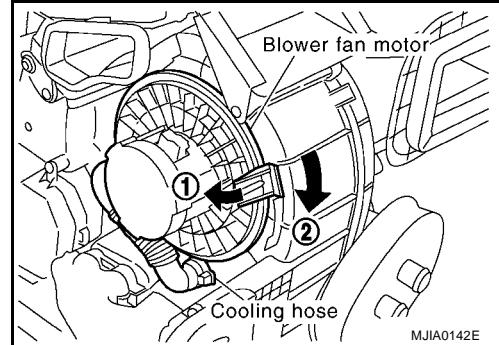
1. Remove instrument panel assembly. Refer to [IP-4, "INSTRUMENT PANEL ASSEMBLY"](#).
2. Remove the side ventilator duct (RH). Refer to [MTC-54, "SIDE VENTILATOR DUCT"](#).



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.

MTC

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BLOWER FAN RESISTOR

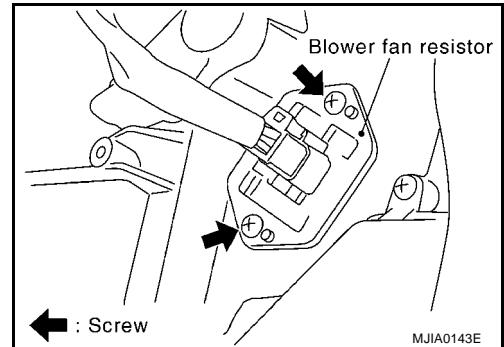
BLOWER FAN RESISTOR

PFP:27150

Removal and Installation REMOVAL

EJS002GL

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



INSTALL

Install in the reverse order of removal.

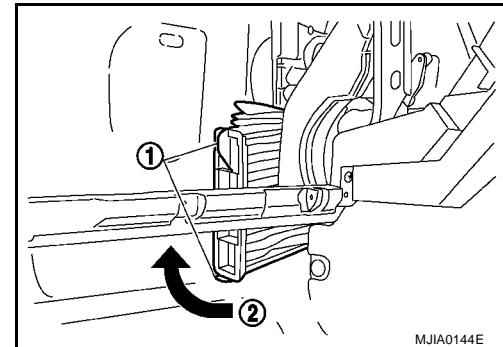
CLEAN FILTER

PFP:27277

Removal, Replacement and Installation REMOVAL

EJS002JJ

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

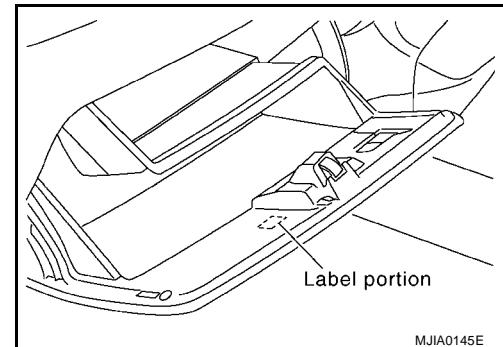


REPLACEMENT

**Clean 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.

MTC

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INTAKE DOOR

PFP:27245

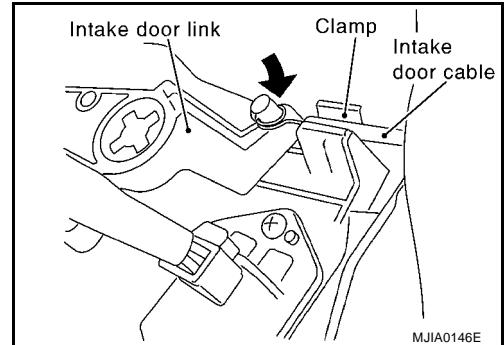
Intake Door Cable Adjustment

EJS002GO

1. Remove the glove box cover assembly. Refer to [IP-8, "O. 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

MODE DOOR

PFP:27181

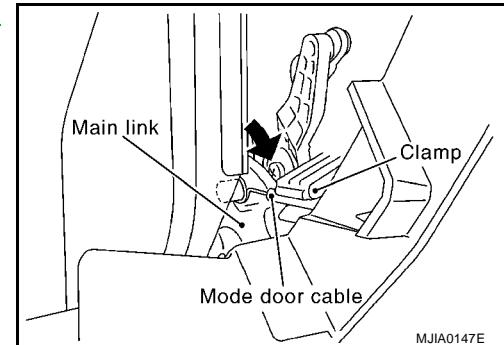
Mode Door Cable Adjustment

EJS002HO

1. Remove the instrument panel stay cover. Refer to [IP-8, "M. 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.



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AIR MIX DOOR

PFP:27180

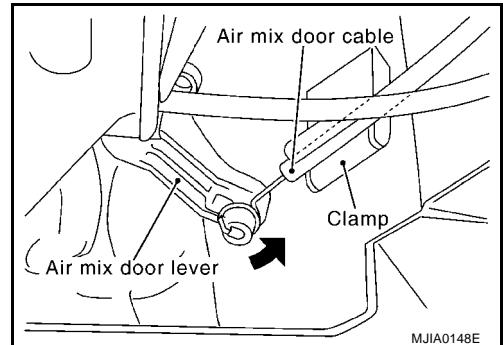
Air Mix Door Cable Adjustment

EJS002HP

1. Remove the instrument panel stay cover. Refer to [IP-8, "M. 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.



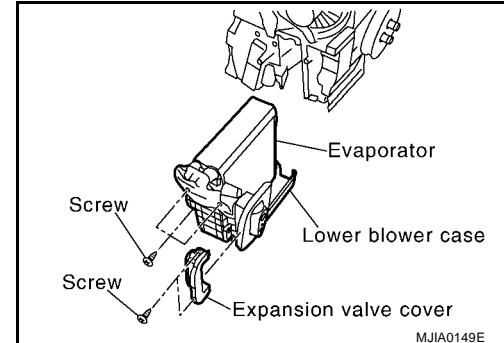
THERMO CONTROL AMPLIFIER

PFP:27675

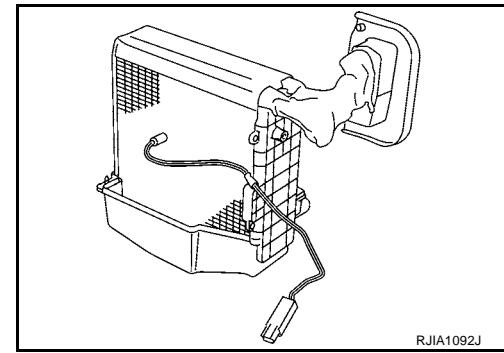
Removal and Installation

REMOVAL

1. Use recovery/recycling recharging equipment [for HFC-134a(R134a)] to discharge refrigerant.
2. Remove the air conditioner unit. Refer to [MTC-40, "A/C UNIT ASSEMBLY"](#) .
3. Remove the clean filter and foot duct (RH). Refer to [MTC-47, "CLEAN FILTER"](#) and [MTC-52, "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 thermal amplifier.



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 thermal amplifier, 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.
- 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)

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MTC

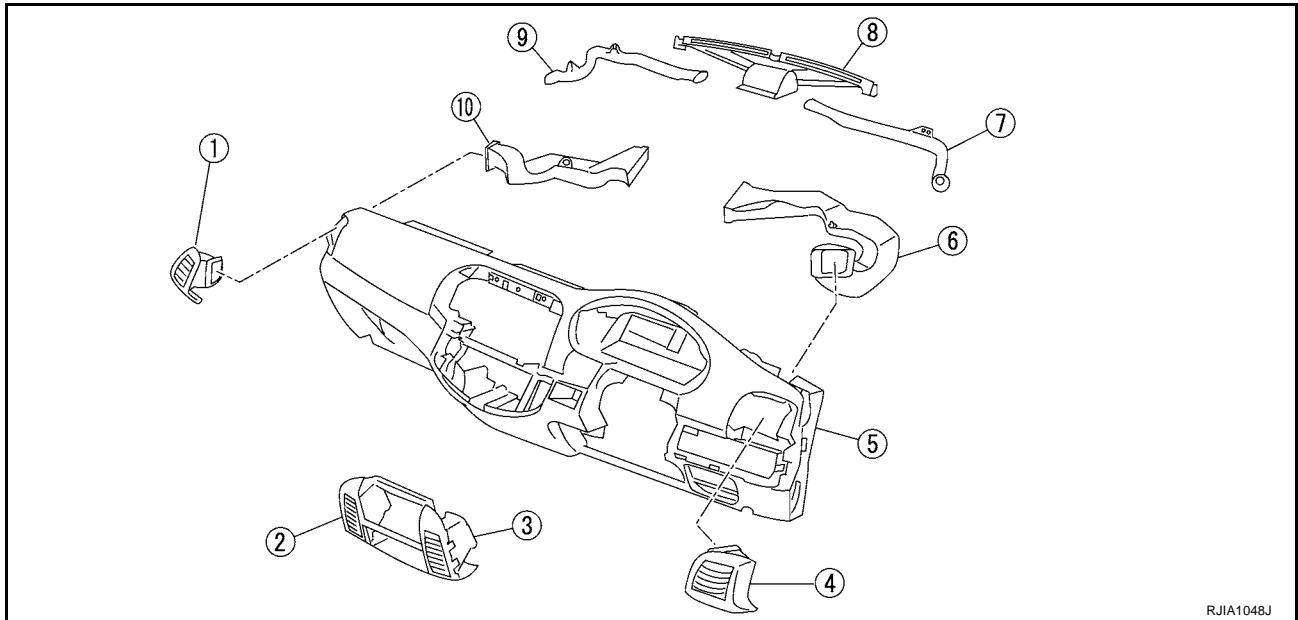
DUCTS AND GRILLES

DUCTS AND GRILLES

PFP:27860

Removal and Installation COMPONENT PARTS LOCATION

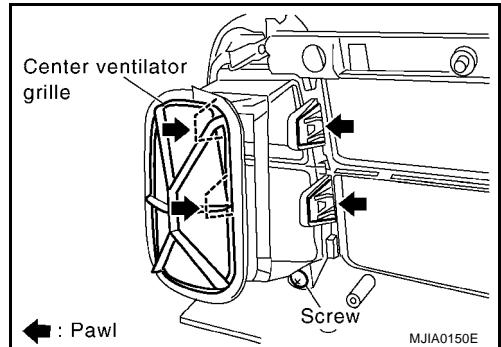
EJS002GT



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)

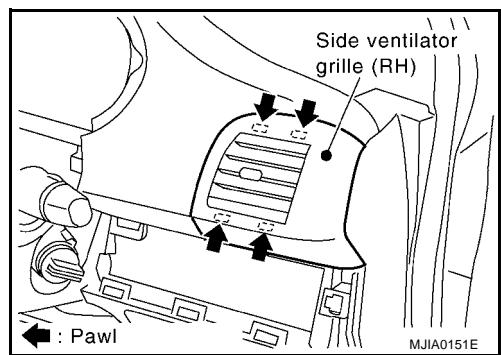
CENTRAL VENTILATOR GRILLE

1. Remove cluster lid "C". Refer to [IP-7, "K. Cluster Lid C"](#) .
2. Remove the audio. Refer to [AV-11, "Removal and Installation of Audio Unit"](#) .
3. Remove the center ventilator grille (LH/RH).



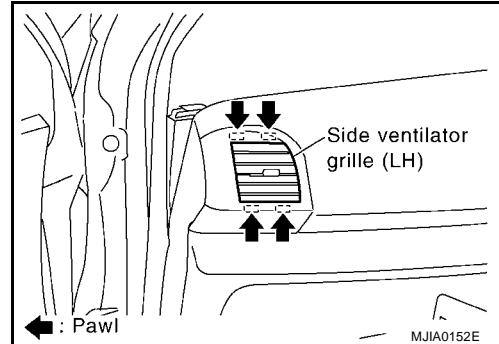
SIDE VENTILATOR GRILLE

1. Remove the upper instrument panel. Refer to [IP-6, "B. Upper Instrument Panel"](#) .
2. Remove the switch panel finisher. Refer to [IP-6, "E. 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, "O. Glove Box Cover Assembly"](#) .



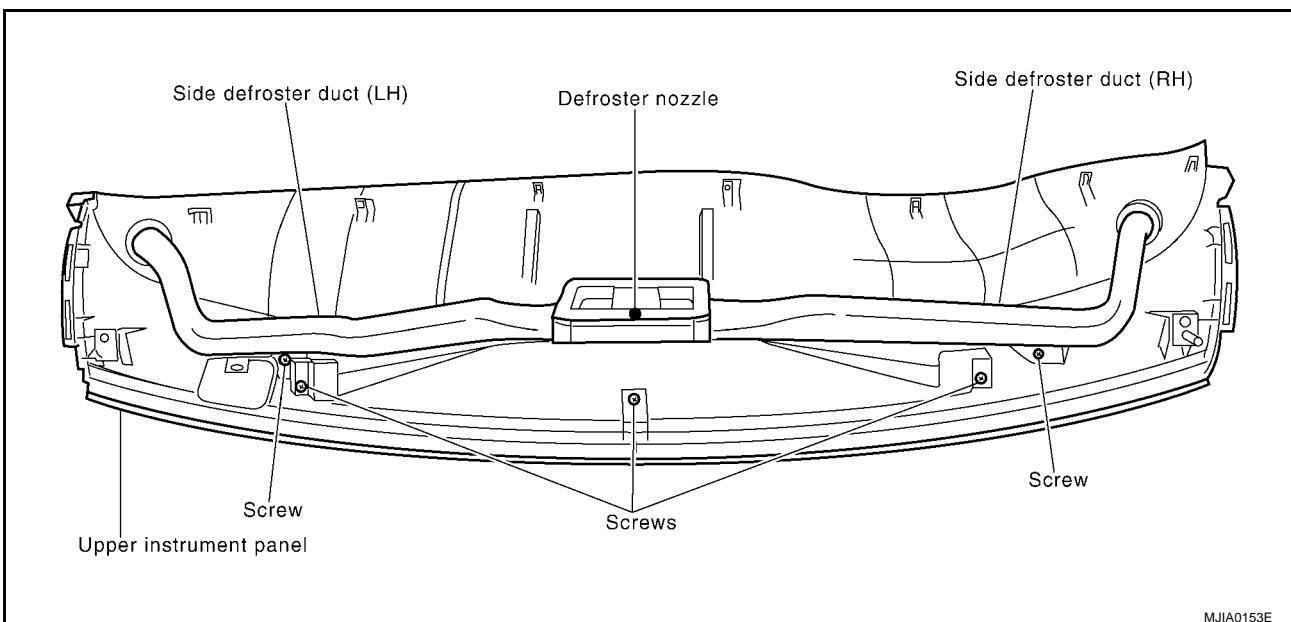
DUCTS AND GRILLES

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

1. Remove the upper instrument panel. Refer to [IP-6, "B. Upper Instrument Panel"](#) .



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

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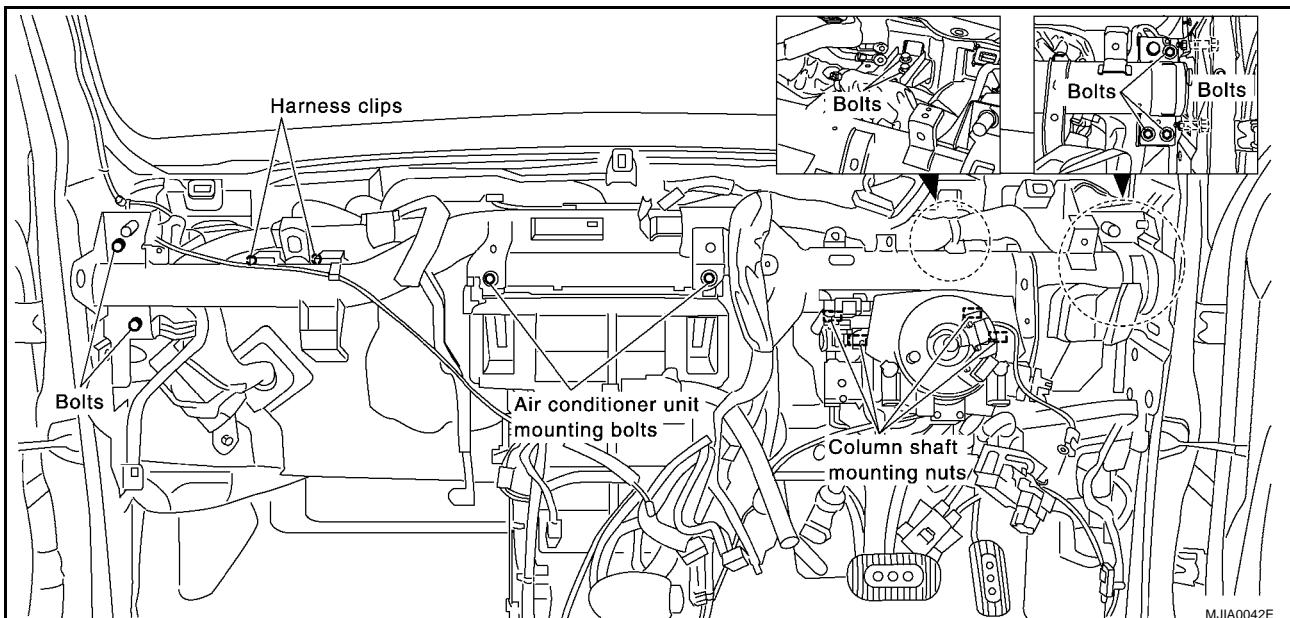
MTC

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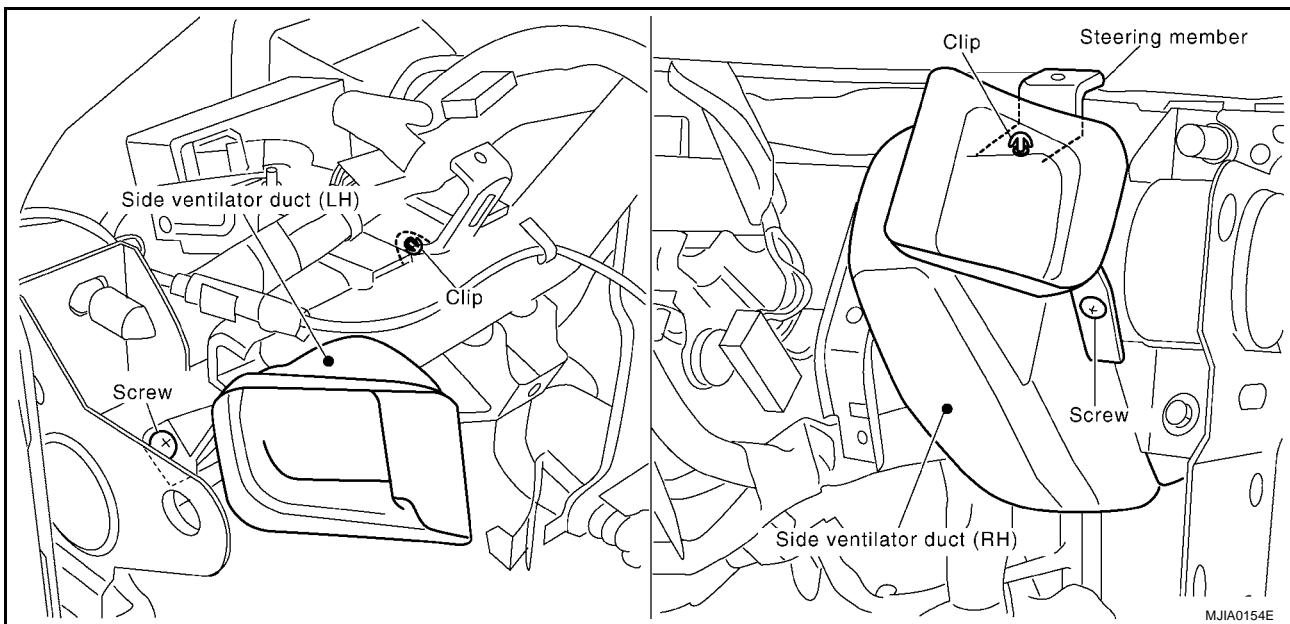
DUCTS AND GRILLES

SIDE VENTILATOR DUCT

1. Remove the glove box cover assembly. Refer to [IP-8, "O. 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-17, "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).

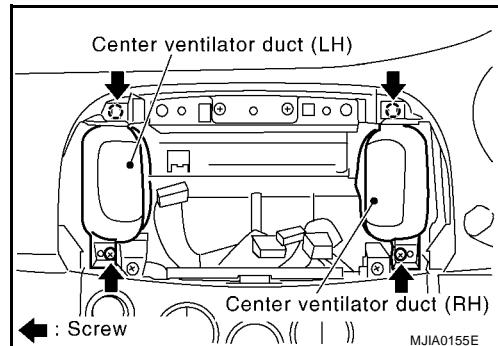


Steering member mounting nut and bolt

Tightening torque :11 - 13 N·m (1.2 - 1.3 kg·m, 8.2 - 9.5 ft-lb)

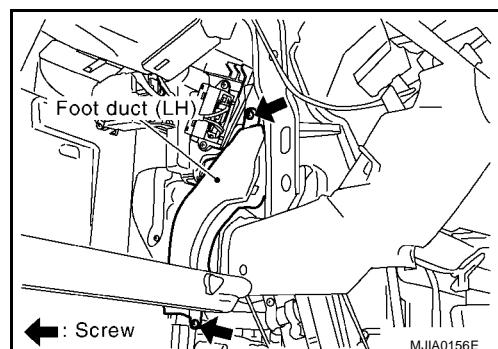
CENTER VENTILATOR DUCT

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

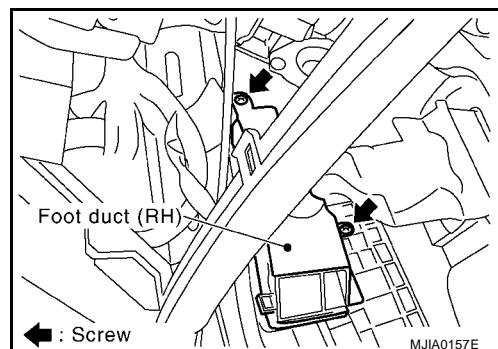


FOOT DUCT

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



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



REFRIGERANT LINES

REFRIGERANT LINES

PFP:92600

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

SETTING OF SERVICE TOOLS AND EQUIPMENT

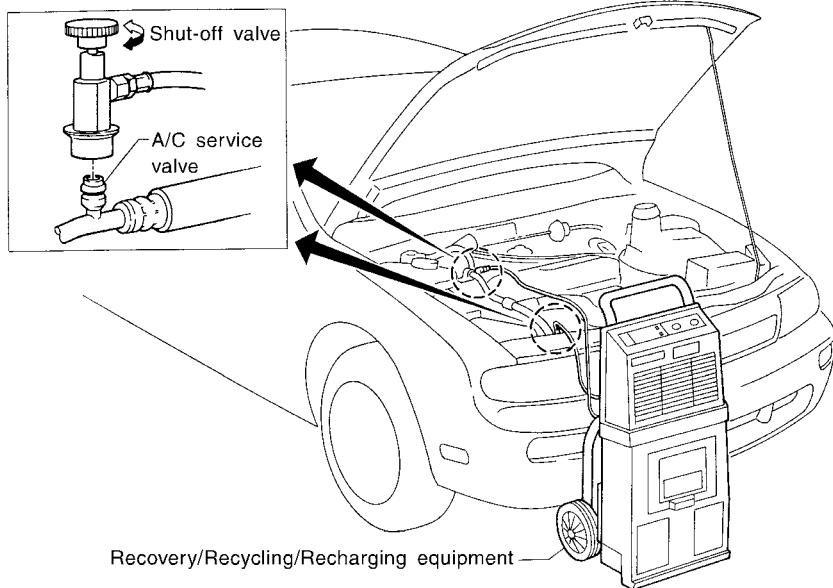
EJS002HN

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.

Example

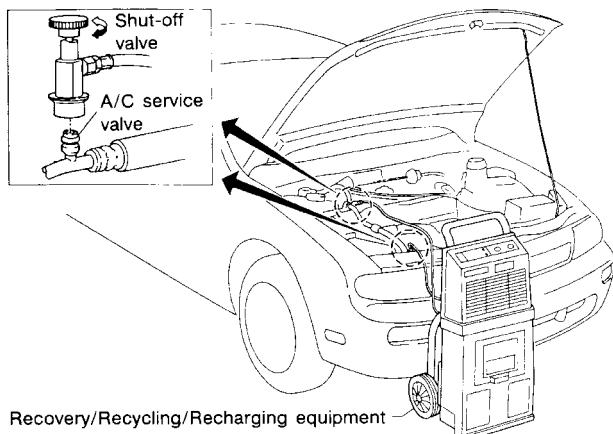


SHA539DE

Evacuating System and Charging Refrigerant

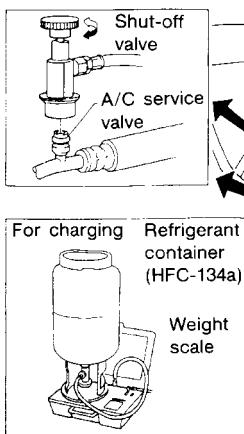
Example

Preferred (Best) method



Recovery/Recycling/Recharging equipment

Alternate method



For charging

Refrigerant container (HFC-134a)

Weight scale

Manifold gauge set

For evacuating
vacuum pump

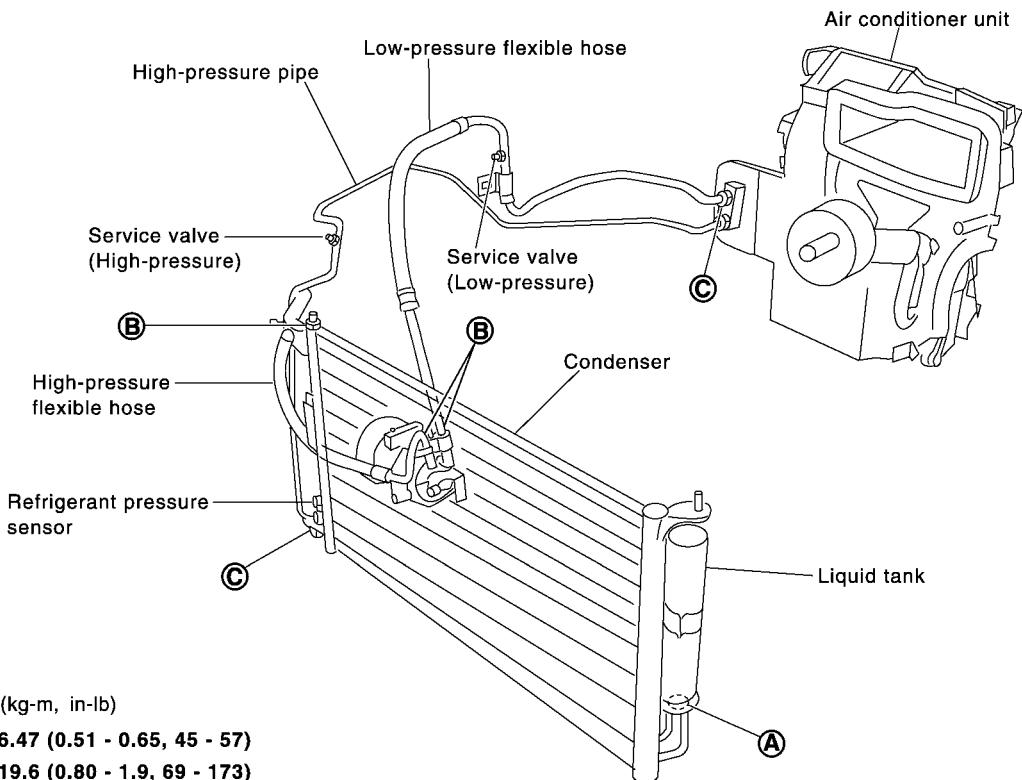
SHA540DC

REFRIGERANT LINES

Component Parts Location

EJS002GU

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MJIA0158E

Compressor REMOVAL

EJS002GV

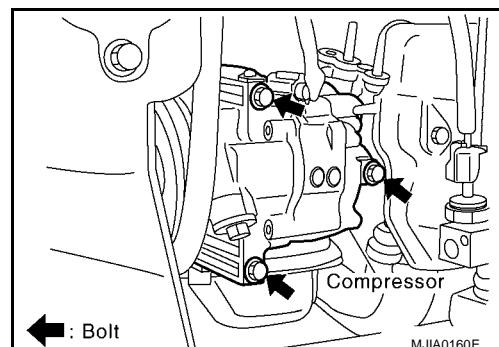
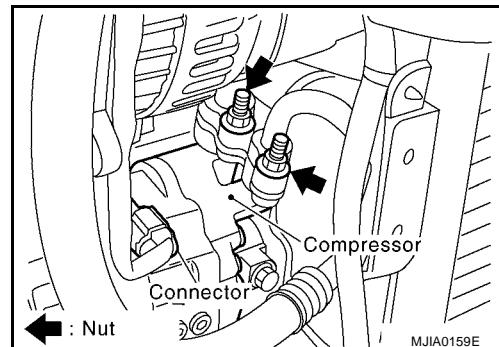
MTC
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1. Use recovery/recycling recharging equipment [for HFC-134a (R134a)] to discharge refrigerant.
2. Remove air duct (fresh air intake side). Refer to [EM-14, "AIR CLEANER AND AIR DUCT"](#).
3. Disconnect compressor connector.
4. Remove the high-pressure and low-pressure flexible hose mounting nuts, 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-10, "DRIVE BELTS"](#).
6. Remove compressor mounting bolts.
7. Remove the compressor from under the vehicle.



REFRIGERANT LINES

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-10, "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 nuts

Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg·m, 6 - 14 ft-lb)

Low-pressure flexible hose mounting nuts

Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg·m, 6 - 14 ft-lb)

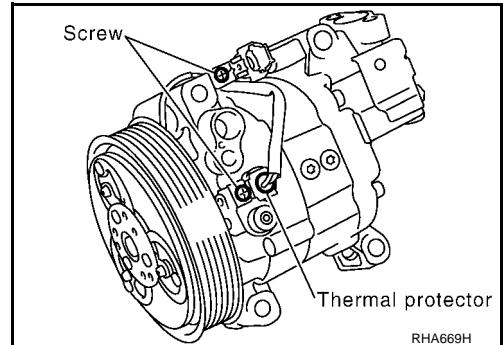
Removal and Installation for Compressor Clutch

EJS002HA

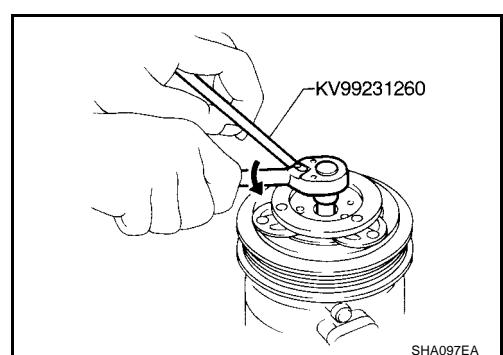
REMOVAL

Overhaul (KC59G Compressor)

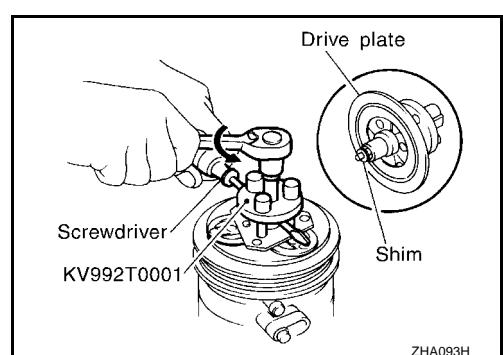
- Remove the two screws holding the connector bracket, thermal protector to the compressor.



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

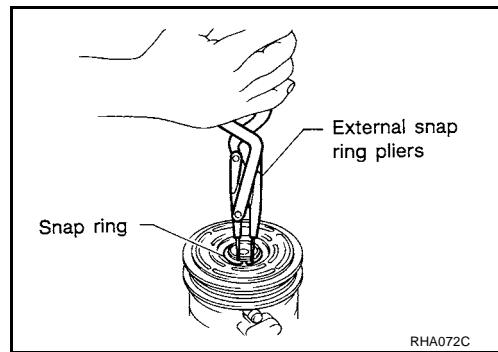


- Remove the drive plate using the clutch disc puller.
- Insert holder's three pins into the drive plate. Rotate the holder clockwise to hook it onto the plate.
- Tighten the center bolt to remove the drive plate.
- While tightening the center bolt, insert a screwdriver between two of the pins (as shown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



REFRIGERANT LINES

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



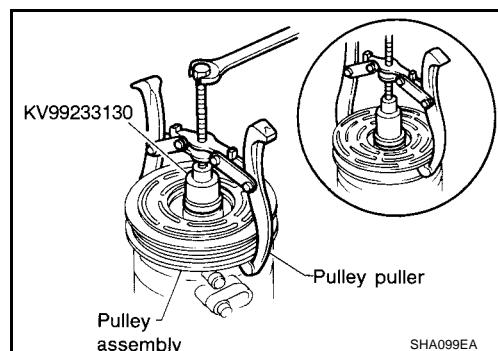
9. Remove the pulley assembly with the puller using a commercially available pulley puller. (Position the center of the puller on the end of the drive shaft)

For pressed pulleys:

To prevent deformation of the pulley groove, the puller claws should be hooked under (not into) the pulley groove.

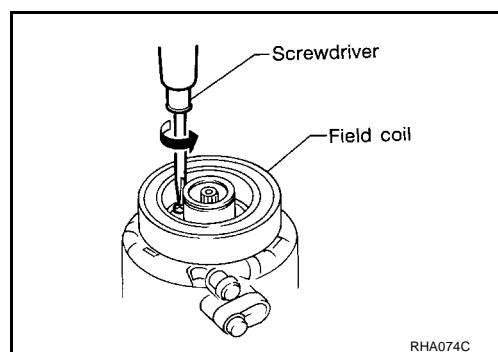
For machine lathed pulleys:

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.

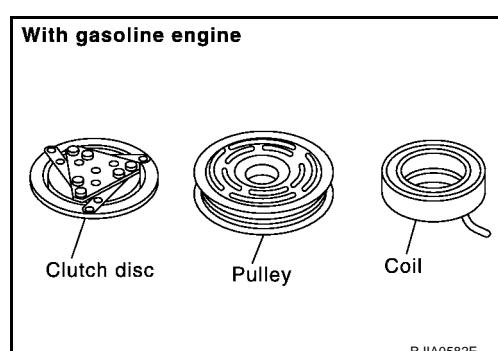
11. Then remove the three field coil fixing screws and remove the field coil.



Inspection

Clutch disc

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

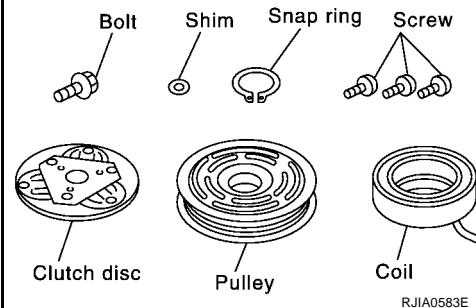


REFRIGERANT LINES

Pulley

Check the appearance of the pulley assembly. If the contact surface of pulley shows 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.

With diesel engine



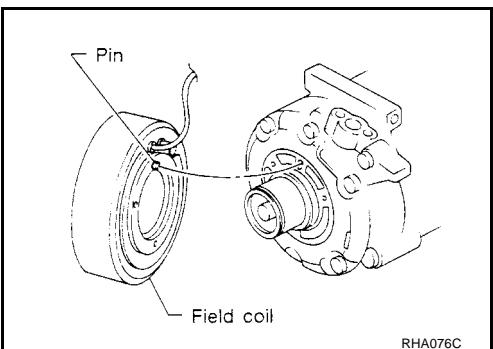
Coil

Check coil for loose connection or cracked insulation.

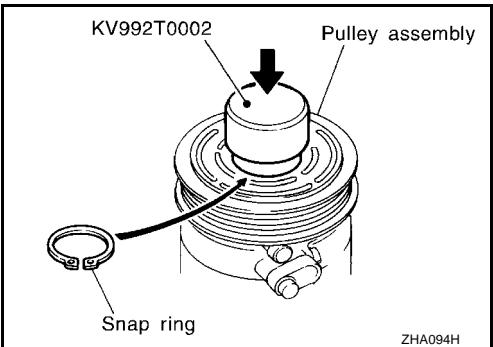
INSTALLATION

KC59G Compressor

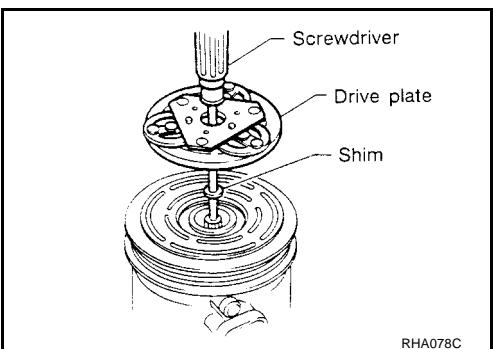
1. Install the field coil.
Be sure to align the coil's pin with the hole in the compressor's front head.
2. Install the field coil harness clip using a screwdriver.



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.

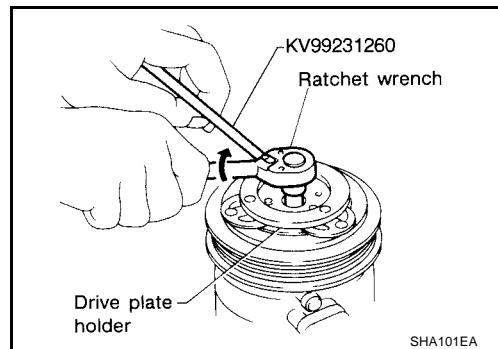


REFRIGERANT LINES

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)

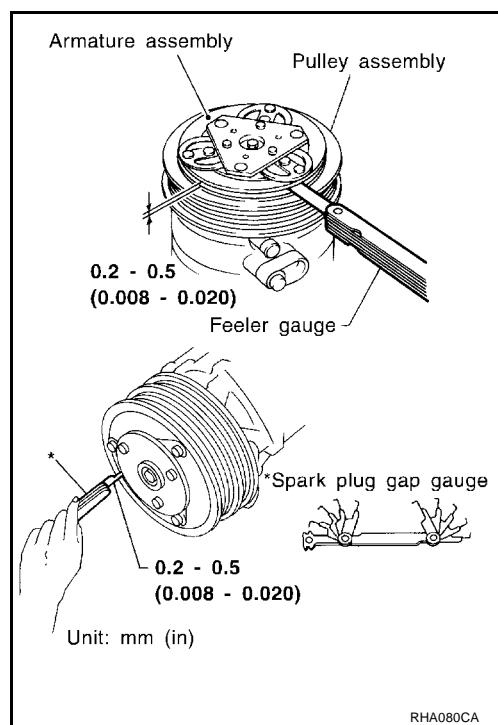
After tightening the bolt, check that the pulley rotates smoothly.



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

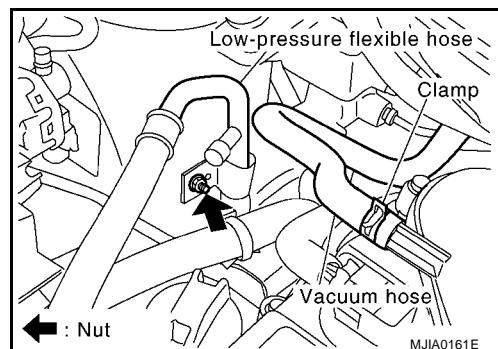
When replacing compressor clutch assembly, always carry out the break-in operation. This is done by engaging and disengaging the clutch about thirty times. Break-in operation raises the level of transmitted torque.

Removal and Installation for Low-Pressure Flexible Hose

EJS002GW

REMOVAL

1. Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] to discharge refrigerant.
2. Remove air duct (fresh air intake side). Refer to [EM-14, "AIR CLEANER AND AIR DUCT"](#).
3. Remove the low-pressure flexible hose bracket mounting nuts.
4. Remove the brake vacuum hose from the air cleaner case.

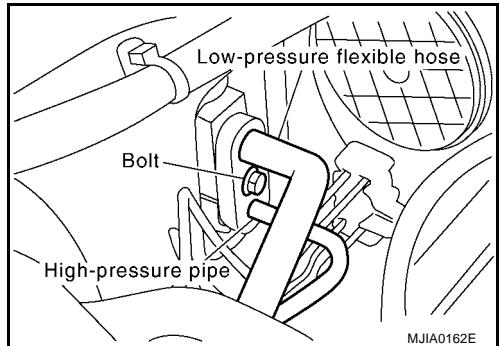


REFRIGERANT LINES

5. Remove the low-pressure flexible hose mounting bolts (air conditioner unit side).

CAUTION:

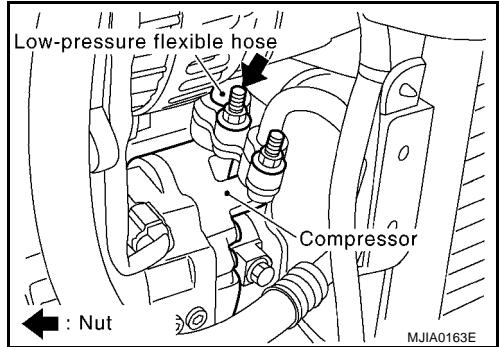
Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.



6. Remove the low-pressure flexible hose mounting bolts (compressor side) and then remove the low-pressure flexible hose.

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 in the reverse order of removal.

CAUTION:

- Replace the low-pressure flexible hose O-ring with a new one. Apply a coat of compressor lubricant to the O-ring prior to installation.
- When charging refrigerant, check for refrigerant leaks.

Low-pressure flexible hose mounting nuts (compressor side)

Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg·m, 6 - 14 ft-lb)

Low-pressure flexible hose 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 bracket mounting nuts

Tightening torque : 3.82 - 4.51 N·m (0.39 - 0.46 kg·m, 43 - 39 in-lb)

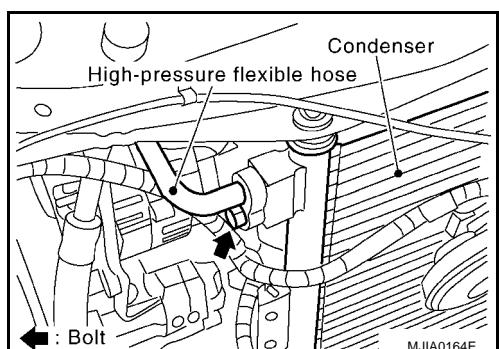
Removal and Installation for High-Pressure Flexible Hose

REMOVAL

1. Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] to discharge refrigerant.
2. Remove air duct (fresh air intake side). Refer to [EM-14, "AIR CLEANER AND AIR DUCT"](#).
3. Remove the front grille (RH). Refer to [EI-9, "FRONT GRILLE"](#).
4. Remove the high-pressure flexible hose mounting bolts (condenser side).

CAUTION:

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

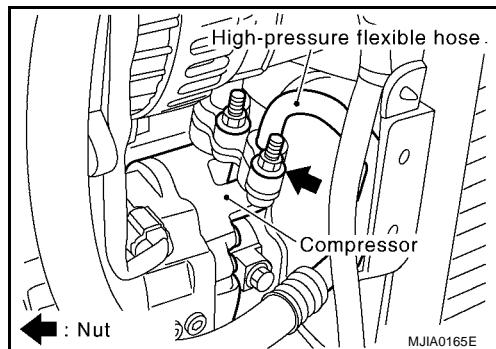


REFRIGERANT LINES

5. Remove the high-pressure flexible hose mounting bolts (compressor side), and then remove the high-pressure flexible hose.

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 in the reverse order of removal.

CAUTION:

- Replace O-ring on high-pressure flexible hose with a new one. Apply compressor oil when installing new O-rings.
- When charging refrigerant, check for refrigerant leaks.

High-pressure flexible hose mounting bolts and nuts

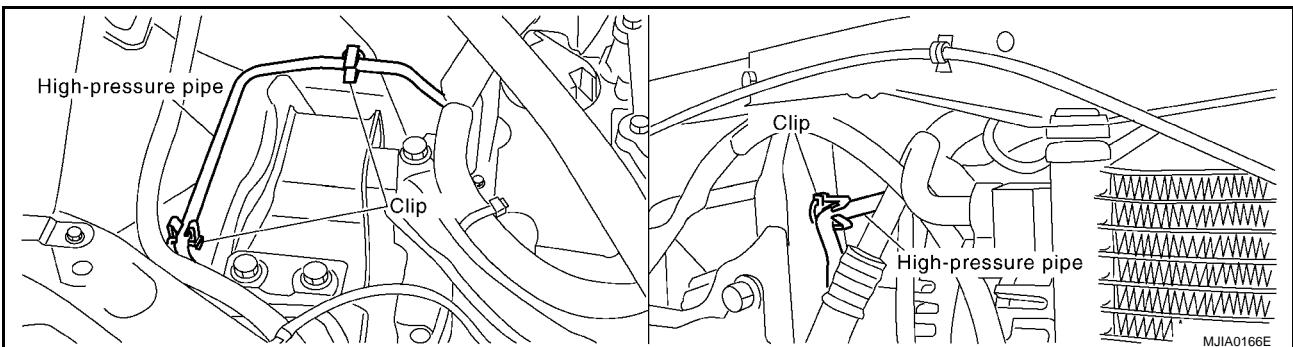
Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg·m, 6 - 14 ft-lb)

Removal and Installation for High-Pressure Pipe

EJS002GY

REMOVAL

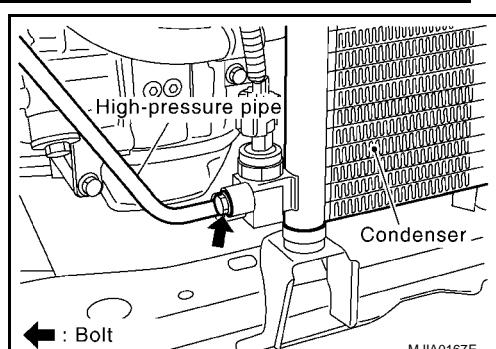
1. Remove the cowl top and headlamp (RH). Refer to [EI-11, "COWL TOP"](#) and halogen headlamp model [LT-31, "Removal and Installation"](#).
2. Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] to discharge refrigerant.
3. Remove the front bumper and air guide (RH). Refer to [EI-4, "FRONT BUMPER"](#).
4. Remove the low-pressure flexible hose. Refer to [MTC-61, "Removal and Installation for Low-Pressure Flexible Hose"](#).
5. Remove the high-pressure pipe clips.



6. Remove the high-pressure pipe mounting bolts, and then remove the high-pressure pipe.

CAUTION:

Seal the pipe connection openings with caps, plastic tape, or something similar to prevent them from being exposed to the atmosphere.



REFRIGERANT LINES

INSTALLATION

Install in the reverse order of removal.

CAUTION:

- Replace the O-ring on the high-pressure pipe with new one, and apply compressor lubricant to it 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 nuts (compressor side)

Tightening torque : 7.8 - 19.6 N·m (0.80 - 1.9 kg·m, 6 - 14 ft·lb)

Removal and Installation for Refrigerant-Pressure Sensor

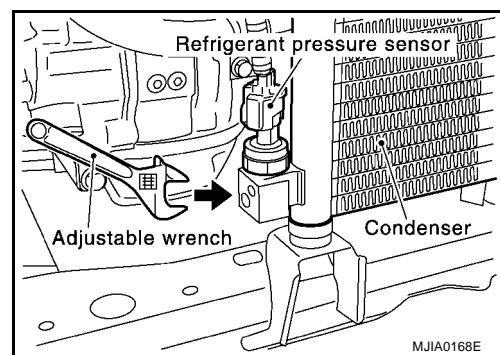
EJS002GZ

REMOVAL AND INSTALLATION

- Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] to discharge refrigerant.
- Remove the front bumper and air guide (RH). Refer to [EI-4, "FRONT BUMPER"](#).
- 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.

CAUTION:

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



Refrigerant-pressure sensor

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

Removal and Installation for Condenser

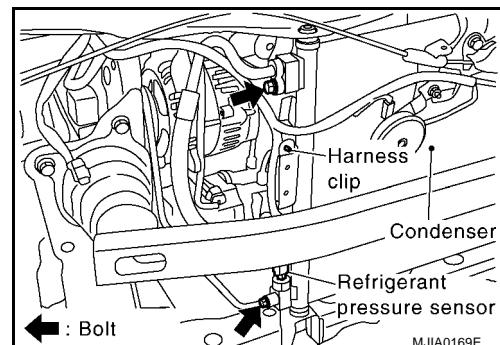
EJS002HO

REMOVAL

- Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] to discharge refrigerant.
- Remove the front bumper and air guide (RH). Refer to [EI-4, "FRONT BUMPER"](#).
- Disconnect the high-pressure flexible hose and high-pressure pipe from the condenser.
- Disconnect the refrigerant pressure sensor connector, and then remove the harness clip.

CAUTION:

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



REFRIGERANT LINES

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

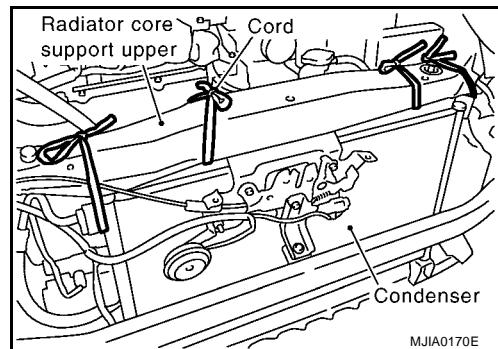
NOTE:

To prevent the compressor 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.

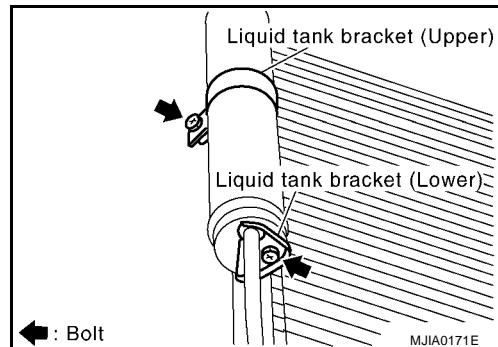
Tightening torque : 43.4 - 58.7 N·m (4.5 - 5.9 kg·m, 32 - 43 ft-lb)

Removal and Installation for Liquid Tank

EJS002H1

REMOVAL

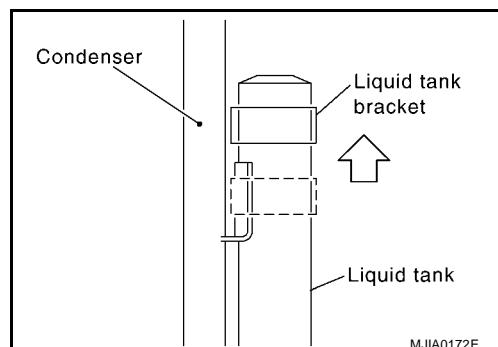
1. Use recovery/recycling recharging equipment [for HFC-134a (R143a)] to discharge refrigerant.
2. Remove condenser. Refer to [MTC-64, "Removal and Installation for Condenser"](#).
3. Clean around the liquid tank to remove foreign material and corrosion.
4. Remove the liquid tank mounting bolts.



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.



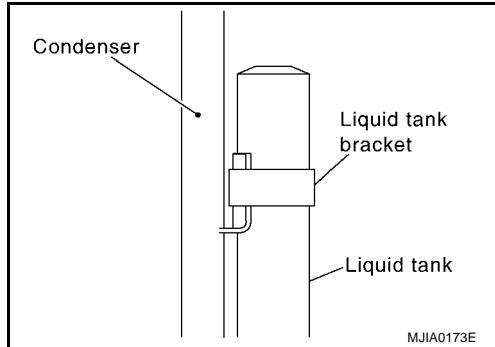
REFRIGERANT LINES

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 Evaporator

EJS002H2

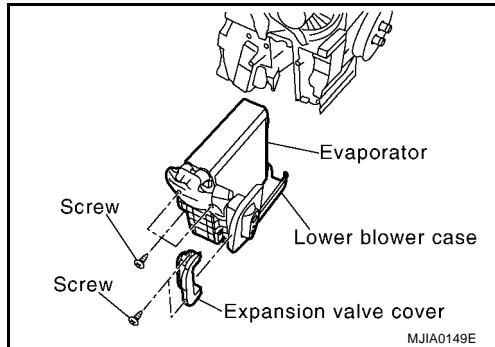
REMOVAL

1. Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] to discharge refrigerant.
2. Remove the air conditioner unit. Refer to [MTC-40, "A/C UNIT ASSEMBLY"](#).

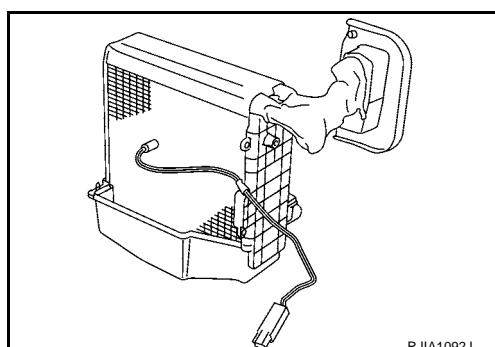
CAUTION:

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 clean filter and foot duct (RH). Refer to [MTC-47, "CLEAN FILTER"](#) and [MTC-55, "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)

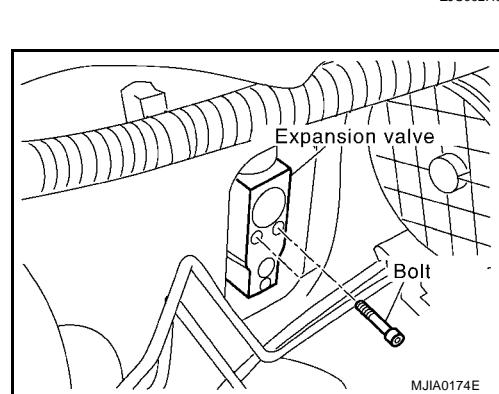
Removal and Installation for Expansion Valve**REMOVAL**

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

- Remove the bolts from the engine room, 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

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.

EJS002H3

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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 manufacturer'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.

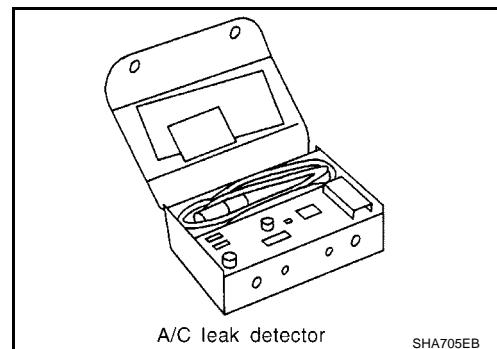
Electronic Refrigerant Leak Detector

EJS002HM

PRECAUTIONS FOR HANDLING LEAK DETECTOR

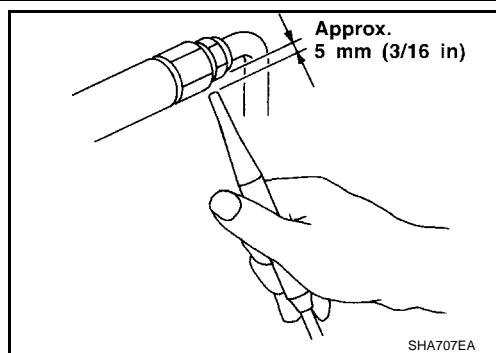
When performing a refrigerant leak check, use an A/C leak detector or equivalent. Ensure that the instrument is calibrated and set properly per the operating instructions.

The leak detector is a delicate device. In order to use the leak detector properly, read the operating instructions and perform any specified maintenance.

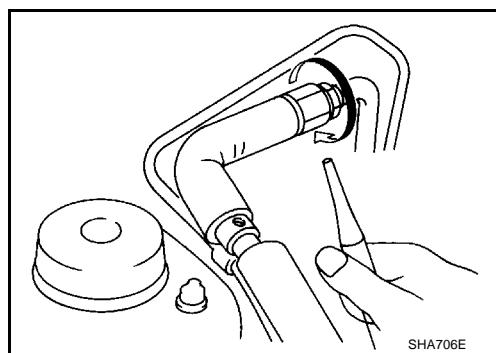


REFRIGERANT LINES

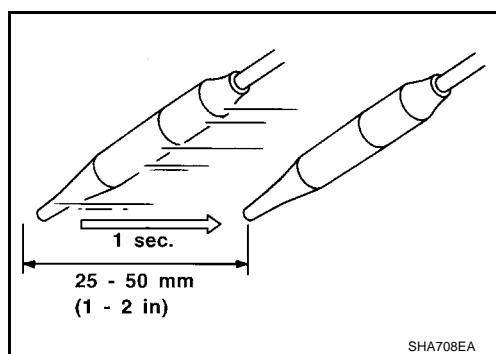
1. Position probe approximately 5 mm (3/16 in) away from point to be checked.



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/cm², 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 (3.52 kg/cm², 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).

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REFRIGERANT LINES

NOTE:

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

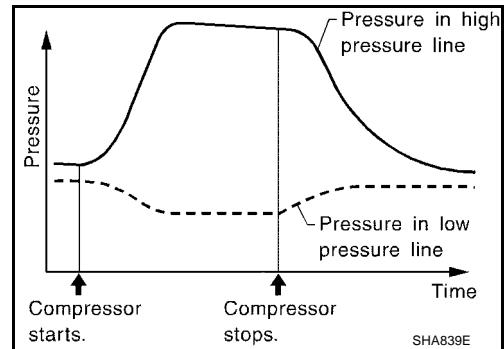
Cooling unit (Evaporator)

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)

SERVICE DATA AND SPECIFICATIONS (SDS) COMPRESSOR

PFP:00030

EJS002H4

Model		ZEXEL VALEO CLIMATE CONTROL make KC59G
Type		Vane rotary
Displacement cm ³ (cu in)/rev	Max.	80 (4.88)
	Min.	—
Cylinder bore x stroke mm(in) Direction of rotation drive belt		Clockwise (viewed from drive end)
		Poly V (4grooves)
		—

LUBRICANT

EJS002H5

Model		ZEXEL VALEO CLIMATE CONTROL make KC59G
Name		Nissan A/C System Oil Type R
Part number		KLH00-PAGR0
Capacity mℓ (Imp fl oz)	Total in system	80 (2.8)
	Compressor (Service part) charging amount	80 (2.8)

REFRIGERANT

EJS002H6

Type	HFC-134a (R-134a)
Capacity kg (lb)	0.45 (0.99)

ENGINE IDLING SPEED

EJS002H7

Refer to [EC-411, "SERVICE DATA AND SPECIFICATIONS \(SDS\)"](#) .

BELT TENSION

EJS002H8

Refer to [MA-15, "ALTERNATOR AND A/C COMPRESSOR BELT \(WITH A/C MODELS\)"](#) .

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SERVICE DATA AND SPECIFICATIONS (SDS)
