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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. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

WARNING:

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

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

EJS0018L

WARNING:

- CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed, compressor failure is likely to occur. Refer to [MTC-3, "Contaminated Refrigerant"](#). To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment (ACR4) (J-39500–NI) and Refrigerant Identifier.
- 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 R-134a from the A/C system, using certified service equipment meeting requirements of SAE J2210 (R-134a recycling equipment), or J2209 (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.

Contaminated Refrigerant

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If a refrigerant other than pure R-134a is identified in a vehicle, your options are:

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- If you choose to perform the repair, recover the refrigerant using only dedicated equipment and containers. **Do not recover contaminated refrigerant into your existing service equipment.** If your facility

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does not have dedicated recovery equipment, you may contact a local refrigerant product retailer for available service. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.

- If the vehicle is within the warranty period, the air conditioner warranty is void. Please contact Nissan Customer Affairs for further assistance.

General Refrigerant

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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 R-134a have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.

Precautions for Leak Detection Dye

EJS0018O

- 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 glasses to protect your eyes and enhance the visibility of the fluorescent dye.
- 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 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 R-134a and R12 A/C systems are different. Do not use R-134a leak detection dye in R-12 A/C system or R-12 leak detection dye in 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 failure occurs.

A/C Identification Label

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

NOTE:

Vehicles with factory installed fluorescent dye have a green label.

AIR CONDITIONER NISSAN		
	REFRIGERANT	COMPRESSOR LUBRICANT
TYPE (PART NO.)	HFC 134a (R134a)	NISSAN LUMINOUS OIL TYPE R
AMOUNT	0.65 ± 0.05kg (1.43 ± 0.11 lbs)	[KLH00-PAGR0]
CAUTION PRECAUTION <ul style="list-style-type: none"> • REFRIGERANT UNDER HIGH PRESSURE. • SYSTEM TO BE SERVICED BY QUALIFIED PERSONNEL. • IMPROPER SERVICE METHODS MAY CAUSE PERSONAL INJURY. • CONSULT SERVICE MANUAL. • THIS AIR CONDITIONER SYSTEM COMPLIES WITH SAE J-639. Nissan Motor Corporation USA, Carson, CA 27090 7B400 LHA242		

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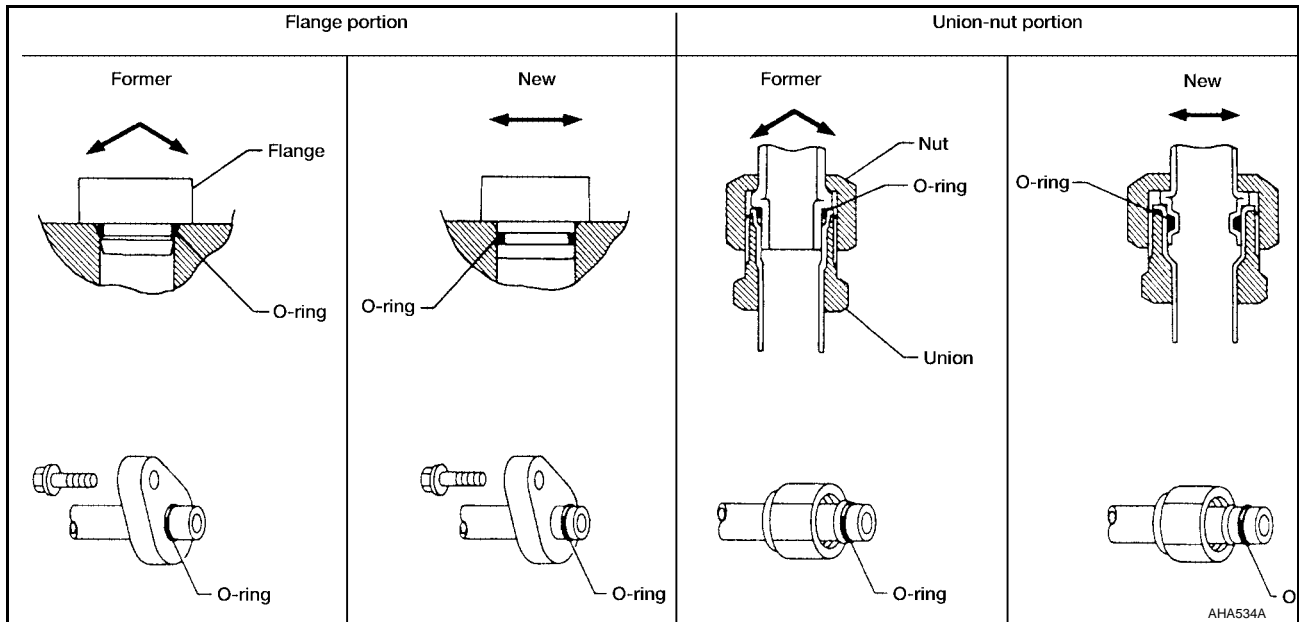
Precautions for Refrigerant Connection

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

- Thermal expansion valve connections.

FEATURES OF NEW TYPE REFRIGERANT CONNECTION

- The O-ring is relocated in 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.



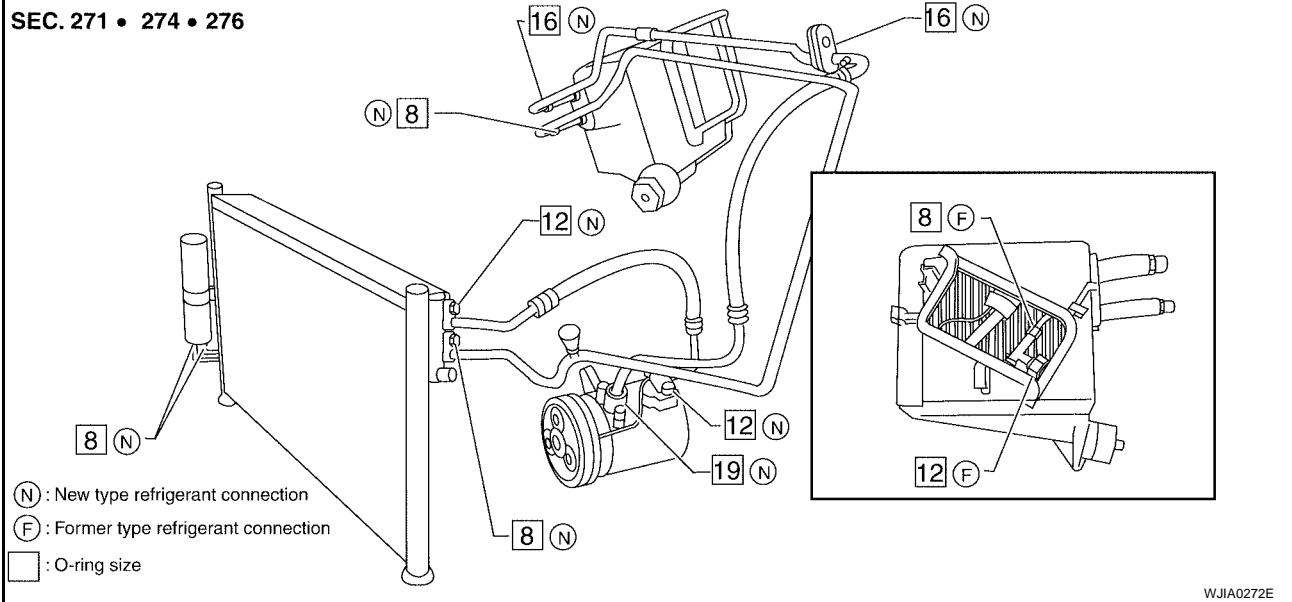
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O-RING AND REFRIGERANT CONNECTION

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CAUTION:

Refrigerant connections in some systems 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.

PRECAUTIONS

O-Ring Part Numbers and Specifications

	Connection 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 (0.23990)	1.78 (0.0701)
	New	12	92472 N8210	10.9 (0.429)	2.43 (0.0957)
	Former		92475 71L00	11.0 (0.433)	2.4 (0.094)
	New	16	92473 N8210	13.6 (0.535)	2.43 (0.0957)
	New	19	92474 N8210	16.5 (0.650)	2.43 (0.0957)

*: Always check with the Parts Department for the latest parts information.

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.

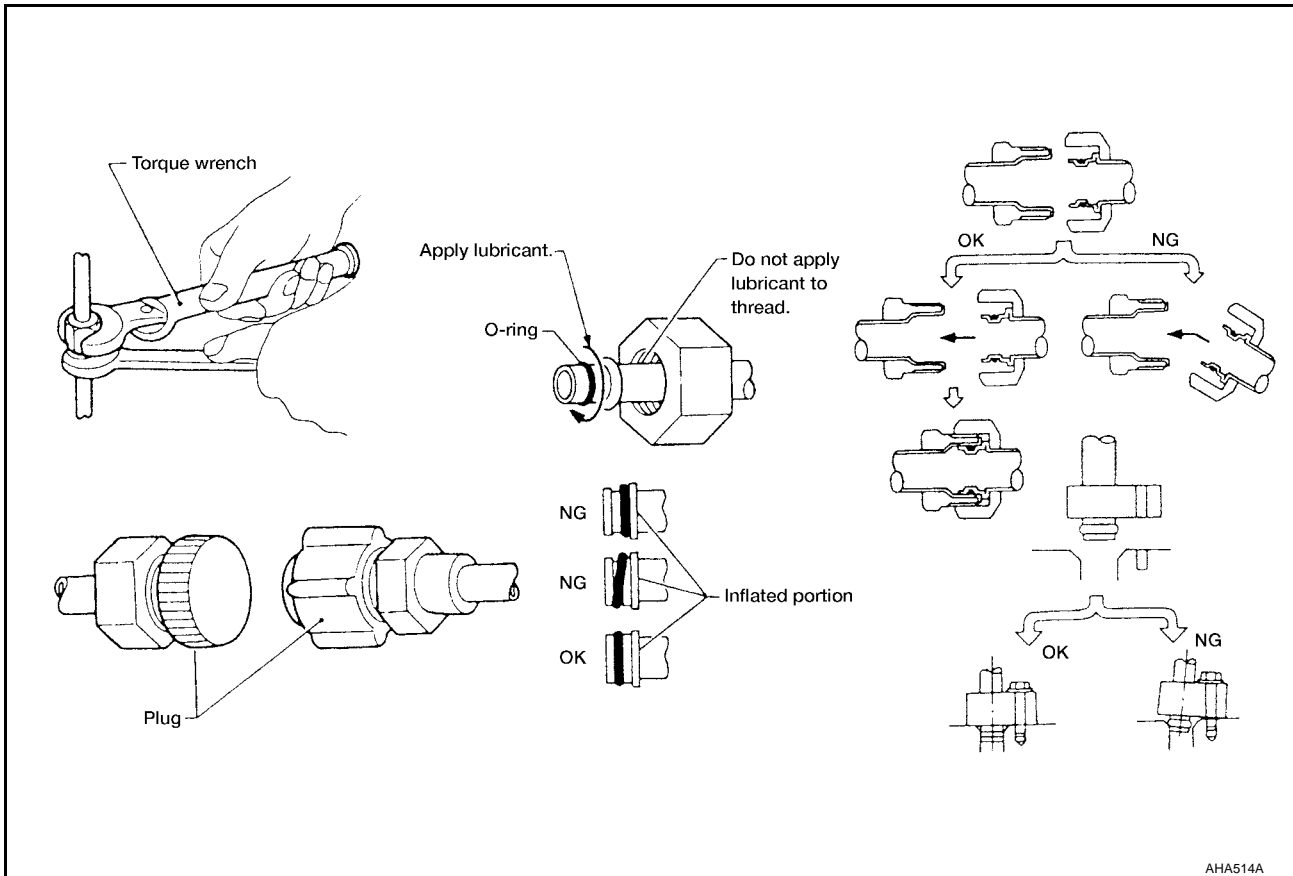
CAUTION:

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. Failure 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.
Lubricant name: NISSAN A/C System Lubricant Type R
Part number: KLH00-PAGRO
- O-ring must be closely attached to inflated portion of tube.
- After inserting tube into union until O-ring is no longer visible, tighten nut to specified torque.

PRECAUTIONS

- After connecting line, conduct leak test and make sure that there is no leakage. When the gas leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.



Precautions for Servicing Compressor

EJS0018R

- Plug all openings to prevent moisture and foreign matter from entering.
- Do not keep the compressor in the upside down position or laid on its side for more than 10 minutes.
- When replacing or repairing compressor, refer to [MTC-20, "Maintenance of Lubricant Quantity in Compressor"](#).
- 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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Follow the manufacturer's instructions for machine operation and machine maintenance. Never introduce any refrigerant other than that specified into the machine.

ELECTRONIC LEAK DETECTOR

Follow the manufacturer's instructions for tester operation and tester maintenance.

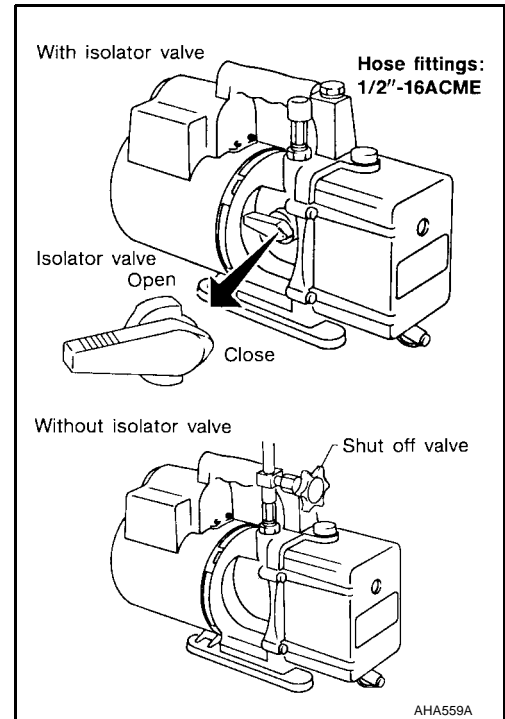
PRECAUTIONS

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 situated near the hose-to-pump connection, as follows.

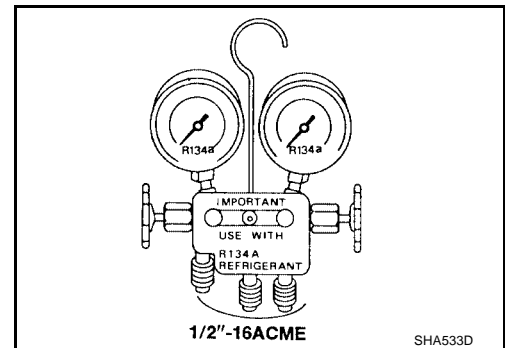
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has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



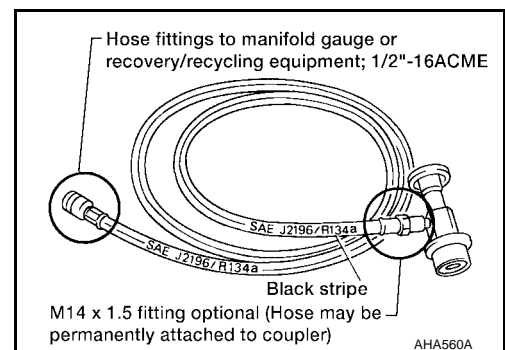
MANIFOLD GAUGE SET

Be certain that the gauge face indicates R-134a or 134a. Make 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) along with specified lubricant.



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.



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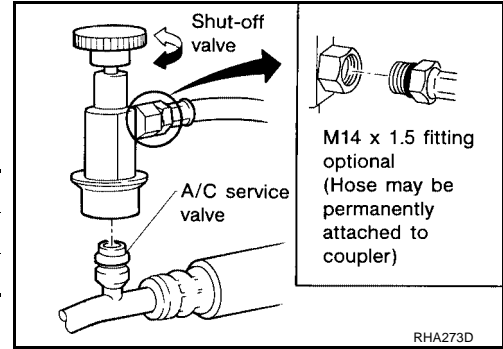
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SERVICE COUPLERS

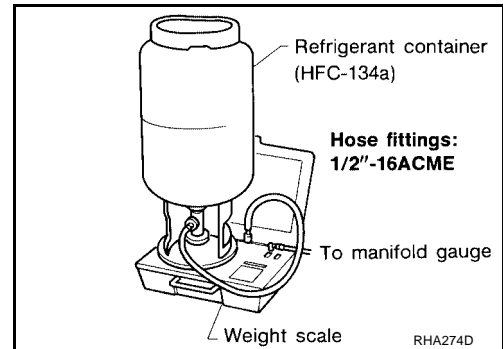
Never attempt to connect HFC-134a (R-134a) service couplers to an CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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 3 months.

To calibrate the weight scale on the ACR4 (J-39500-NI):

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 changed to "A2".
5. Place a known weight (dumbbell or similar weight), between 10 and 19 lbs., on the center of the weight scale.
6. Enter the known weight using 4 digits (Example 10 lbs = 10.00, 10.5 lbs = 10.50).
7. Press **Enter** — the display returns to the vacuum mode.
8. Press **Shift/Reset** and **Enter** at the same time.
9. Press **6** — the known weight on the scale is displayed.
10. Remove the known weight from the scale. "0.00" will be displayed.
11. Press **Shift/Reset** to return the ACR4 to the program mode.

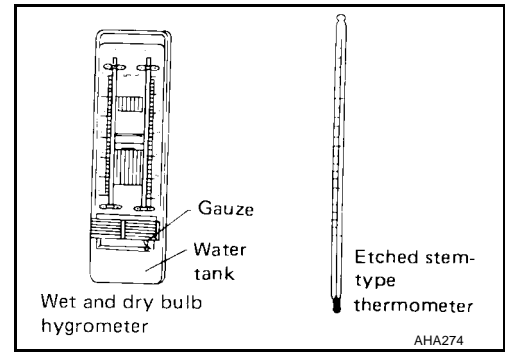
CHARGING CYLINDER

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

PRECAUTIONS

THERMOMETER AND HYGROMETER

An etched stem-type thermometer and a hygrometer can be used to check the air conditioning system performance. A hygrometer is used because the air conditioning performance depends on the humidity.



Wiring Diagrams and Trouble Diagnosis

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When you read wiring diagrams, refer to the following:

- Refer to [GI-13, "How to Read Wiring Diagrams"](#) .
- Refer to [PG-8, "POWER SUPPLY ROUTING"](#) .

When you perform trouble diagnosis, refer to the following:

- Refer to [GI-9, "HOW TO FOLLOW TEST GROUPS IN TROUBLE DIAGNOSES"](#) .
- Refer to [GI-25, "How to Perform Efficient Diagnosis for an Electrical Incident"](#) .

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PREPARATION

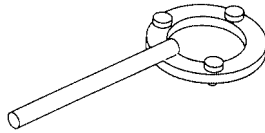
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Special Service Tools

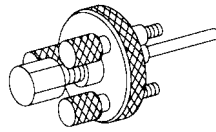
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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

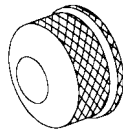
Tool number (Kent-Moore No.) Tool name	Description
KV99231260 (J-38874) Clutch disc wrench	Removing shaft nut and clutch disc
KV99232340 (J-38874) Clutch disc puller	Removing clutch disc
KV99234330 (J-39024) Pulley installer	Installing pulley
KV99233130 (J-39023) Pulley puller	Removing pulley



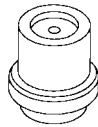
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NT206



NT207



NT208

PREPARATION

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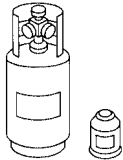

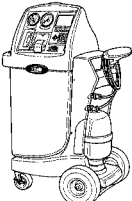
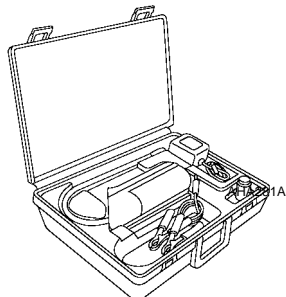
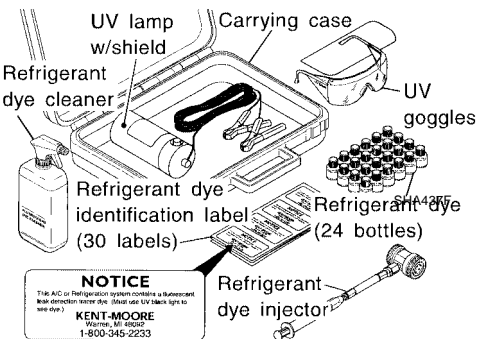
HFC-134a (R-134a) Service Tools and Equipment

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.

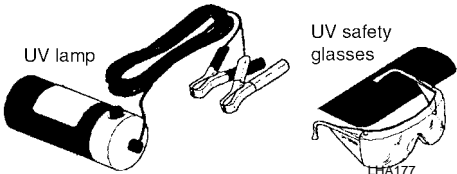
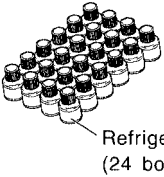
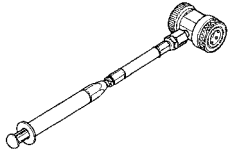

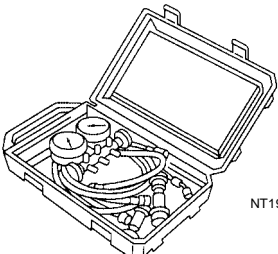
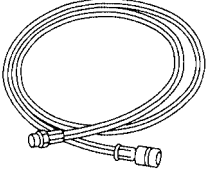
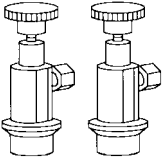
Adapters that convert one size fitting to another must never be used: refrigerant/lubricant contamination will occur and compressor failure will result.

Tool number (Kent-Moore No.) Tool name	Description
HFC-134a (R-134a) refrigerant  NT196	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size ● large container 1/2"-16 ACME
KLH00-PAGR0 (—) NISSAN A/C System Lubricant Type R  NT197	Type: Polyalkylene glycol oil (PAG), type R Application: HFC-134a (R-134a) vane rotary compressors (NISSAN only) Lubricity: 40 mℓ (1.4 US fl oz, 1.4 Imp fl oz)
(J-43600) Recovery/Recycling Recharging equipment (ACR2000)  WJIA0293E	Function: Refrigerant Recovery and Recycling and Recharging
(J-41995) Electrical leak detector 	Power supply: ● DC 12 V (Cigarette lighter) Function: Checks for refrigerant leaks.
(J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety glasses (J-41459) Refrigerant dye injector (J-41447) qty. 24 R-134a refrigerant dye (J-43872) Refrigerant dye cleaner  NOTICE This A/C or Refrigeration system contains a fluorocarbon based refrigerant under pressure. (Do not use tools that apply to see eye.) KENT-MOORE P.O. Box 1100 1-800-345-2233	Power supply: DC 12V (Battery terminal)

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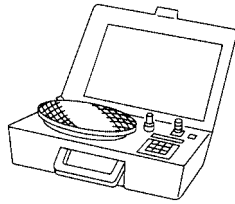
MTC

PREPARATION

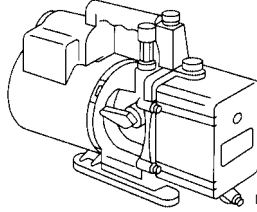
Tool number (Kent-Moore No.) Tool name	Description
(J-42220) Fluorescent dye leak detector 	UV lamp Power supply: DC 12V (Battery terminal) For checking refrigerant leak when fluorescent dye is installed in A/C system. Includes: UV lamp and UV safety glasses
(J-41447) R134a Fluorescent Leak Detection Dye (Box of 24, 1/4 ounce bottles) 	Dye Application: For R-134a PAG oil Container: 1/4 ounce (7.4 cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)
(J-41459) R134a Dye Injector Use with J-41447, 1/4 ounce bottle 	Dye injector For injecting 1/4 ounce of Fluorescent Leak Detection Dye into A/C system.
(J-43872) Dye cleaner 	For cleaning dye spills.
(J-39183) Manifold gauge set (with hoses and couplers) 	Identification: <ul style="list-style-type: none"> ● The gauge face indicates R-134a. Fitting size: Thread size <ul style="list-style-type: none"> ● 1/2"-16 ACME
Service hoses <ul style="list-style-type: none"> ● High side hose (J-39501-72) ● Low side hose (J-39502-72) ● Utility hose (J-39476-72) 	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
Service couplers <ul style="list-style-type: none"> ● High side coupler (J-39500-20) ● Low side coupler (J-39500-24) 	Hose fitting to service hose: <ul style="list-style-type: none"> ● M14 x 1.5 fitting is optional or permanently attached.

PREPARATION

Tool number (Kent-Moore No.) Tool name	Description	A
(J-39650) Refrigerant weight scale	For measuring of refrigerant Fitting size: Thread size <ul style="list-style-type: none"> ● 1/2"-16 ACME 	B C
(J-39649) Vacuum pump (Including the isolator valve)	Capacity: <ul style="list-style-type: none"> ● Air displacement: 4 CFM ● Micron rating: 20 microns ● Oil capacity: 482 g (17 oz) Fitting size: Thread size <ul style="list-style-type: none"> ● 1/2"-16 ACME 	D E F



NT200



NT203

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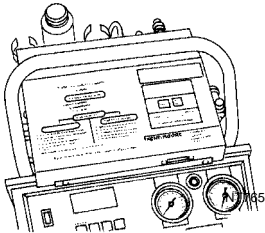
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PREPARATION

Commercial Service Tool

EJS0018W

Tool name Note	Description
Refrigerant Identifier Equipment 	Checking refrigerant purity and for system contamination

For details of handling methods, refer to the Instruction Manual attached to the service tool.

REFRIGERATION SYSTEM

PFP:KA990

EJS0018X

REFRIGERATION SYSTEM

Refrigeration Cycle REFRIGERANT FLOW

The refrigerant flows in the standard pattern. Refrigerant flows through the compressor, condenser, liquid tank, expansion valve, evaporator, and back to the compressor. The refrigerant evaporation through the evaporator coil is controlled by an externally equalized expansion valve, located inside the evaporator case.

FREEZE PROTECTION

The compressor cycles on and off to maintain the evaporator temperature within a specified range. When the evaporator coil temperature falls below a specified point, the thermo control amplifier interrupts the compressor operation. When the evaporator coil temperature rises above the specification, the thermo control amplifier allows compressor operation.

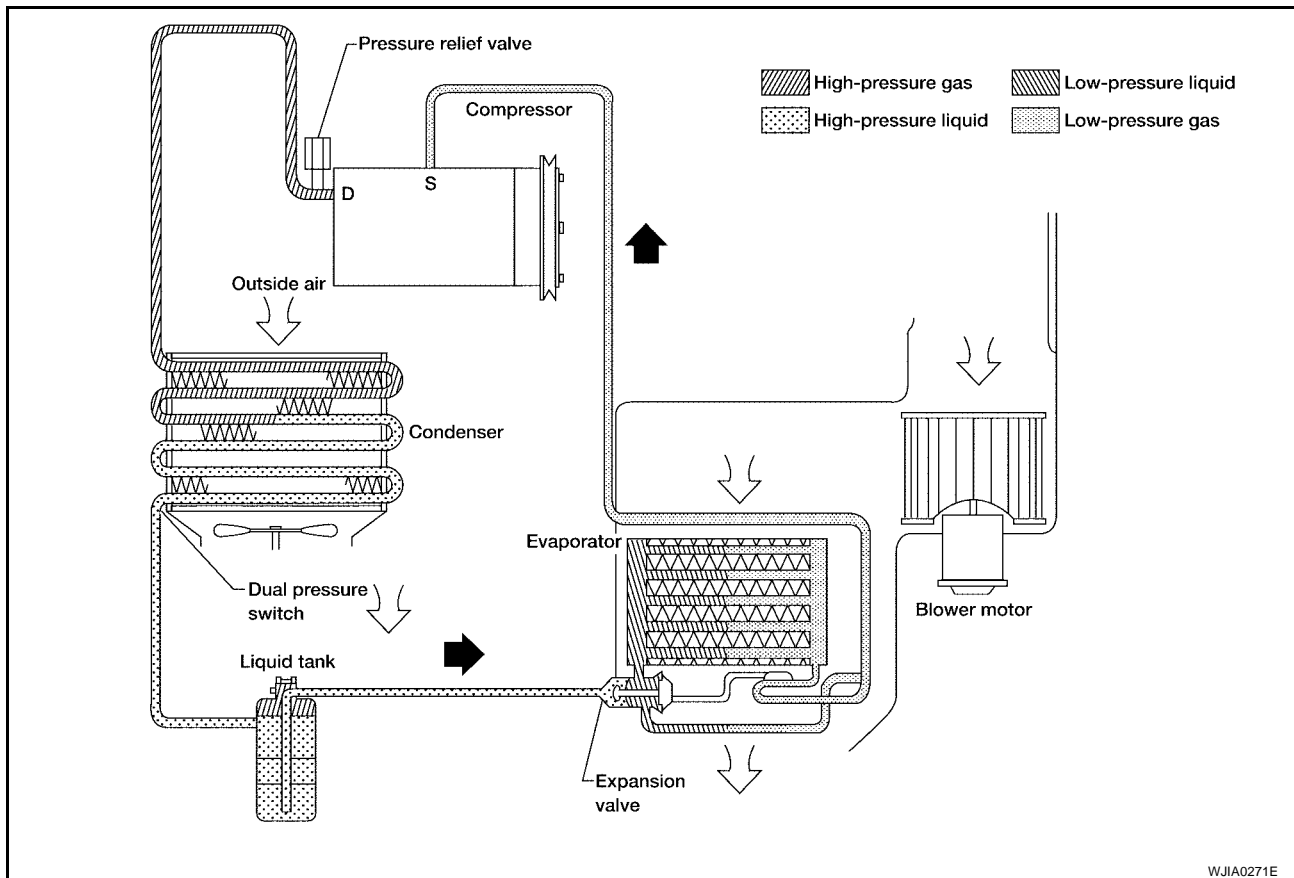
REFRIGERANT SYSTEM PROTECTION

Dual Pressure Switch

The refrigerant system is protected against excessively high or low pressure. The protection is effected by a dual pressure switch located on the liquid tank. If the pressure falls out of specifications, the switch opens to interrupt compressor operation.

Pressure Relief Valve

The refrigerant system is also protected by a pressure relief valve located on the flexible high pressure hose near the compressor. When the pressure of refrigerant in the system increases to an abnormal level [more than 3,727 kPa (38 kg/cm², 540 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.



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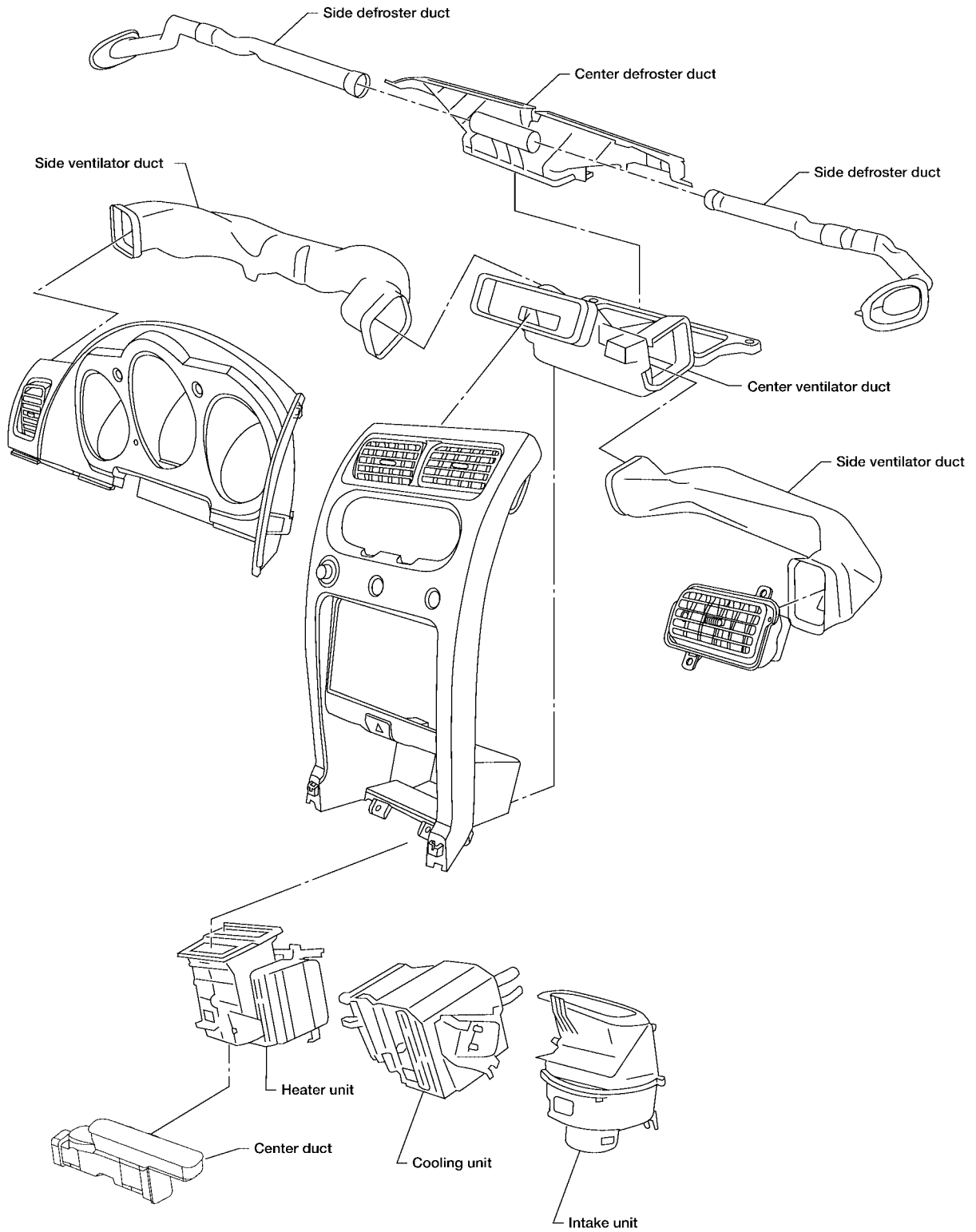
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REFRIGERATION SYSTEM

Component Layout FRONT

EJS00190

SEC. 270 • 271 • 272 • 273 • 685

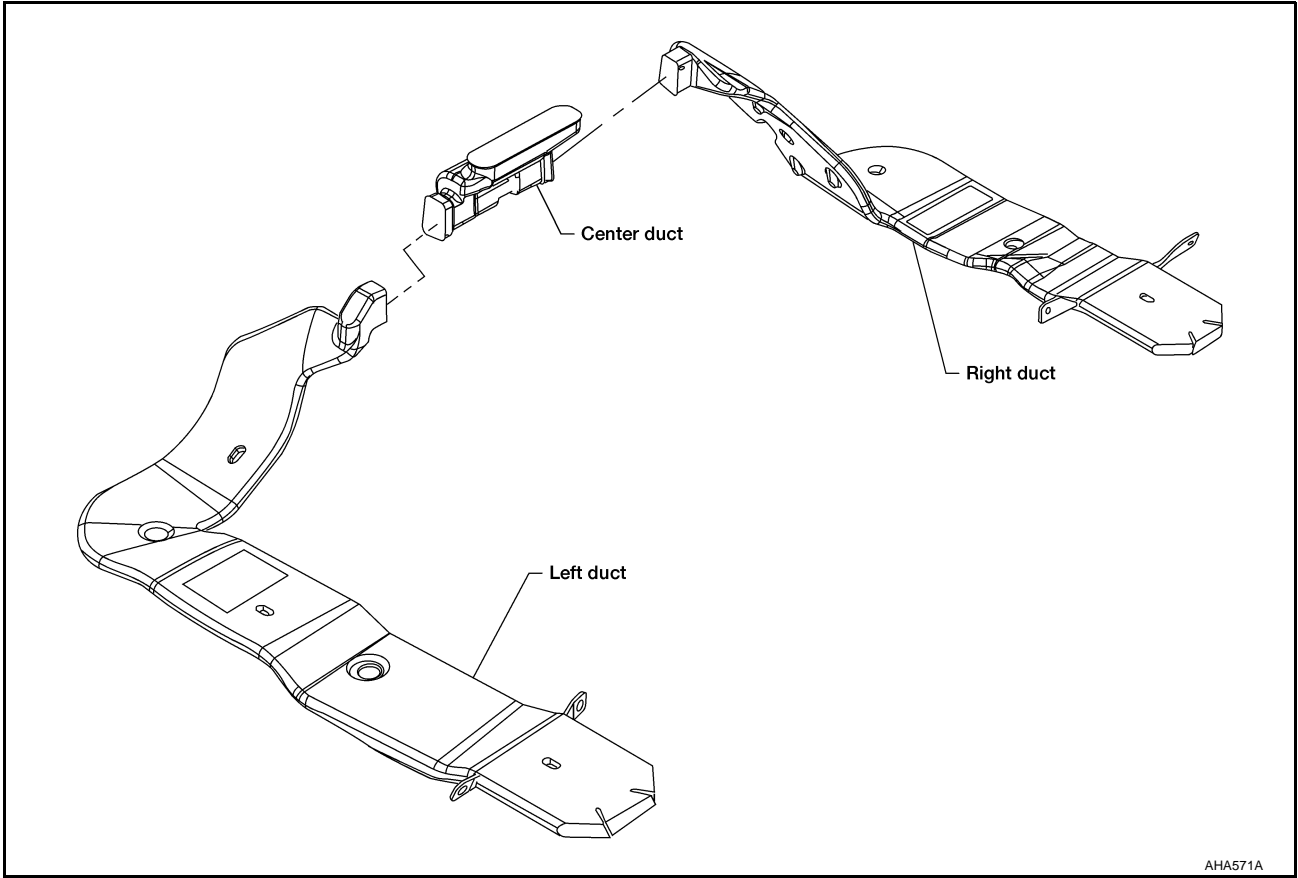


WHA333

MTC-18

REFRIGERATION SYSTEM

REAR



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LUBRICANT

PPF:KLG00

LUBRICANT

Maintenance of Lubricant Quantity in Compressor

EJS0019P

The lubricant in the compressor circulates through the system with the refrigerant. Add lubricant to compressor when replacing any component or after a large gas leakage occurred. It is important to maintain the specified amount.

If lubricant quantity is not maintained properly, the following malfunctions may result:

- Lack of lubricant: May lead to a seized compressor
- Excessive lubricant: Inadequate cooling (thermal exchange interference)

LUBRICANT

Name: NISSAN A/C System Lubricant Type R

Part number: KLH00-PAGR0

CHECKING AND ADJUSTING

Adjust the lubricant quantity according to the flowchart shown below.

1. LUBRICANT RETURN OPERATION

Can lubricant return operation be performed?

- A/C system works properly.
- There is no evidence of a large amount of lubricant leakage.

Yes or No

Yes >> GO TO 2
No >> GO TO 3

2. PERFORM LUBRICANT RETURN OPERATION, PROCEEDING AS FOLLOWS

1. Start engine, and set the following conditions:

- **Test condition**

Engine speed: Idling to 1,200 rpm

A/C switch: ON

RECIRCULATION switch: OFF

Fan speed: Max. position

Temp. control: Optional [Set so that intake air temperature is 25 to 30°C (77 to 86°F).]

2. Perform lubricant return operation for about 10 minutes.
3. Stop engine.

CAUTION:

If excessive lubricant leakage is noted, do not perform the lubricant return operation.

>> GO TO 3

3. CHECK COMPRESSOR

Should the compressor be replaced?

Yes or No

Yes >> Refer to [MTC-21, "Lubricant Adjusting Procedure for Compressor Replacement"](#) .
No >> GO TO 4

4. CHECK ANY PART

Is there any part to be replaced? (Evaporator, condenser, liquid tank or in case there is evidence of a large amount of lubricant leakage.)

Yes or No

Yes >> Refer to "[MTC-21, "Lubricant Adjusting Procedure for Components Replacement Except Compressor"](#)" .
No >> Perform [MTC-52, "PERFORMANCE TEST DIAGNOSIS"](#) .

LUBRICANT

Lubricant Adjusting Procedure for Components Replacement Except Compressor

After replacing any of the following major components, add the correct amount of lubricant to the system.

Amount of lubricant to be added

Part replaced	Lubricant to be added to system	Remarks
	Amount of lubricant m ℓ (US fl oz, Imp fl oz)	
Evaporator	75 (2.5, 2.6)	—
Condenser	75 (2.5, 2.6)	—
Liquid tank	5 (0.2, 0.2)	Add if compressor is not replaced. *1
In case of refrigerant leak	30 (1.0, 1.1)	Large leak
	—	Small leak *2

● *1: If compressor is replaced, addition of lubricant is included in the flow chart.

● *2: If refrigerant leak is small, no addition of lubricant is needed.

Lubricant Adjusting Procedure for Compressor Replacement

1. Before connecting ACR4 to vehicle, check ACR4 gauges. No refrigerant pressure should be displayed, recover refrigerant from equipment lines and then check refrigerant purity.
2. Confirm refrigerant purity in supply tank using ACR4 and refrigerant identifier.
3. Confirm refrigerant purity in vehicle A/C system using ACR4 and refrigerant identifier.
4. Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure lubricant discharged into the recovery/recycling equipment.
5. Drain the lubricant from the old (removed) compressor into a graduated container and record the amount of lubricant drained.
6. Drain the lubricant from the new compressor into a separate, clean container.
7. Measure an amount of new lubricant installed equal to amount drained from old compressor. Add this lubricant to new compressor through the suction port opening.
8. Measure an amount of new lubricant equal to the amount recovered during discharging. Add this lubricant to new compressor through the suction port opening.
9. If the liquid tank also needs to be replaced, add an additional 5 m ℓ (0.2 US fl oz, 0.2 Imp fl oz) of lubricant at this time.

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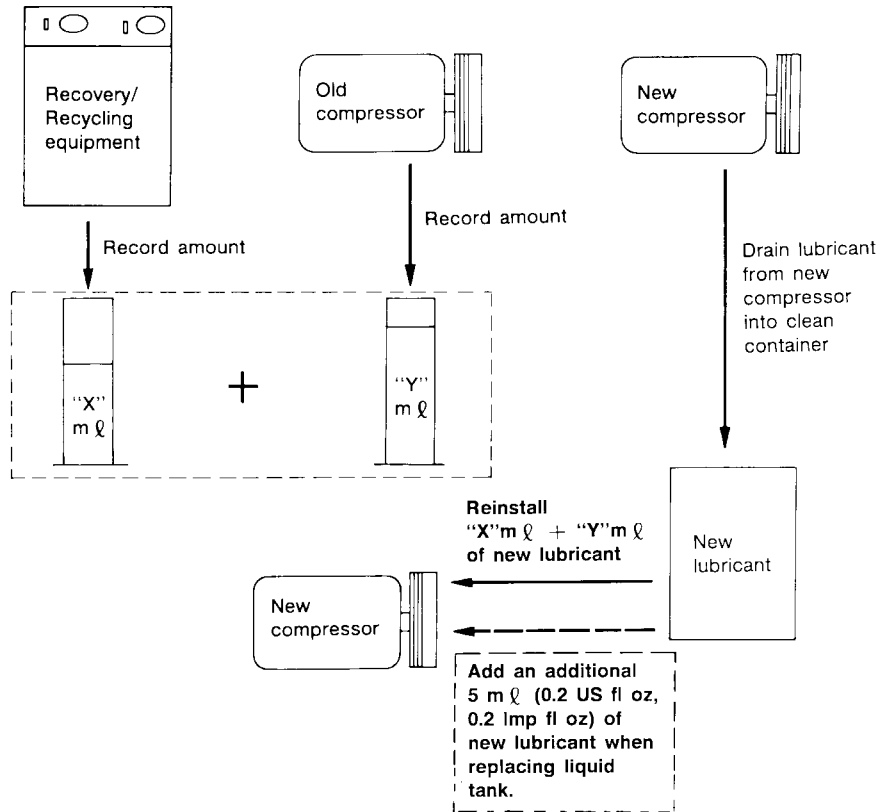
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LUBRICANT

Do not add this 5 mℓ (0.2 US fl oz, 0.2 Imp fl oz) of lubricant if only replacing the compressor.

Lubricant adjusting procedure for compressor replacement



RHA065DD

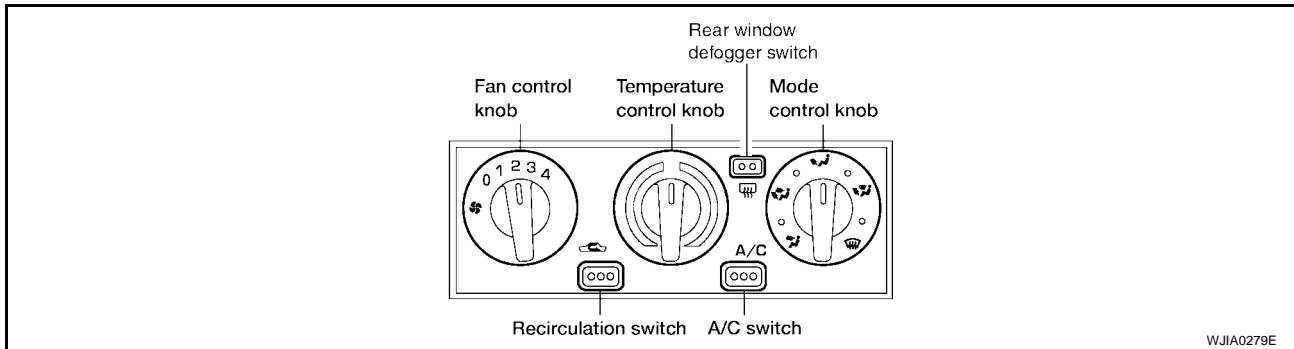
AIR CONDITIONER CONTROL

AIR CONDITIONER CONTROL

PF27500

Control Operation

EJS0018Y



FAN CONTROL KNOB

This knob turns the fan ON and OFF, and controls fan speed.

MODE CONTROL KNOB

This knob controls the direction of air flow through the front discharge outlets.

TEMPERATURE CONTROL KNOB

This knob allows adjustment of the outlet air temperature.

RECIRCULATION (REC) SWITCH

OFF position: Outside air is drawn into the passenger compartment.

ON position: Interior air is recirculated inside the vehicle. The indicator lamp will also light.

AIR CONDITIONER SWITCH

The air conditioner switch controls the A/C system. When the switch is depressed with the fan ON, the A/C relay is activated by the ECM allowing compressor operation. The indicator lamp will also light.

The air conditioner cooling function operates only when the engine is running and ambient air temperature is above 2°C (35°F).

REAR WINDOW DEFOGGER SWITCH

OFF position: Rear window defogger is not operating.

ON position: Rear window defogger is operating.

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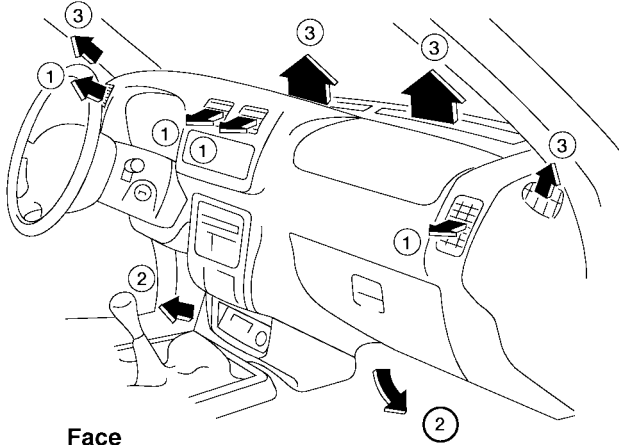
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AIR CONDITIONER CONTROL

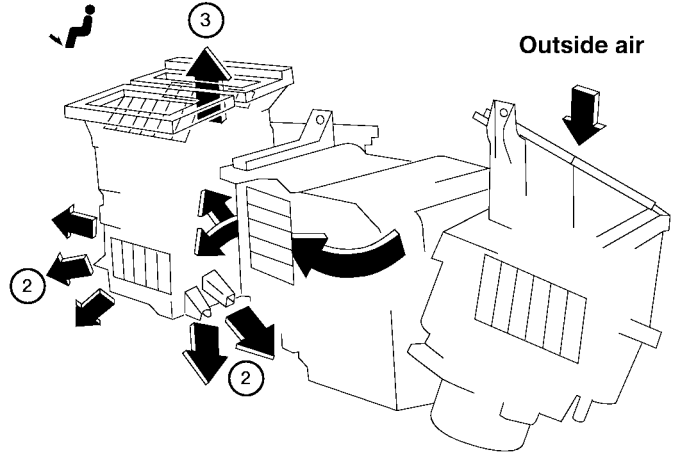
EJS0018Z

Discharge Air Flow

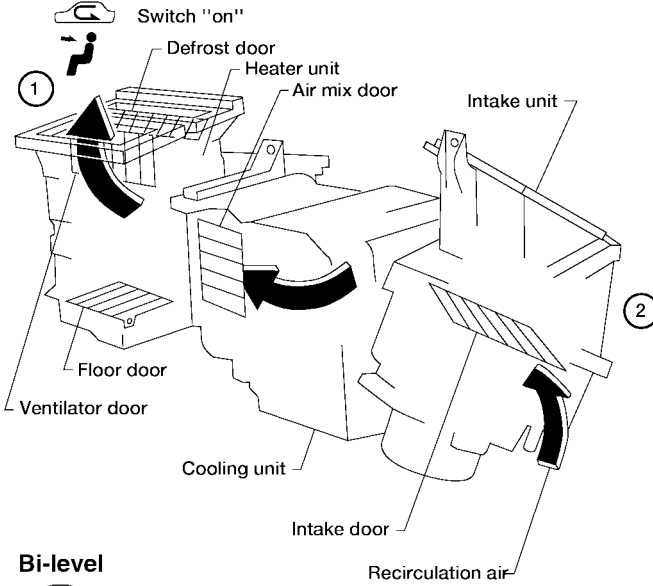
Air outlets



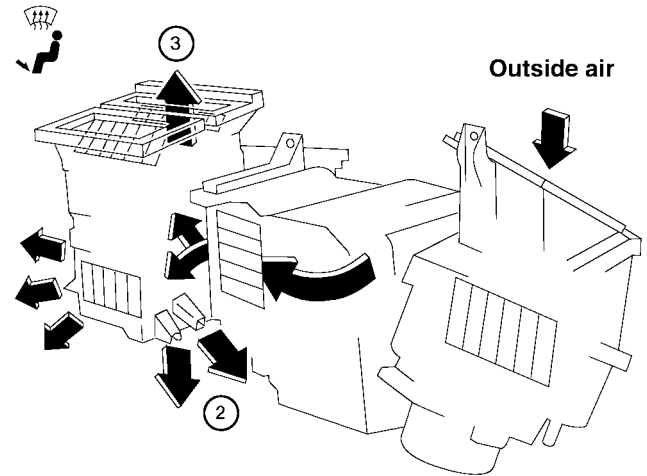
Foot



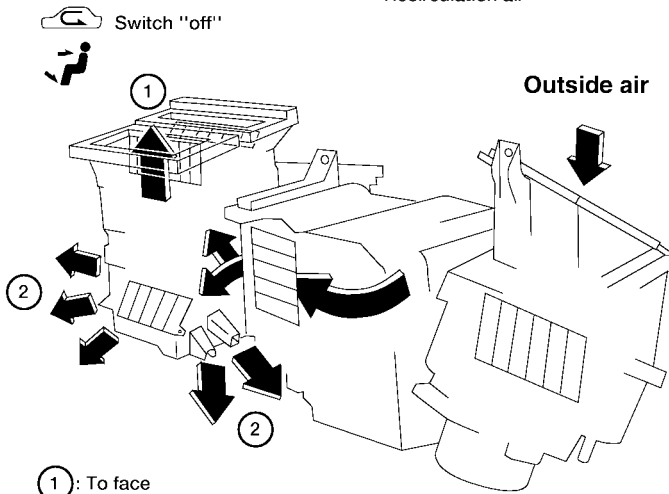
Face



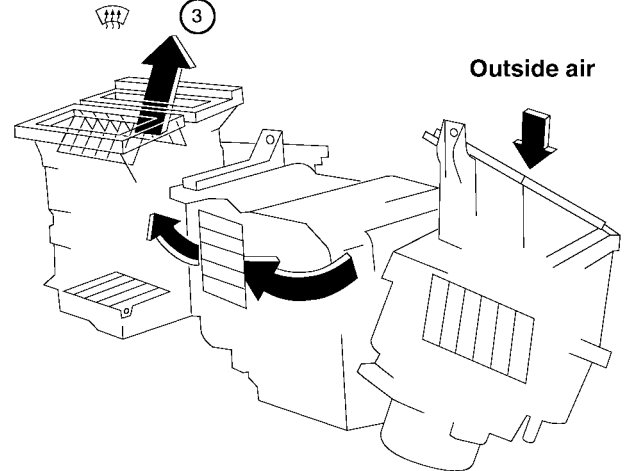
Foot and defrost



Bi-level



Defrost



- ① : To face
- ② : To foot
- ③ : To defrost

For air flow %, refer to "DESCRIPTION".

AHA290A

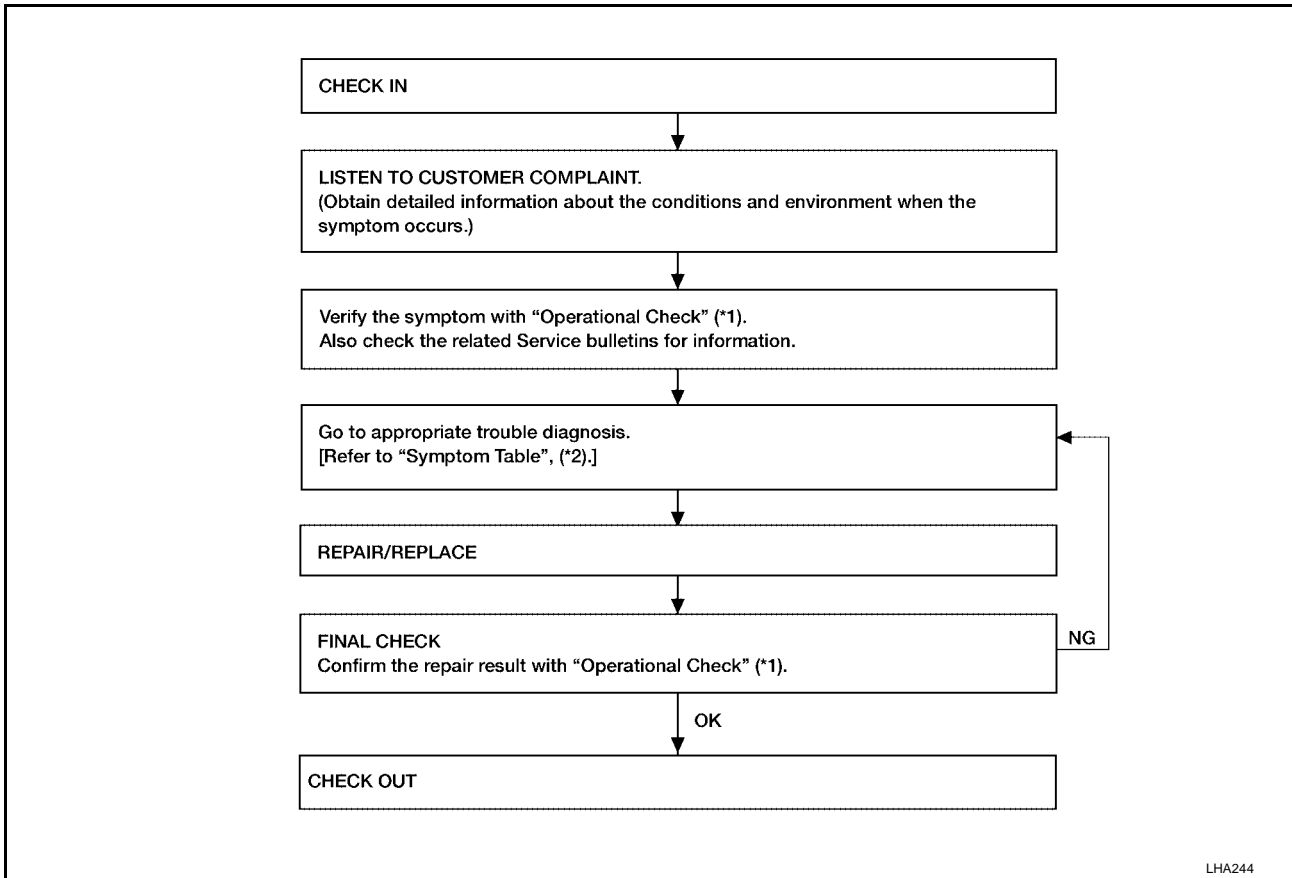
TROUBLE DIAGNOSIS

PF0:00004

TROUBLE DIAGNOSIS

How to Perform Trouble Diagnoses for Quick and Accurate Repair WORK FLOW

EJS00193



*1: [MTC-32](#)

*2: [MTC-25](#)

LHA244

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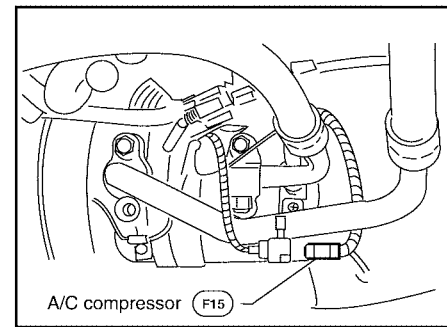
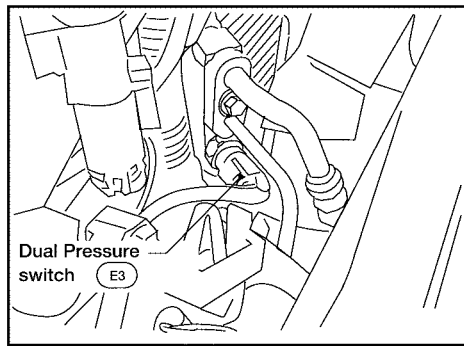
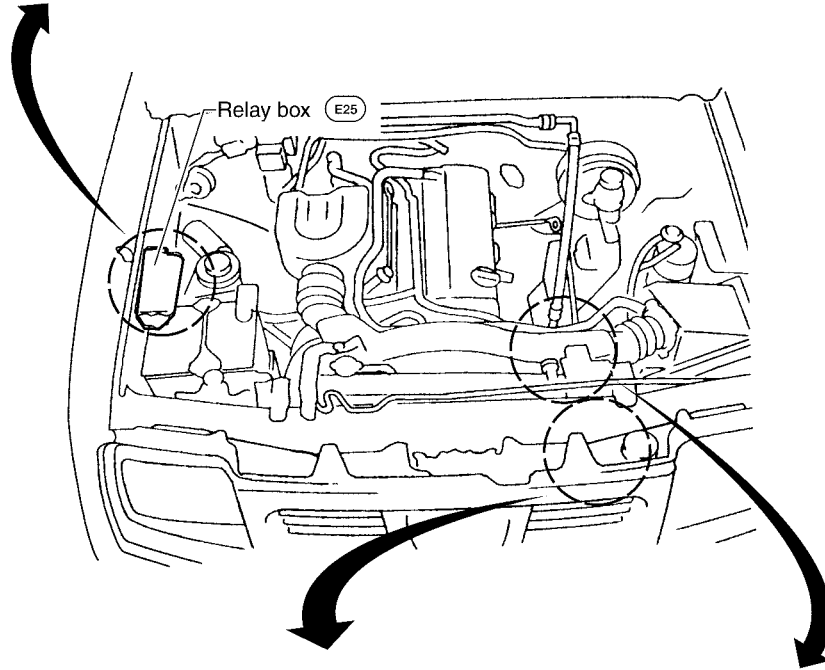
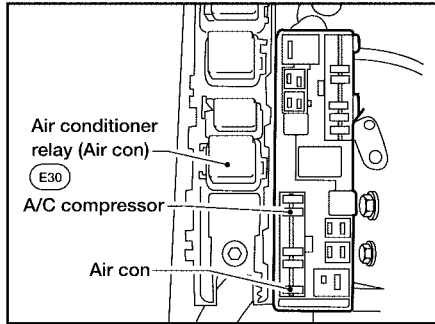
SYMPTOM TABLE

Symptom	Reference page
● Blower motor does not rotate.	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR BLOWER MOTOR". MTC-39
● Mode door does not change positions.	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR MODE DOOR". MTC-34
● Intake door position does not change.	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR INTAKE DOOR". MTC-36
● Magnet clutch does not engage when A/C switch and fan switch are ON.	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH". MTC-44
● Insufficient cooling	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT COOLING". MTC-51
● Insufficient heating	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT HEATING". MTC-58
● Noise	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR NOISE". MTC-60

TROUBLE DIAGNOSIS

EJS00191

Component Location ENGINE COMPARTMENT KA24DE Models

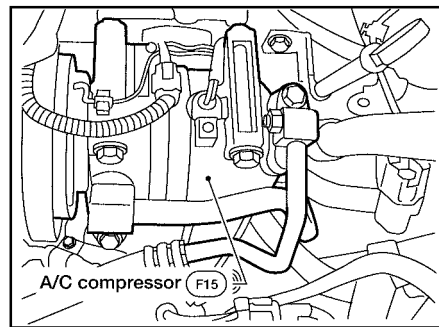
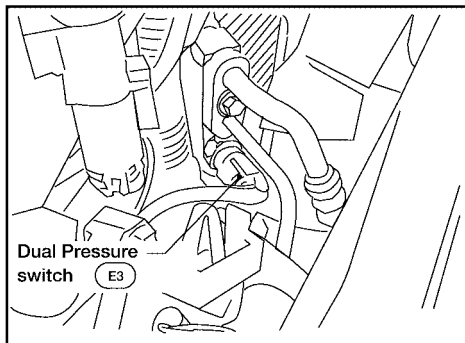
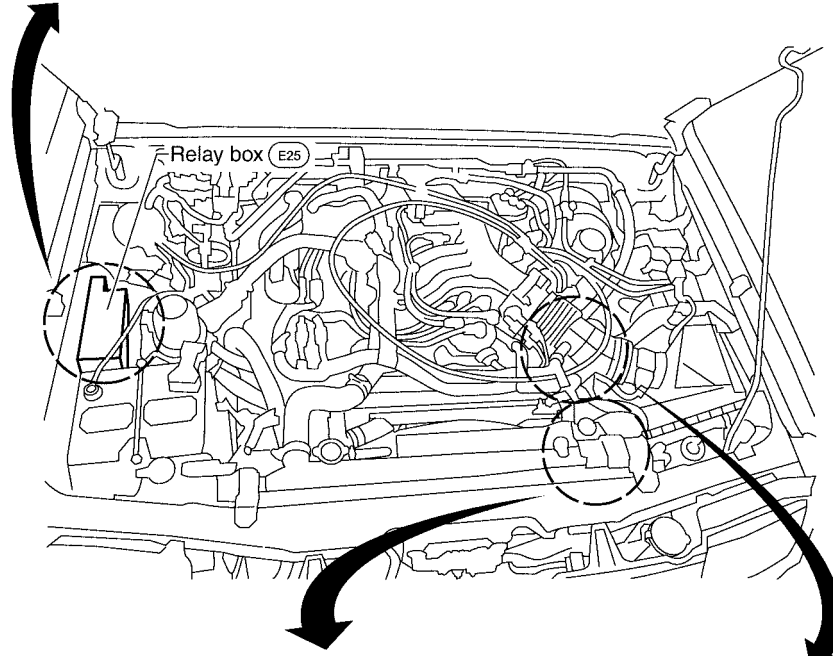
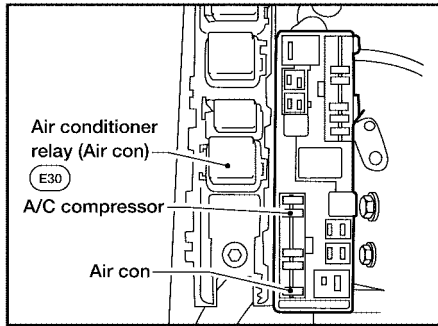


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TROUBLE DIAGNOSIS

ENGINE COMPARTMENT

VG33E Models

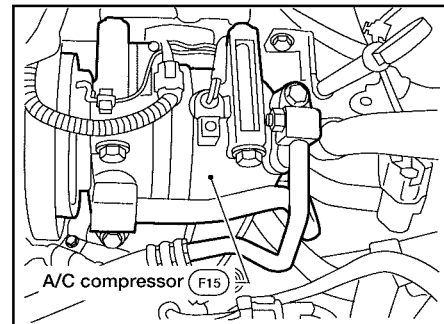
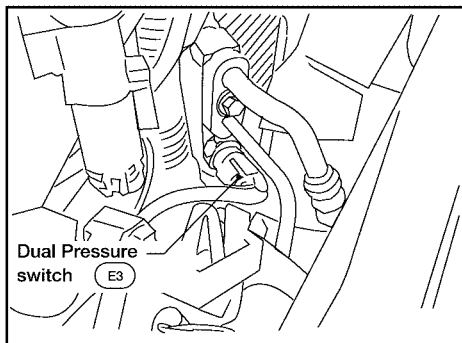
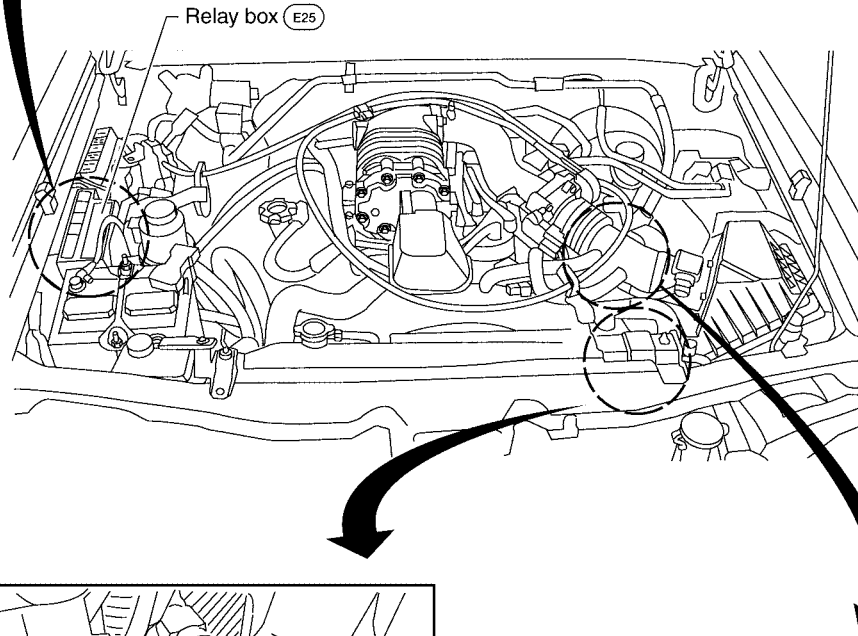
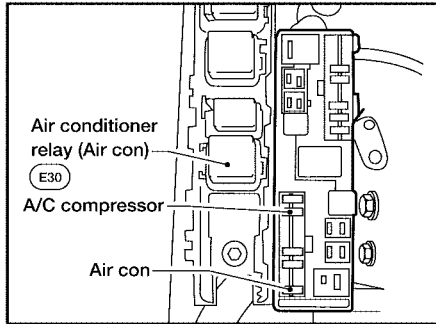


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TROUBLE DIAGNOSIS

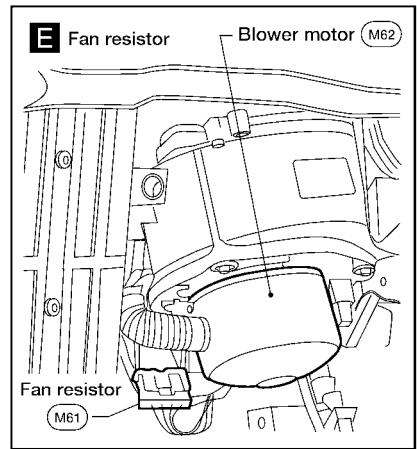
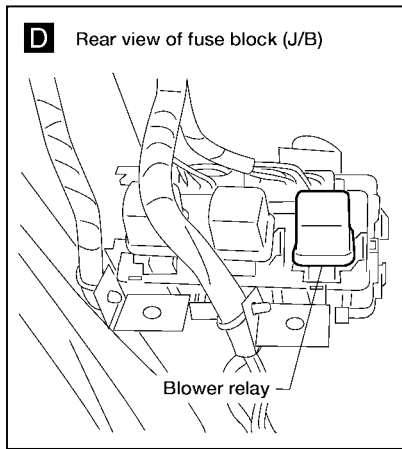
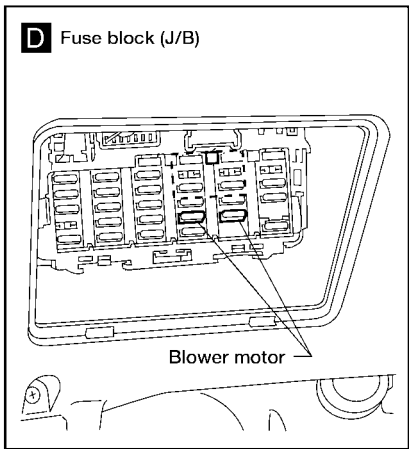
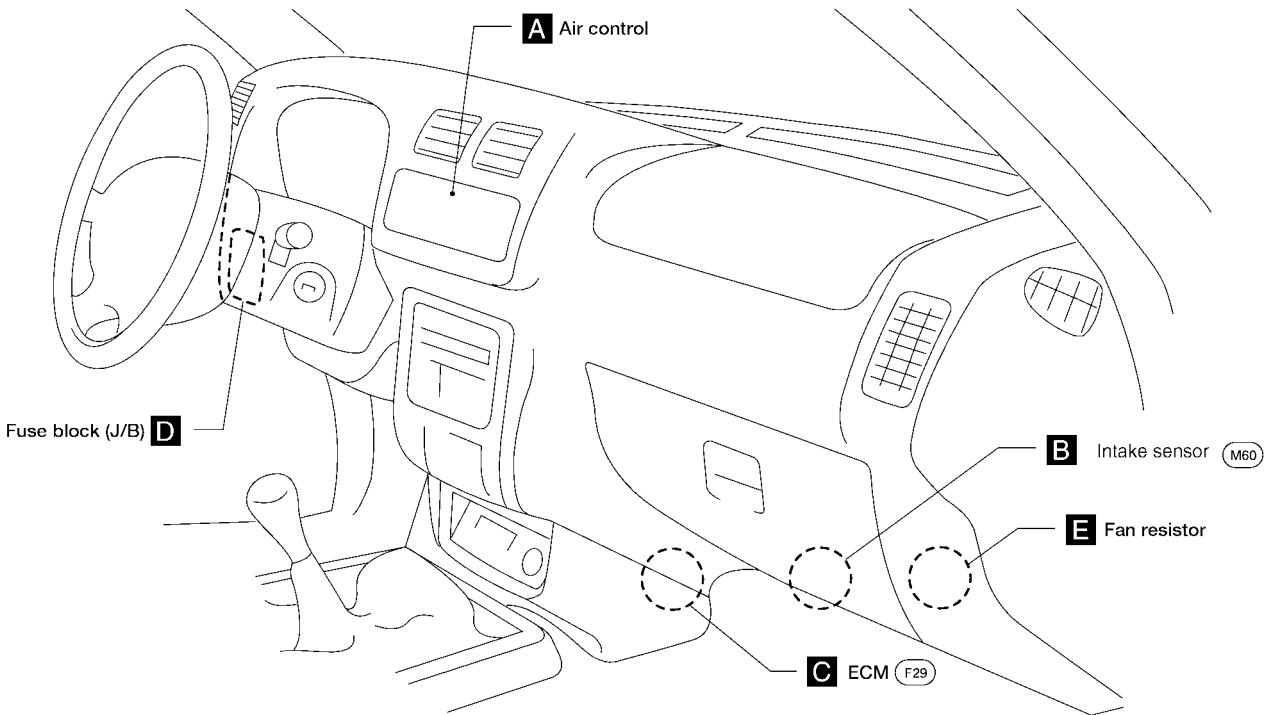
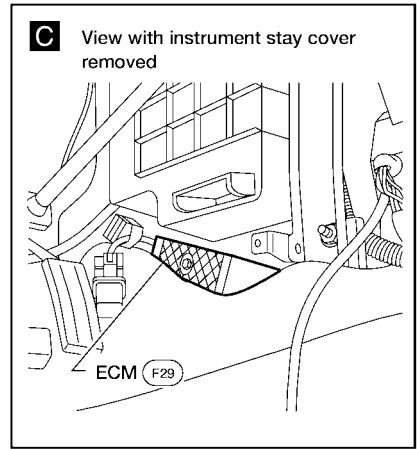
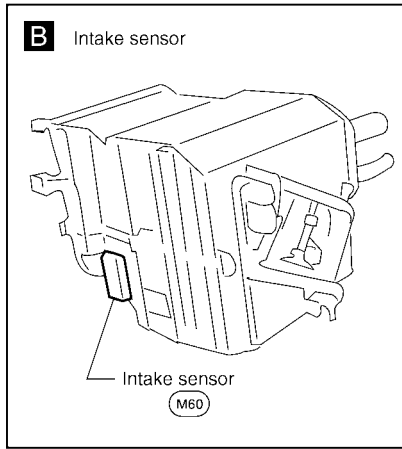
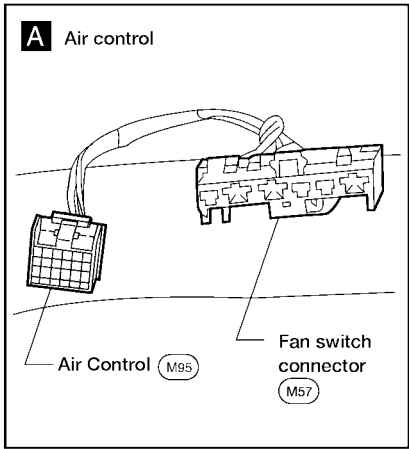
VG33ER Models



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TROUBLE DIAGNOSIS

PASSENGER COMPARTMENT



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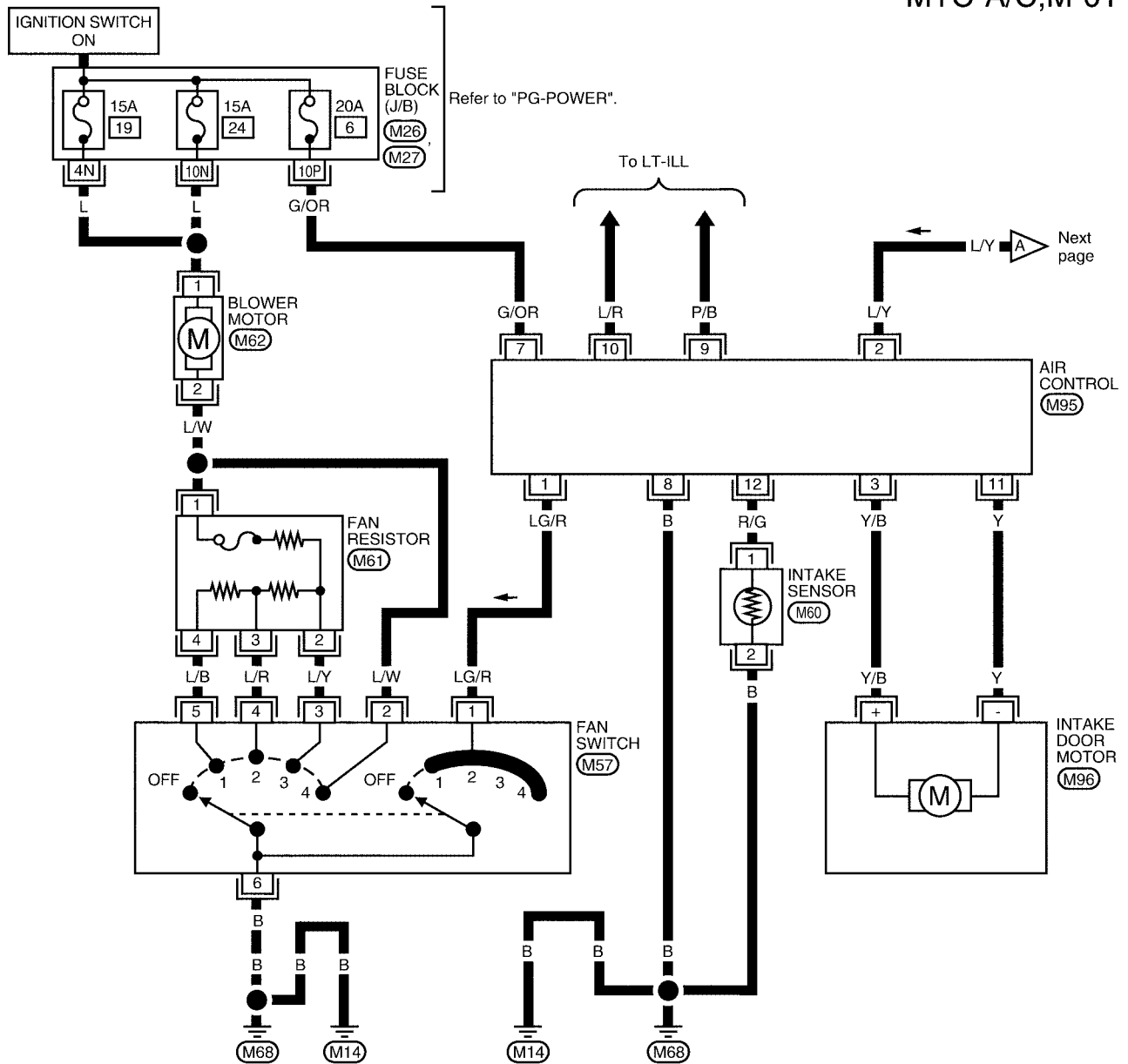
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TROUBLE DIAGNOSIS

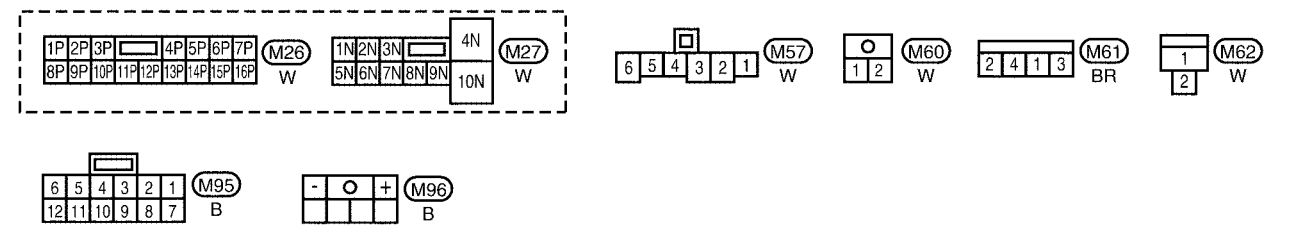
Wiring Diagram — A/C —

EJS00192

MTC-A/C,M-01



Next page



WJWA0038E

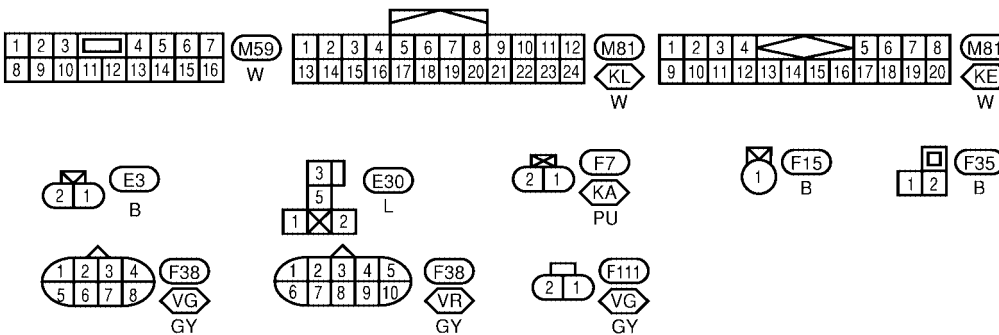
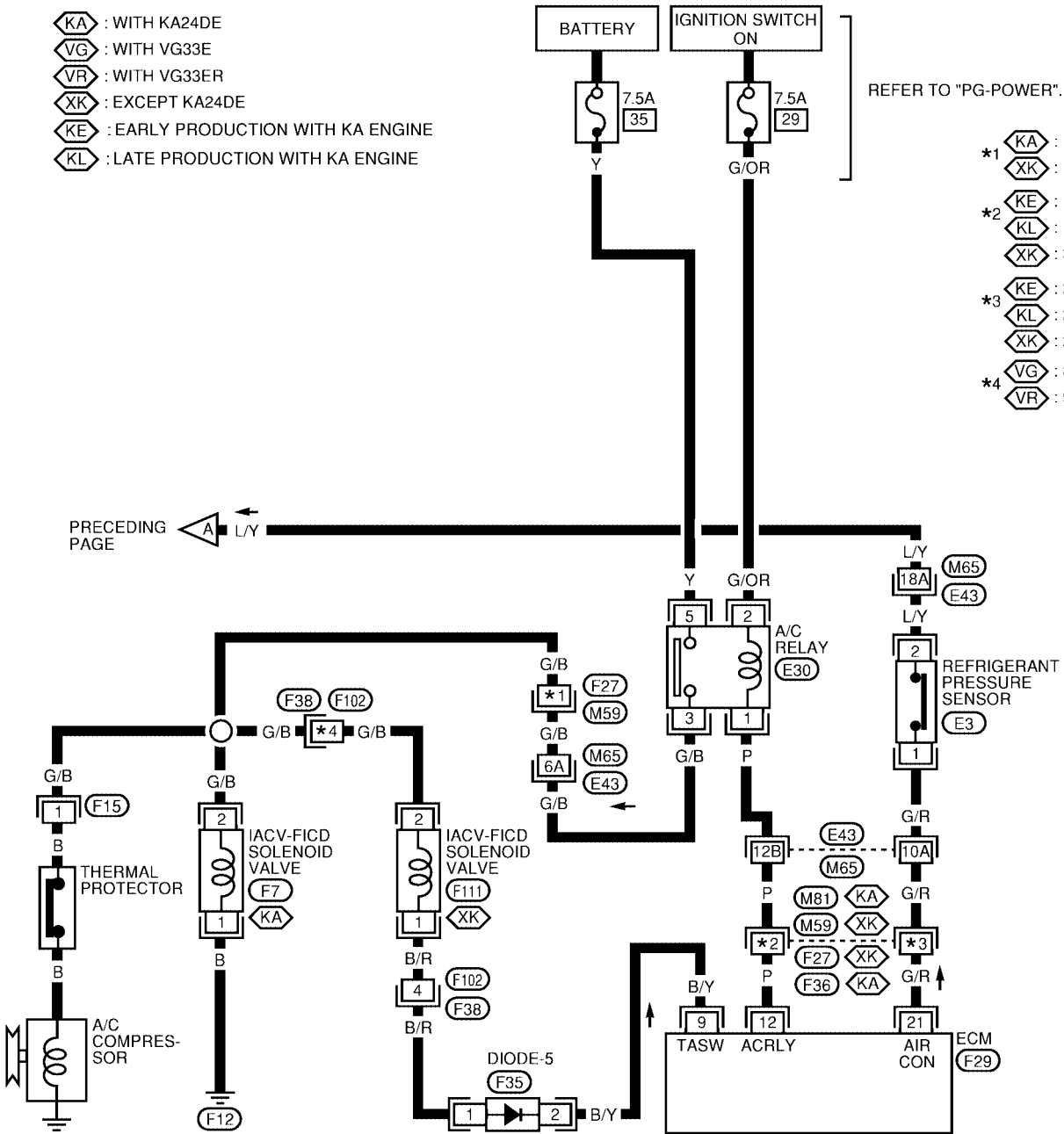
TROUBLE DIAGNOSIS

MTC-A/C,M-02

- ⬡KA : WITH KA24DE
- ⬡VG : WITH VG33E
- ⬡VR : WITH VG33ER
- ⬡XK : EXCEPT KA24DE
- ⬡KE : EARLY PRODUCTION WITH KA ENGINE
- ⬡KL : LATE PRODUCTION WITH KA ENGINE

REFER TO "PG-POWER".

- *1 ⬡KA : 1
- ⬡XK : 15
- *2 ⬡KE : 11
- ⬡KL : 14
- ⬡XK : 3
- *3 ⬡KE : 20
- ⬡KL : 23
- ⬡XK : 2
- *4 ⬡VG : 8
- ⬡VR : 9



REFER TO THE FOLLOWING.

- ⬡E43 - SUPER MULTIPLE JUNCTION (SMJ)
- ⬡F29 - ELECTRICAL UNITS

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TROUBLE DIAGNOSIS

EJS00195

Operational Check

The purpose of the operational check is to confirm that the system operates as it should. The systems which are checked are the blower, mode (discharge air), intake air, temperature decrease, temperature increase, and compressor.

CONDITIONS:

Engine running at normal operating temperature.

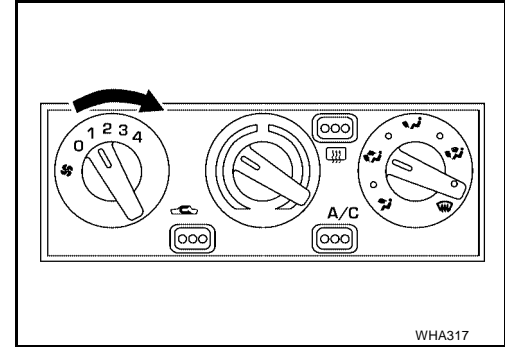
PROCEDURE:

1. Check Blower Motor

1. Turn fan control knob to 1-speed.
Blower should operate on 1-speed.
2. Then turn fan control knob to 2-speed, and continue checking blower speed until all four speeds are checked.
3. Leave blower on 4-speed.

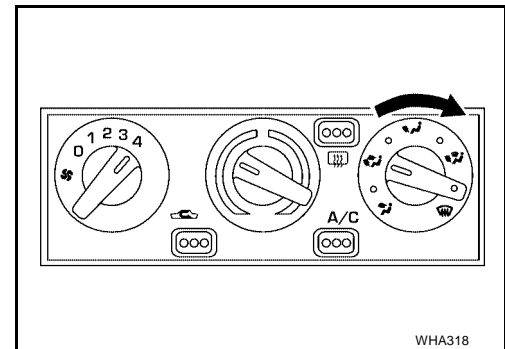
If NG, go to [MTC-39, "TROUBLE DIAGNOSIS PROCEDURE FOR BLOWER MOTOR"](#).

If OK, continue with the check.



2. Check Discharge Air

1. Turn mode control knob to each mode position.



2. Confirm that discharge air comes out according to the air distribution table at left.

Refer to [MTC-24, "Discharge Air Flow"](#).

If NG, go to [MTC-34, "TROUBLE DIAGNOSIS PROCEDURE FOR MODE DOOR"](#).

If OK, continue with next check.

Discharge air flow			
Switch mode/ indicator	Air outlet/distribution		
	Face	Foot	Defrost
	100%	—	—
	60%	40%	—
	—	80%	20%
	—	60%	40%
	—	—	100%

AHA983

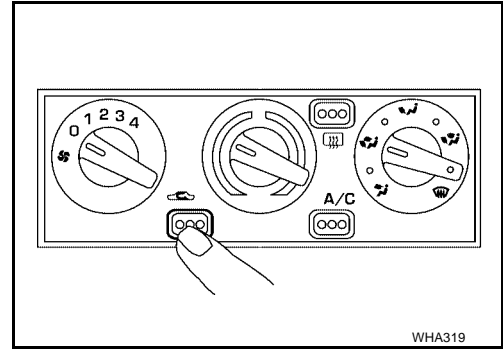
TROUBLE DIAGNOSIS

3. Check Recirculation

1. Press recirculation switch.
Recirculation indicator should light.
2. Listen for intake door position to change (you should hear blower sound change slightly).

If NG, go to [MTC-36, "TROUBLE DIAGNOSIS PROCEDURE FOR INTAKE DOOR"](#) .

If OK, continue with next check.

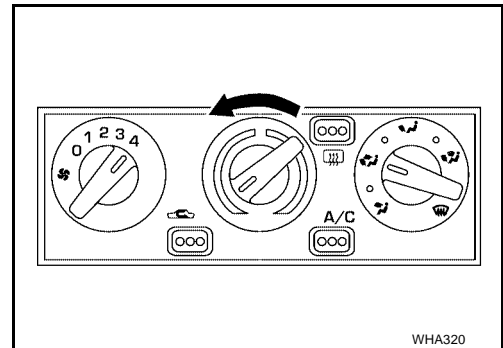


4. Check Temperature Decrease

1. Turn temperature control knob to full cold.
2. Check for cold air at discharge air outlets.

If NG, go to [MTC-51, "TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT COOLING"](#) .

If OK, continue with next check.

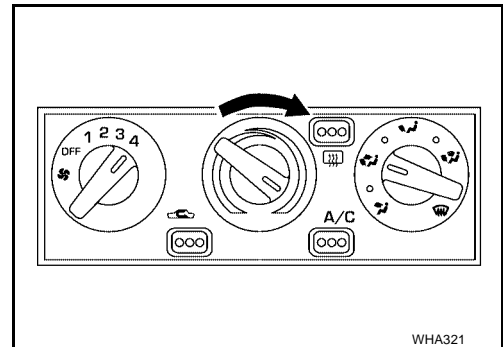


5. Check Temperature Increase

1. Turn temperature control knob to full hot.
2. Check for hot air at discharge air outlets.

If NG, go to [MTC-58, "TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT HEATING"](#) .

If OK, continue with next check.



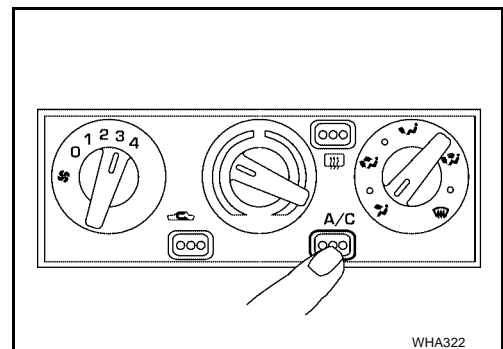
6. Check A/C Switch

1. Turn fan control knob to the desired (1 to 4 speed) position.
2. Push the A/C switch to turn ON the air conditioner.
The indicator lamp should come on when air conditioner is ON.
3. Confirm that the compressor clutch engages (audio or visual inspection).
4. Check for cold air at the appropriate discharge air outlets.

If NG, go to [MTC-44, "TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH"](#) .

If OK, continue with next check.

If all operational checks are OK (symptom cannot be duplicated), go to [GI-25, "How to Perform Efficient Diagnosis for an Electrical Incident"](#) and perform tests as outlined to simulate driving conditions environment. If symptom appears, refer to [MTC-25, "SYMPTOM TABLE"](#) and perform applicable trouble diagnoses procedures.



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TROUBLE DIAGNOSIS

EJS001GF

Mode Door

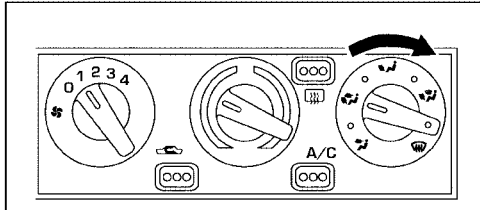
TROUBLE DIAGNOSIS PROCEDURE FOR MODE DOOR

Symptom:

- Mode door does not change.

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Discharge air.

1) Turn mode control knob.

2) Confirm that discharge air comes out according to the air distribution table at left.
Refer to "Discharge Air Flow" in "DESCRIPTION" (*1).

Discharge air flow

Mode control knob	Air outlet/distribution		
	Face	Foot	Defroster
	100%	–	–
	60%	40%	–
	–	80%	20%
	–	60%	40%
	–	–	100%

NOTE:

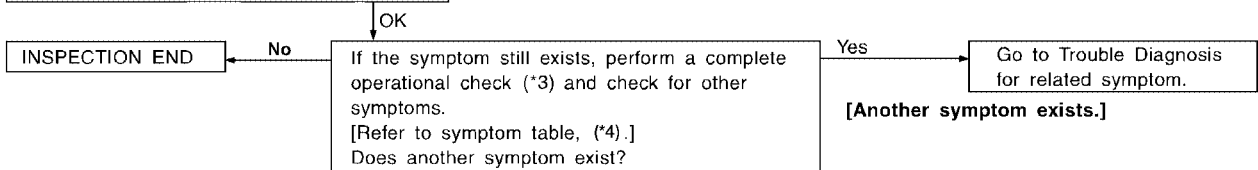
Confirm that the compressor clutch is engaged (visual inspection) and intake door position is at FRESH when the DEF () or D/F () button is pressed.

If OK (symptom cannot be duplicated), perform complete operational check (*3).

If NG (symptom is confirmed), continue with STEP-2 following.

2. Check for any service bulletins.

3. Check mode door control linkage adjustment. (*2)



*1: [MTC-24](#)

*2: [MTC-38](#)

*3: [MTC-32](#)


*4: [MTC-25](#)

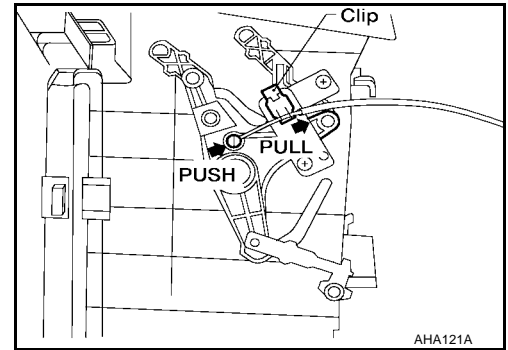
WHA325

TROUBLE DIAGNOSIS

MODE DOOR CONTROL LINKAGE ADJUSTMENT

Mode door control linkage

- Turn mode door control knob to  position.
- Set side link in DEF mode.
- Pull on outer cable in direction of arrow and then clamp it.
- **After positioning mode door control cable, check that it operates properly.**



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TROUBLE DIAGNOSIS

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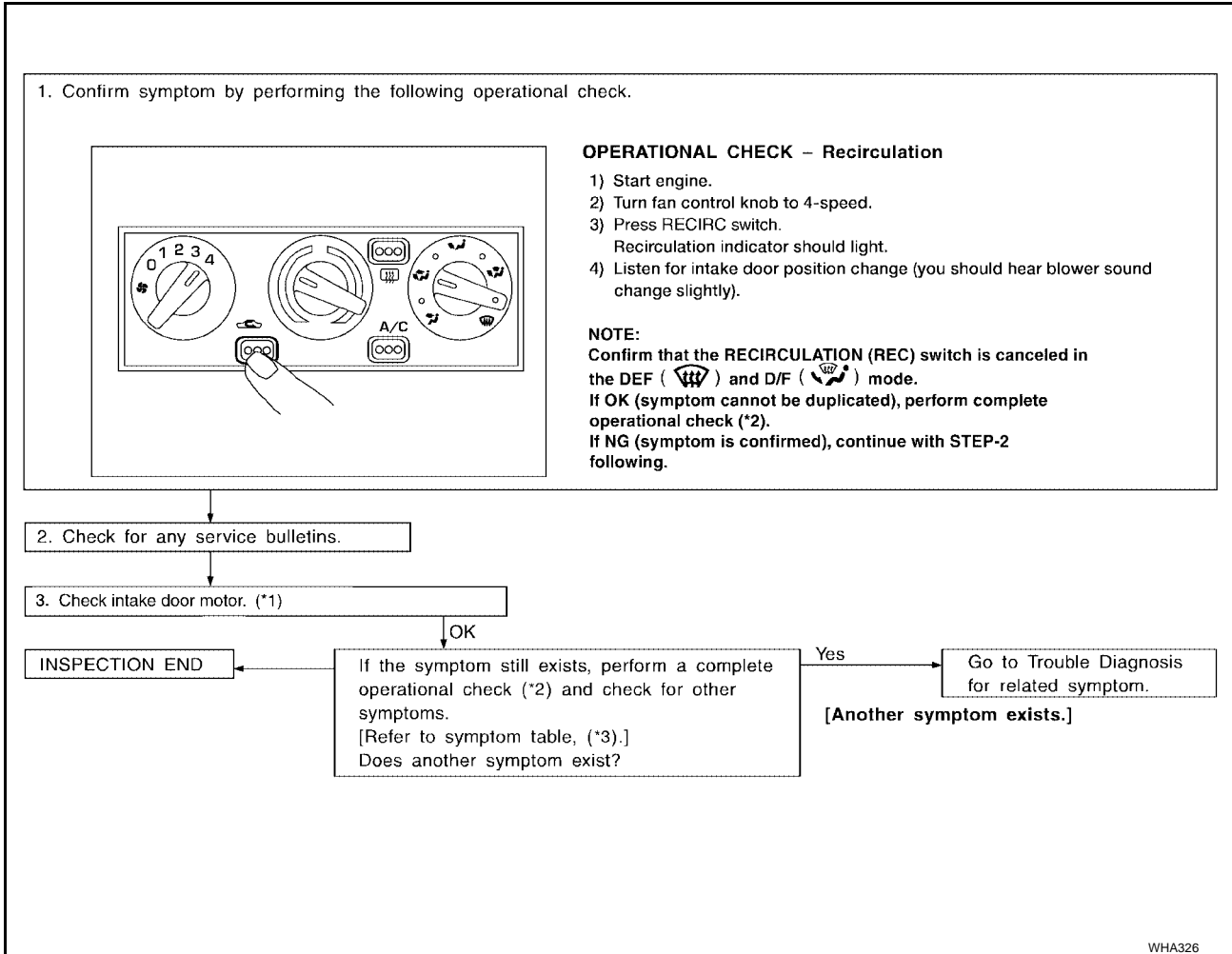
Intake Door

TROUBLE DIAGNOSIS PROCEDURE FOR INTAKE DOOR

Symptom:

- Intake door position does not change in VENT, B/L or FOOT mode.

Inspection Flow



*1: [MTC-37](#)

*2: [MTC-32](#)

*3: [MTC-25](#)

TROUBLE DIAGNOSIS

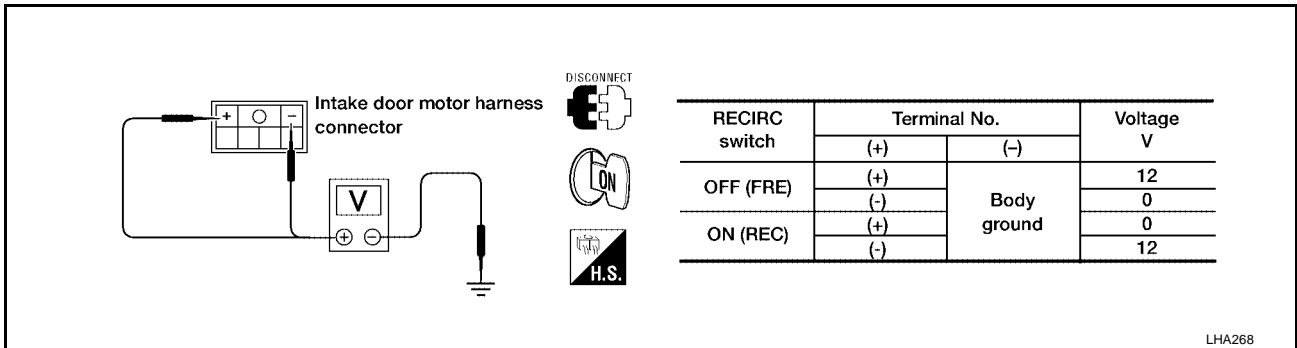
INTAKE DOOR CIRCUIT

SYMPTOM:

- Intake door does not operate.

1. CHECK POWER FOR INTAKE DOOR MOTOR

1. Disconnect intake door motor harness connector.
2. Turn ignition switch ON.
3. Check voltage between intake door motor harness connector M96 terminals + (Y/B), - (Y) and ground as shown.

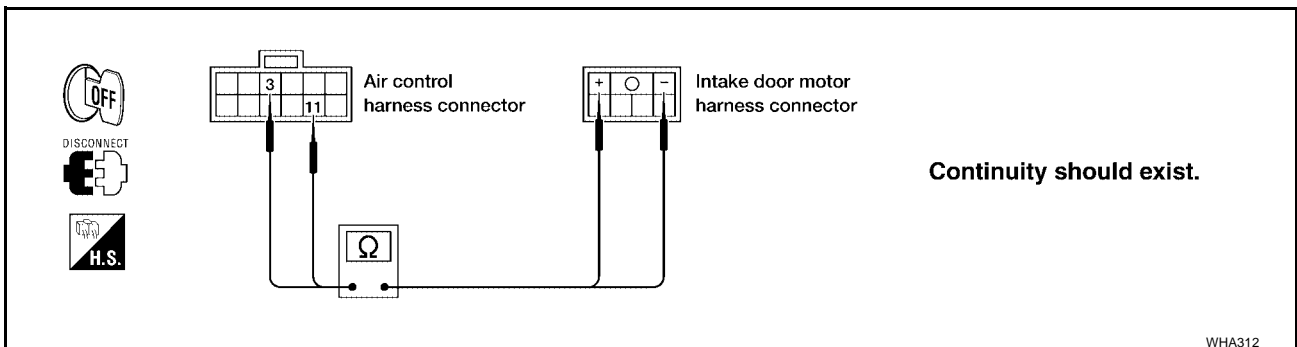


OK or NG

- OK >> GO TO 3
 NG >> GO TO 2

2. CHECK INTAKE DOOR CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect air control harness connector.
3. Check continuity between air control harness connector M95 terminals 3 (Y/B), 11 (Y) and intake door motor harness connector M96 terminals + (Y/B), - (Y).



NOTE:

Mode control knob should be in position.

OK or NG

- OK >> Check harness for short.
 NG >> Replace air control.

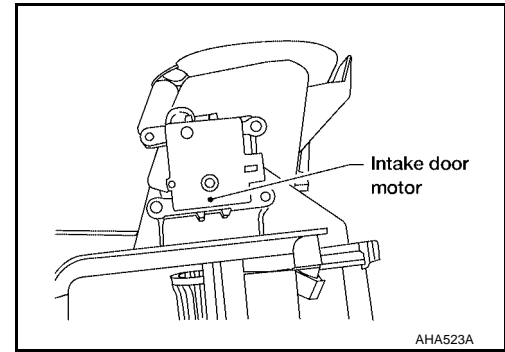
TROUBLE DIAGNOSIS

3. CHECK INTAKE DOOR MOTOR

1. Reconnect intake door motor connector M96.
2. Turn ignition switch ON.
3. Observe intake door operation when the RECIRC switch is turned ON and OFF.
4. Intake door should change position.

OK or NG

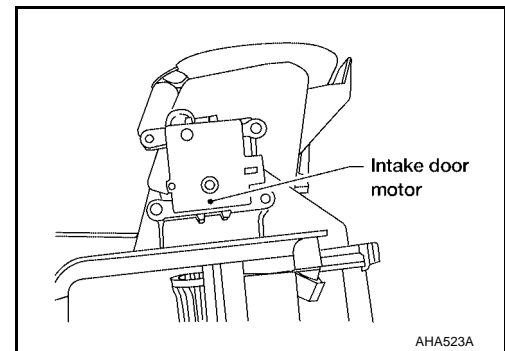
- OK >> Check harness and connectors for open or short.
NG >> Replace intake door motor.



CONTROL LINKAGE ADJUSTMENT

Intake Door Motor

1. Install intake door motor on intake unit.
Ensure that the intake door motor lever is fitted into the slit portion of the intake door link.
2. Connect the intake door motor harness connector before installing the intake door motor.
3. Turn ignition switch on and press the recirculation switch.
4. Turn the mode control knob to VENT, B/L or FOOT mode.
5. Check that intake door motor operates properly when RECIRCULATION switch is turned ON and OFF.



TROUBLE DIAGNOSIS

EJS001GH

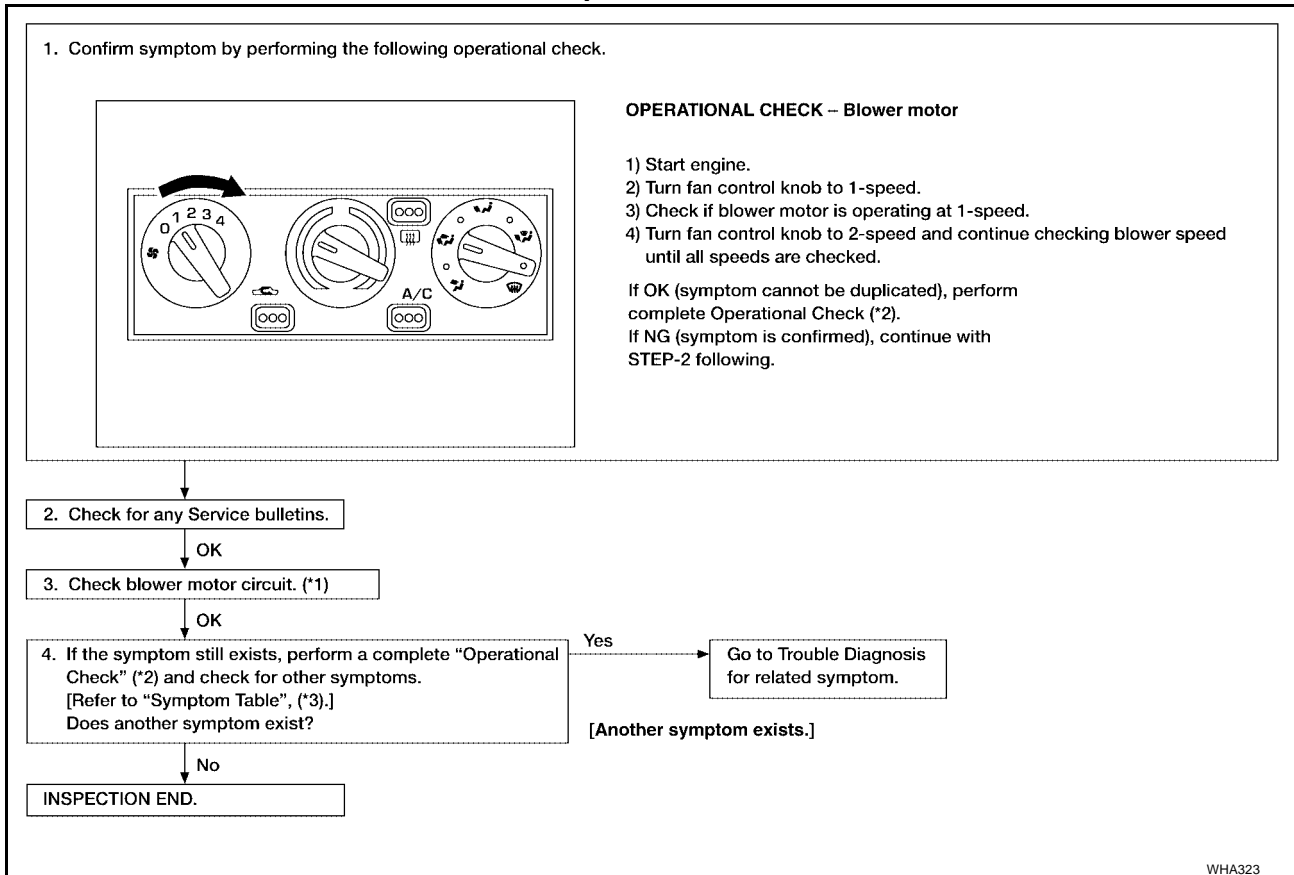
Blower Motor

TROUBLE DIAGNOSIS PROCEDURE FOR BLOWER MOTOR

Symptom:

- Blower motor does not rotate.

Inspection Flow



*1: [MTC-39](#)

*2: [MTC-32](#)

*3: [MTC-25](#)

BLOWER MOTOR CIRCUIT

SYMPTOM:

- Blower motor does not rotate.

1. DIAGNOSTIC PROCEDURE

Check if blower motor rotates properly at each fan speed.

Does not rotate at any speed>>GO TO 2

Does not rotate at 1-3 speed>>GO TO 6

Does not rotate at 4 speed>>GO TO 7

2. CHECK FUSES.

Check 15A fuse [No. 19, located in the fuse block (J/B)] and 15A fuse [No. 24, located in the fuse block (J/B)]. For fuse layout, refer to [PG-8, "POWER SUPPLY ROUTING"](#).

Are fuses OK?

YES >> GO TO 3

NO >> GO TO 9

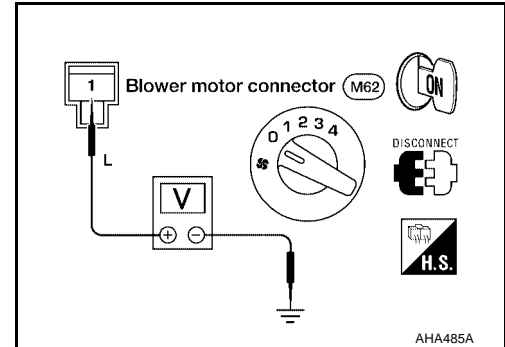
TROUBLE DIAGNOSIS

3. CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT

1. Disconnect blower motor harness connector.
2. Check voltage between blower motor harness connector M62 terminal 1 and ground.

Does battery voltage exist?

- Yes >> GO TO 4
- No >> Check the following.
- If NG, repair harness or connector.
 - Harness for open between blower motor and fuse block (J/B).
 - Harness connectors M27 and M62



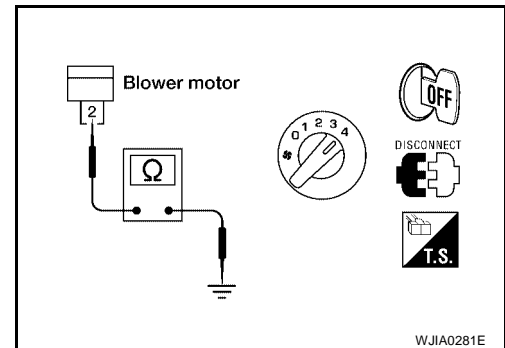
4. CHECK BLOWER MOTOR GROUND CIRCUIT

1. Disconnect blower motor harness connector.
2. Turn fan control switch to 4-speed.
3. Check continuity between blower motor harness connector M62 terminal 2 (L) and ground.

Continuity should exist.

OK or NG

- OK >> GO TO 5
- NG >> Check the following. If NG, repair harness or connector.
- Harness for open or short between blower motor and ground.
 - Harness connectors M57 and M62

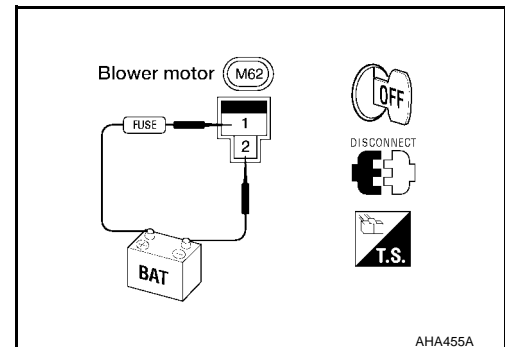


5. CHECK BLOWER MOTOR

1. Disconnect blower motor harness connector.
2. Apply 12 volts to blower motor terminal 1 and ground to blower motor terminal 2.

Does blower motor rotate?

- Yes >> Reconnect blower motor connector and go to [MTC-39, "TROUBLE DIAGNOSIS PROCEDURE FOR BLOWER MOTOR"](#).
- No >> Replace blower motor.



TROUBLE DIAGNOSIS

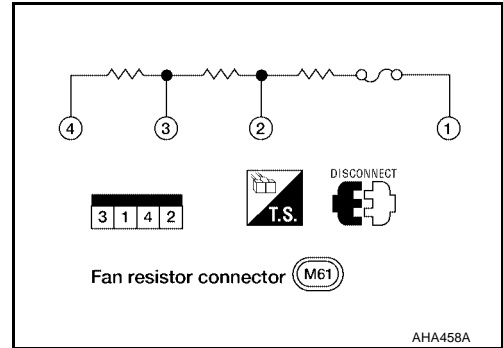
6. CHECK FAN RESISTOR

1. Disconnect fan resistor harness connector M61.
2. Check resistance between fan resistor terminals.

Terminal No.		Resistance (Approx.) Ω
(+)	(-)	
1	2	0.2 - 0.3
	3	0.8 - 1.0
	4	2.0 - 2.4

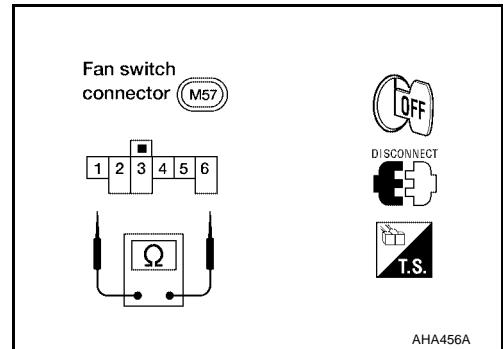
OK or NG

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



7. CHECK FAN SWITCH

Disconnect fan switch harness connector M57 and check continuity between terminals at each fan switch position.



Terminal	Position				
	OFF	1	2	3	4
1		○	○	○	○
2		○	○	○	○
3		○	○	○	○
4		○	○	○	○
5		○	○	○	○
6		○	○	○	○

AHA457A

OK or NG

- OK >> GO TO 8
 NG >> Replace fan switch.

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TROUBLE DIAGNOSIS

8. CHECK FAN SWITCH GROUND

1. Disconnect fan switch harness connector M57.
2. Check continuity between fan switch harness connector terminal 6 and ground.

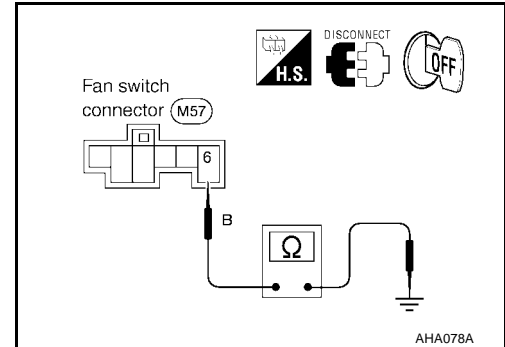
Continuity should exist.

OK or NG

OK >> Check the following.

- If NG, repair harness or connectors.
 - Harness connectors M57, M61 and M62
 - Harness for open or short between blower motor and fan switch, fan resistor

NG >> Repair harness or connector.



9. REPLACE FUSE

1. Replace fuses.
2. Activate the blower motor system.

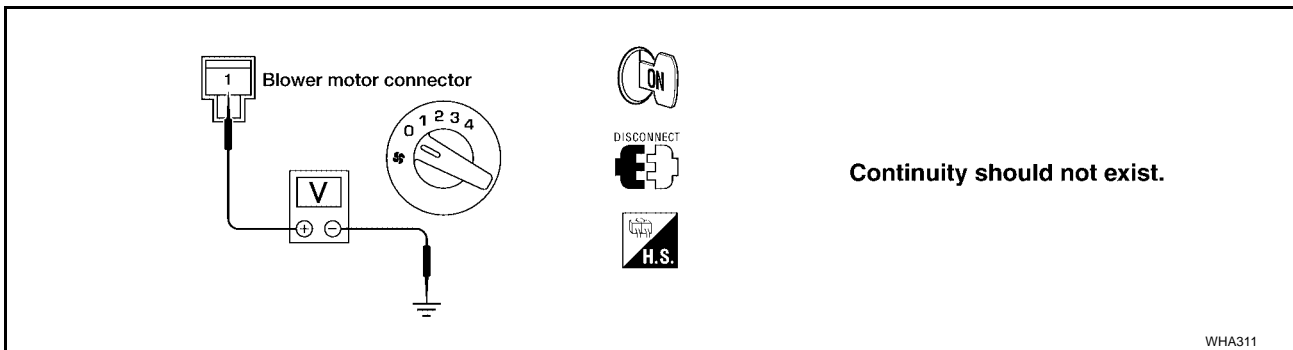
Do the fuses blow when the front blower motor is activated?

Yes >> GO TO 10

No >> **INSPECTION END**

10. CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR A SHORT

1. Disconnect battery cable and blower motor harness connector M62.
2. Check continuity between front blower motor harness connector M62 terminal 1 (L) and ground.



Does continuity exist?

Yes >> Check the following. If NG, repair harness or connector.

- Harness connectors M27 and M62
- Harness for short between blower motor and fuse block (J/B).

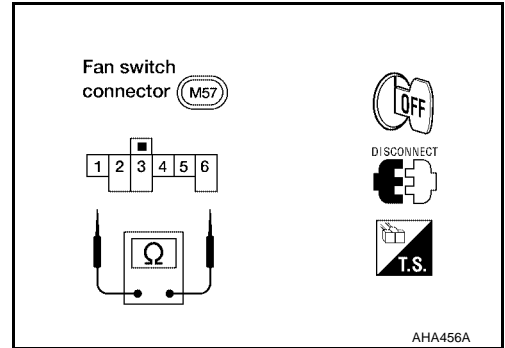
No >> Check front blower motor. Refer to [MTC-43, "Blower Motor"](#) . If necessary, clear intake unit. If OK, replace front blower motor.

TROUBLE DIAGNOSIS

ELECTRICAL COMPONENTS INSPECTION

Fan Switch

Check continuity between terminals at each switch position.



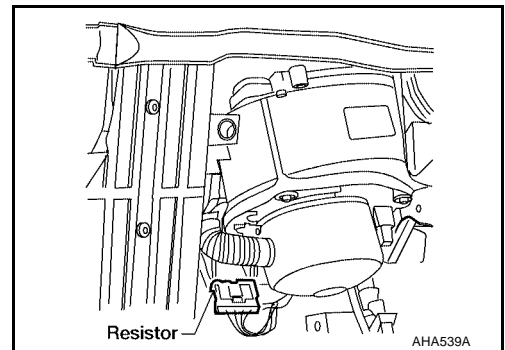
Terminal	Position				
	OFF	1	2	3	4
1		○	○	○	○
2					○
3				○	
4			○		
5		○	○	○	○
6		○	○	○	○

AHA457A

Blower Motor

Confirm smooth rotation of the blower motor.

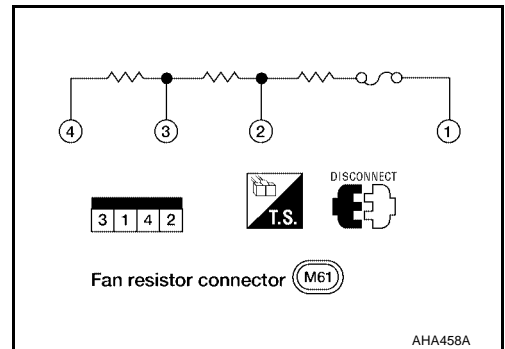
- Check that there are no foreign particles inside the intake unit.



Fan Resistor

Terminal No.		Resistance (Approx.) Ω
(+)	(-)	
1	2	0.2 - 0.3
	3	0.8 - 1.0
	4	2.0 - 2.4

Check resistance between terminals.



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TROUBLE DIAGNOSIS

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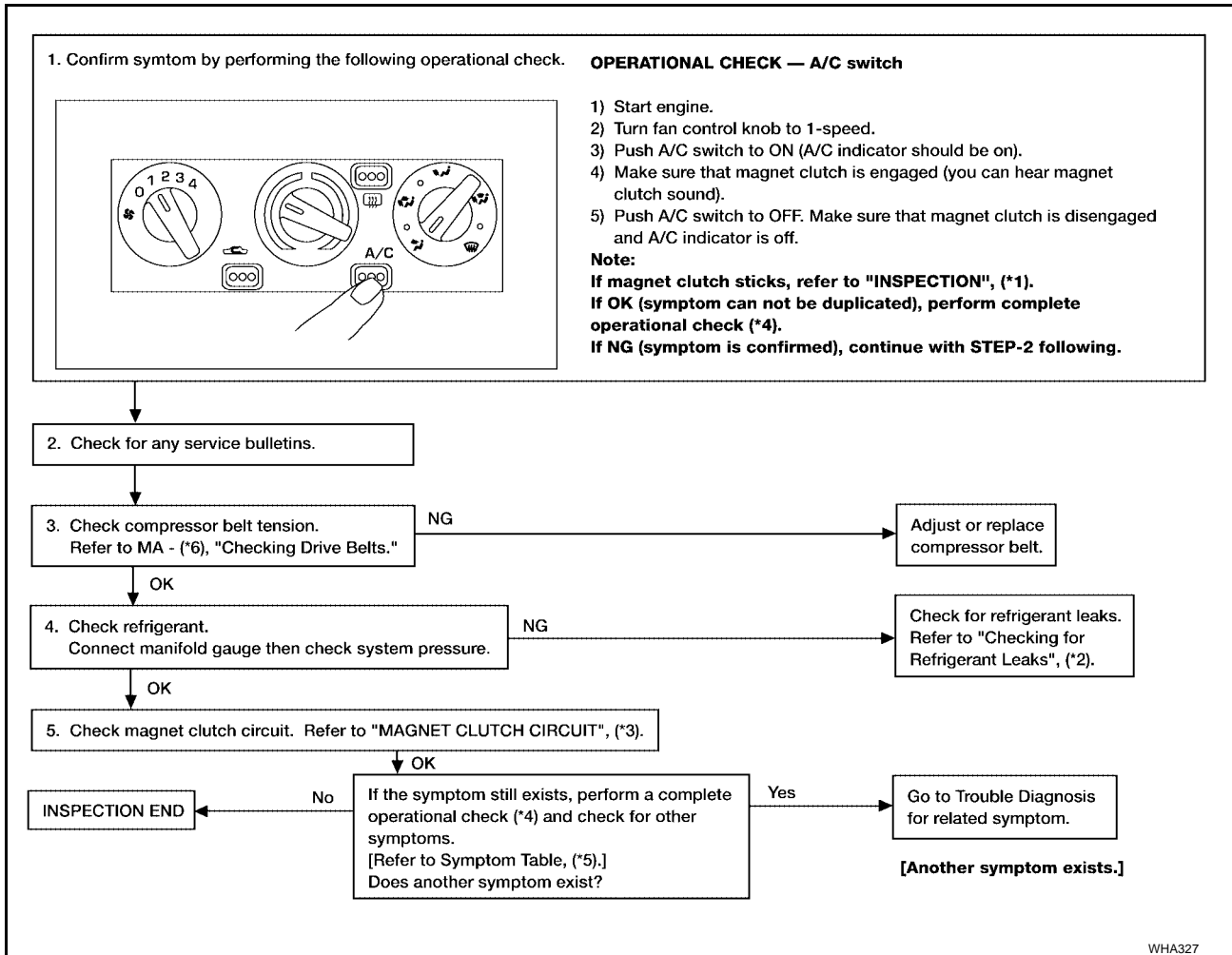
Magnet Clutch

TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH

Symptom:

- Magnet clutch does not engage when A/C switch and fan switch are ON.

INSPECTION FLOW



WHA327

*1: [MTC-71](#)

*2: [MTC-74](#)

*3: [MTC-45](#)

*4: [MTC-32](#)

*5: [MTC-25](#)

*6: [MA-15](#) (KA24DE models) or [MA-24](#) (VG33E and VG33ER models)

TROUBLE DIAGNOSIS

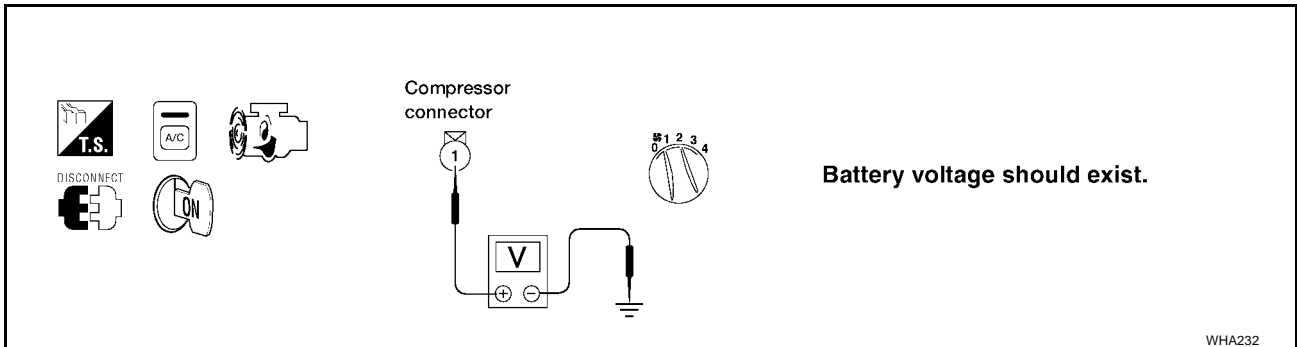
MAGNET CLUTCH CIRCUIT

SYMPTOM:

- Magnet clutch does not engage when A/C switch and fan switch are ON.

1. CHECK A/C COMPRESSOR POWER SUPPLY CIRCUIT

1. Disconnect A/C compressor harness connector F15-2.
2. Press the A/C switch ON.
3. Does approx. 12 volts exist between A/C compressor connector F15 terminal 1 (G/B) and ground?



Yes or No

- Yes >> GO TO 2
No >> GO TO 3

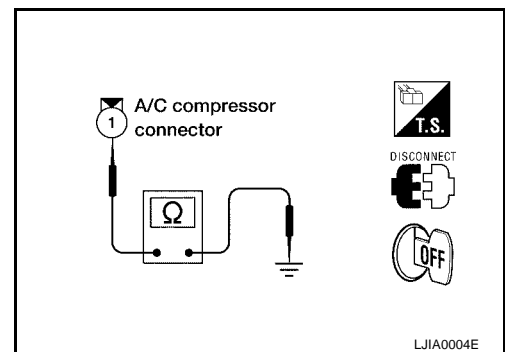
2. CHECK A/C COMPRESSOR GROUND

Check continuity between A/C compressor connector F15 terminal 1 (G/B) and ground.

Continuity should exist.

OK or NG

- OK >> Refer to [MTC-44, "TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH"](#) .
NG >> If NG, replace magnet clutch. Refer to [MTC-71, "Coil"](#) .



3. CHECK CIRCUIT CONTINUITY

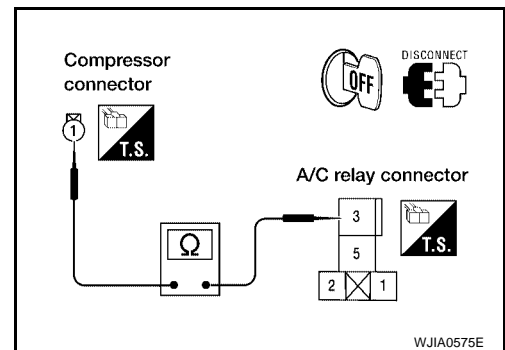
1. Disconnect A/C relay.
2. Check circuit continuity between A/C relay connector E30 terminal 3 and A/C compressor connector F15 terminal 1 (G/B).

Continuity should exist.

3. Also, check harness for short.

OK or NG

- OK >> GO TO 4
NG >> Repair harness or connector.



TROUBLE DIAGNOSIS

4. CHECK INTAKE SENSOR CIRCUIT

Refer to [MTC-61, "Intake Sensor"](#) .

OK or NG

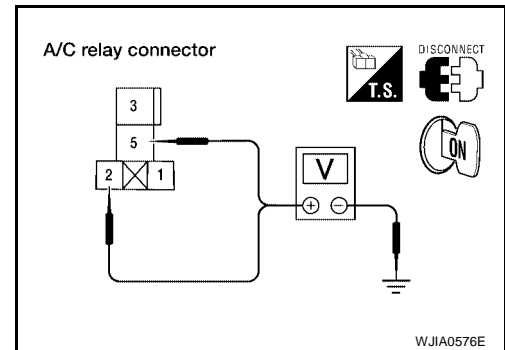
- OK >> GO TO 5.
- NG >> Repair as necessary.

5. CHECK A/C RELAY POWER SUPPLY CIRCUIT

1. Disconnect A/C relay.
2. Does approx. 12 volts exist between A/C relay connector E30 terminals 2 (G/OR), 5 (Y) and ground?

Yes or No

- Yes >> GO TO 6
- No >> GO TO 12



6. CHECK A/C RELAY

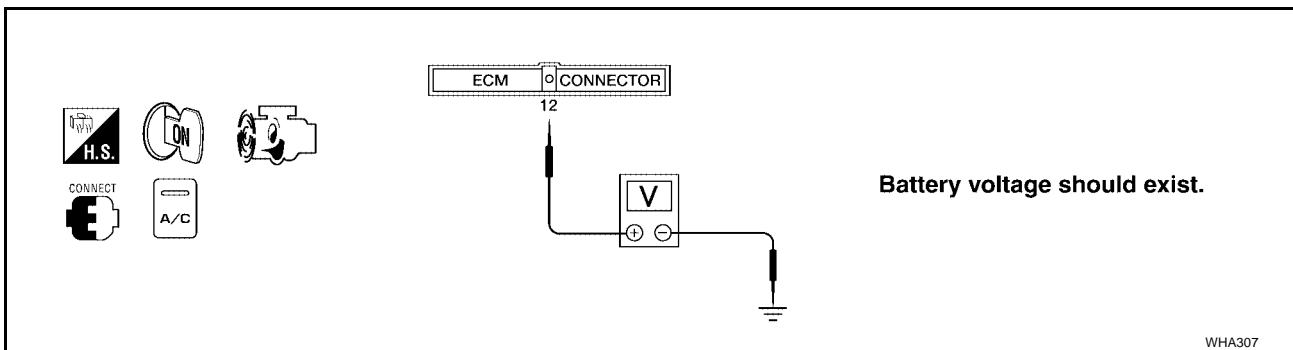
Refer to [MTC-49, "A/C Relay"](#) .

OK or NG

- OK >> GO TO 7
- NG >> Replace A/C relay.

7. CHECK A/C RELAY GROUND CONTROL CIRCUIT

1. Reconnect A/C relay.
2. Engine running and A/C OFF.
3. Does approx. 12 volts exist between ECM harness connector F29 terminal 12 (P) and ground?



Yes or No

- Yes >> GO TO 8
- No >> Check the following. If NG, repair harness or connectors.
 - Harness for open or short between A/C relay and ECM

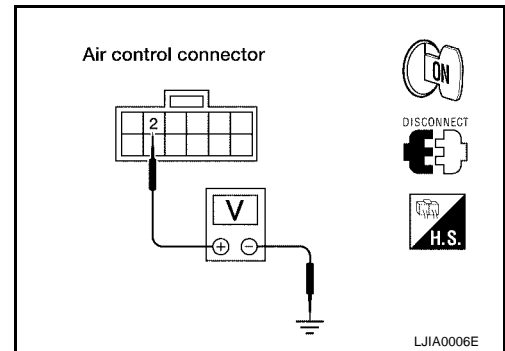
TROUBLE DIAGNOSIS

8. CHECK ECM OUTPUT VOLTAGE

Does approx. 5 volts exist between air control harness connector M95 terminal 2 (L/Y) and ground?

Yes or No

- Yes >> GO TO 15
- No >> GO TO 9



9. CHECK CIRCUIT CONTINUITY

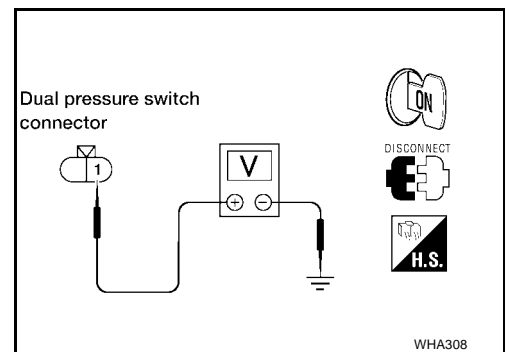
1. Disconnect dual pressure switch harness connector E3.
2. Check voltage from terminal 1 to ground.

Do approx. 5 volts exist?

3. Also, check harness for short.

Yes or No

- Yes >> GO TO 10
- No >> Repair harness or connector.



10. CHECK DUAL PRESSURE SWITCH

Refer to [MTC-49, "Dual Pressure Switch"](#).

OK or NG

- OK >> GO TO 11
- NG >> Replace dual pressure switch.

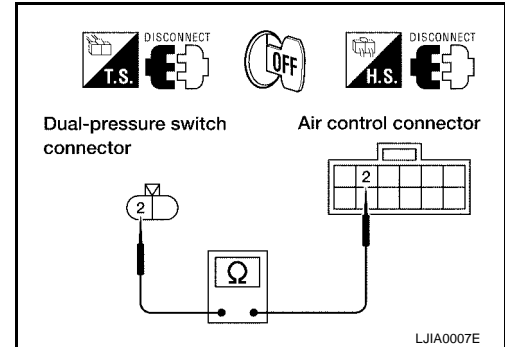
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TROUBLE DIAGNOSIS

11. CHECK CIRCUIT CONTINUITY

1. Disconnect dual pressure switch harness connector E3.
2. Check circuit continuity between air control harness connector M95 terminal 2 (L/Y) and dual pressure switch connector E3 terminal 2 (L/Y).

Continuity should exist.

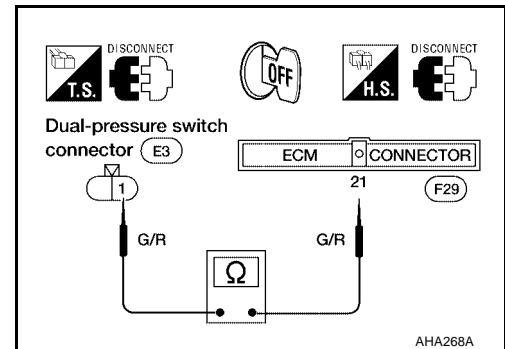


3. Also check circuit continuity between dual pressure switch connector E3 terminal 1 (G/R) and ECM connector F29 terminal 21 (G/R).

Continuity should exist.

OK or NG

- OK >> Check ECM. Refer to [EC-121](#) (KA24DE), [EC-689](#) (VG33E) or [EC-1288](#) (VG33ER).
- NG >> Repair harness or connector.



12. CHECK FUSES

Check 7.5A fuse (No. 29, located in the fuse and fusible link box) and 7.5A fuse (No. 35, located in the fuse and fusible link box). For fuse layout, refer to [PG-8, "POWER SUPPLY ROUTING"](#).

Are fuses OK?

- YES >> Check the following. If NG, repair harness or connectors.
- Harness for open between fuse and fusible link box and A/C relay
- NO >> GO TO 13

13. REPLACE FUSE

Replace fuse.

Does fuse blow when A/C is activated?

- Yes >> GO TO 14
- No >> **INSPECTION END**

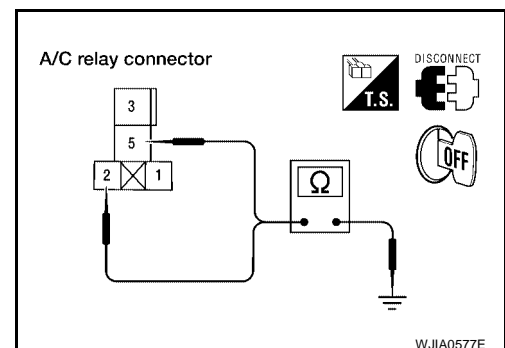
14. CHECK A/C RELAY POWER SUPPLY CIRCUITS FOR SHORT

1. Disconnect battery cable and A/C relay.
2. Check for continuity on A/C relay connector E30 terminals 2 (G/OR), 5 (Y) to ground.

Continuity should not exist.

OK or NG

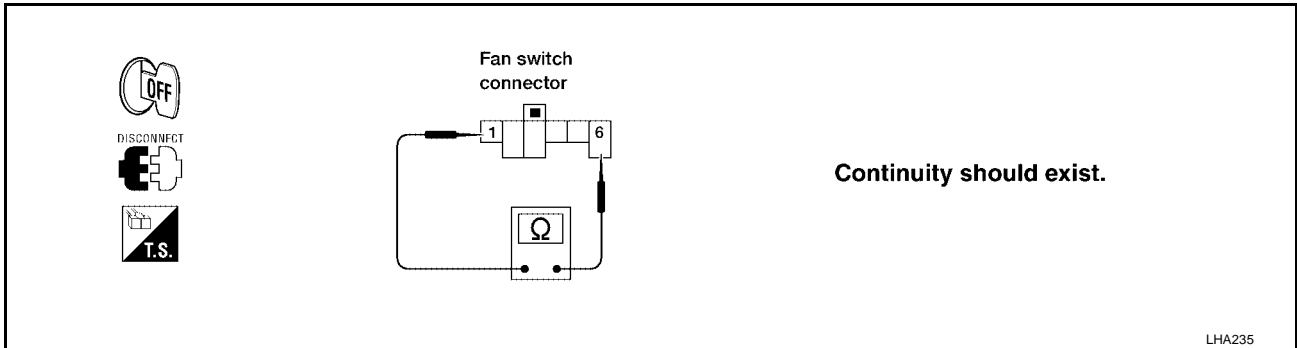
- OK >> Check the following.
- If NG, repair harness or connectors.
 - Harness connectors M95 and E30.
 - Harness for open or short between fuse and fusible link box and A/C relay, or A/C switch.
- NG >> Repair harness or connector.



TROUBLE DIAGNOSIS

15. CHECK FAN SWITCH

1. Disconnect fan switch connector M57.
2. Turn fan control knob to ON (any speed position except off).
3. Check continuity between fan switch terminals 1 and 6.



OK or NG

OK >> Check the following. If NG, repair harness or connectors.

- Harness connectors M57 and M95.
- Harness for open or short between fan switch and A/C switch.
- If OK, replace air control.

NG >> Replace fan switch.

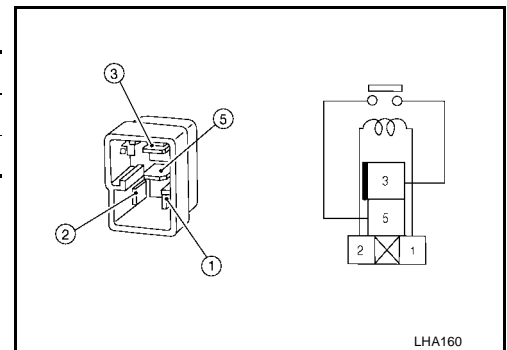
ELECTRICAL COMPONENTS INSPECTION

A/C Relay

Check continuity between terminals 3 and 5.

Conditions	Continuity
12V direct current supply between terminals 1 and 2	Yes
No current supply	No

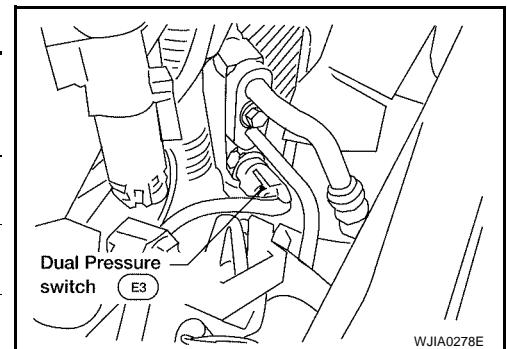
If NG, replace relay.



Dual Pressure Switch

Check continuity between terminals.

	Terminals	High-pressure side line pressure kPa (kg/cm ² , psi)	Operation	Continuity
Low-pressure side	1 - 2	Increasing to 157 - 216 (1.6 - 2.2, 23 - 31)	ON	Yes
		Decreasing to 157 - 196 (1.6 - 2.0, 23 - 28)	OFF	No
Increasing to 2,648 - 2,844 (27 - 29, 384 - 412)		OFF	No	
Decreasing to 1,373 - 1,765 (14 - 18, 199 - 256)		ON	Yes	
High-pressure side				

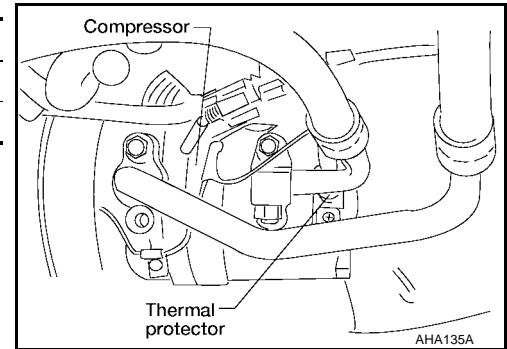


TROUBLE DIAGNOSIS

Thermal Protector

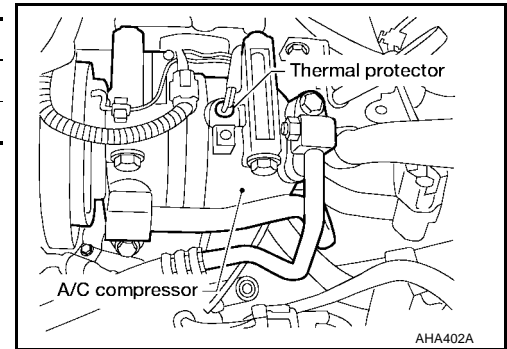
KA24DE

Temperature of compressor °C (°F)	Operation
Increasing to approx. 145 - 155 (293 - 311)	Turn OFF
Decreasing to approx. 130 - 140 (266 - 284)	Turn ON



VG33E and VG33ER

Temperature of compressor °C (°F)	Operation
Increasing to approx. 145 - 155 (293 - 311)	Turn OFF
Decreasing to approx. 130 - 140 (266 - 284)	Turn ON



TROUBLE DIAGNOSIS

EJS001GJ

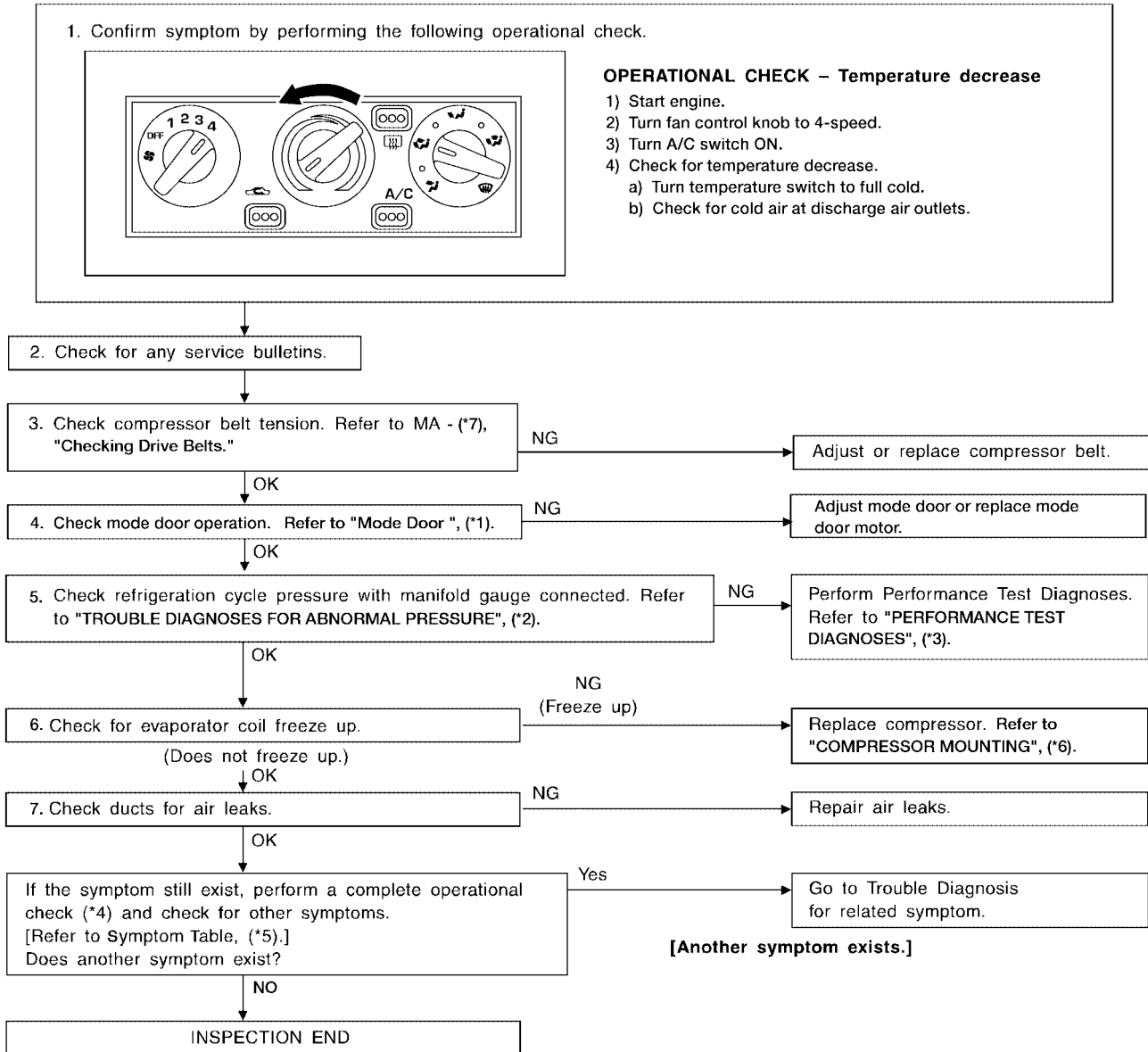
Insufficient Cooling

TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT COOLING

Symptom:

- Insufficient cooling

Inspection Flow



*1: [MTC-34](#)

*2: [MTC-55](#)

*3: [MTC-52](#)

*4: [MTC-32](#)

*5: [MTC-25](#)

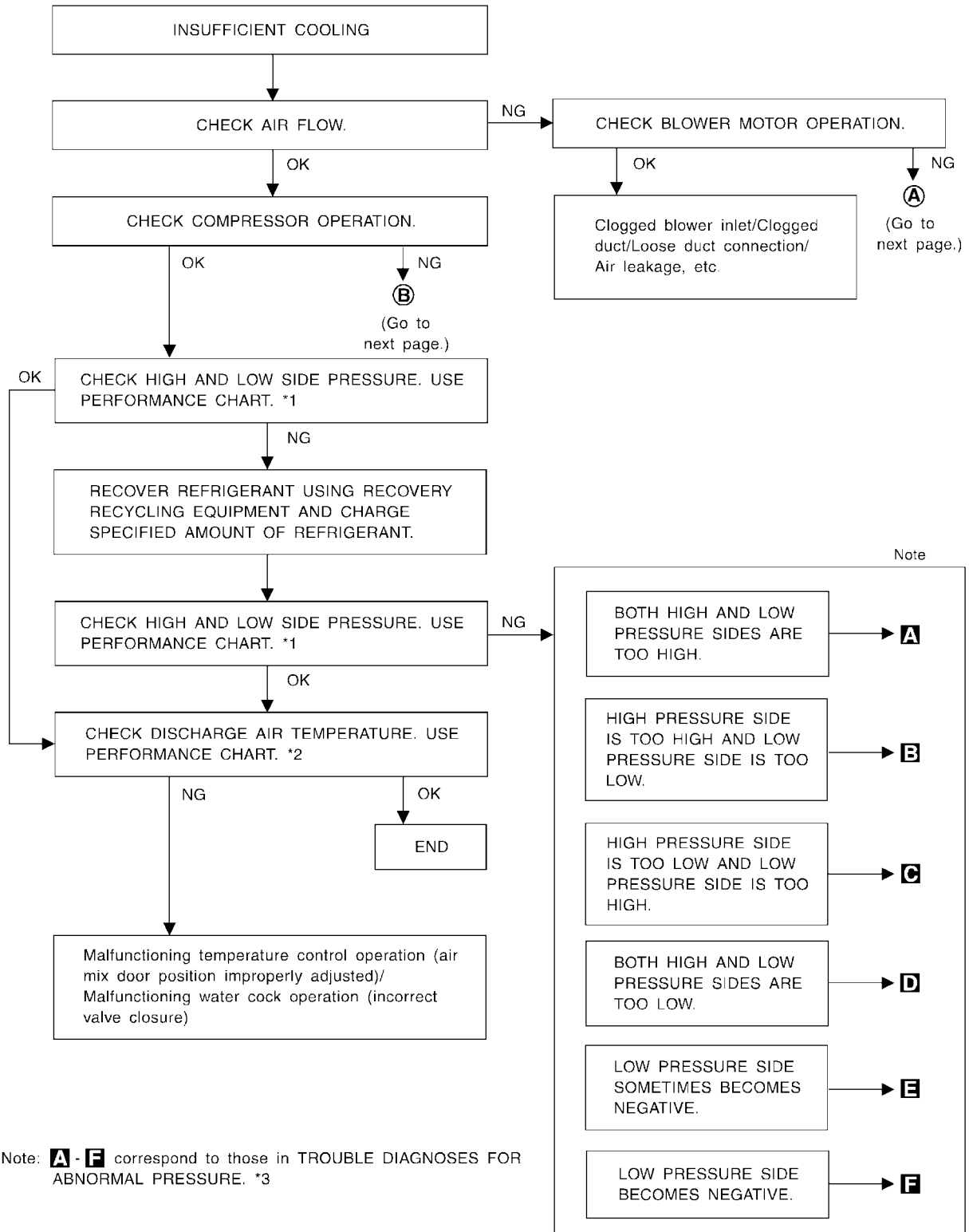
*6: [MTC-68](#)

*7: [MA-15](#) (KA24DE models) or [MA-24](#) (VG33E and VG33ER models)

WHA328

TROUBLE DIAGNOSIS

PERFORMANCE TEST DIAGNOSIS



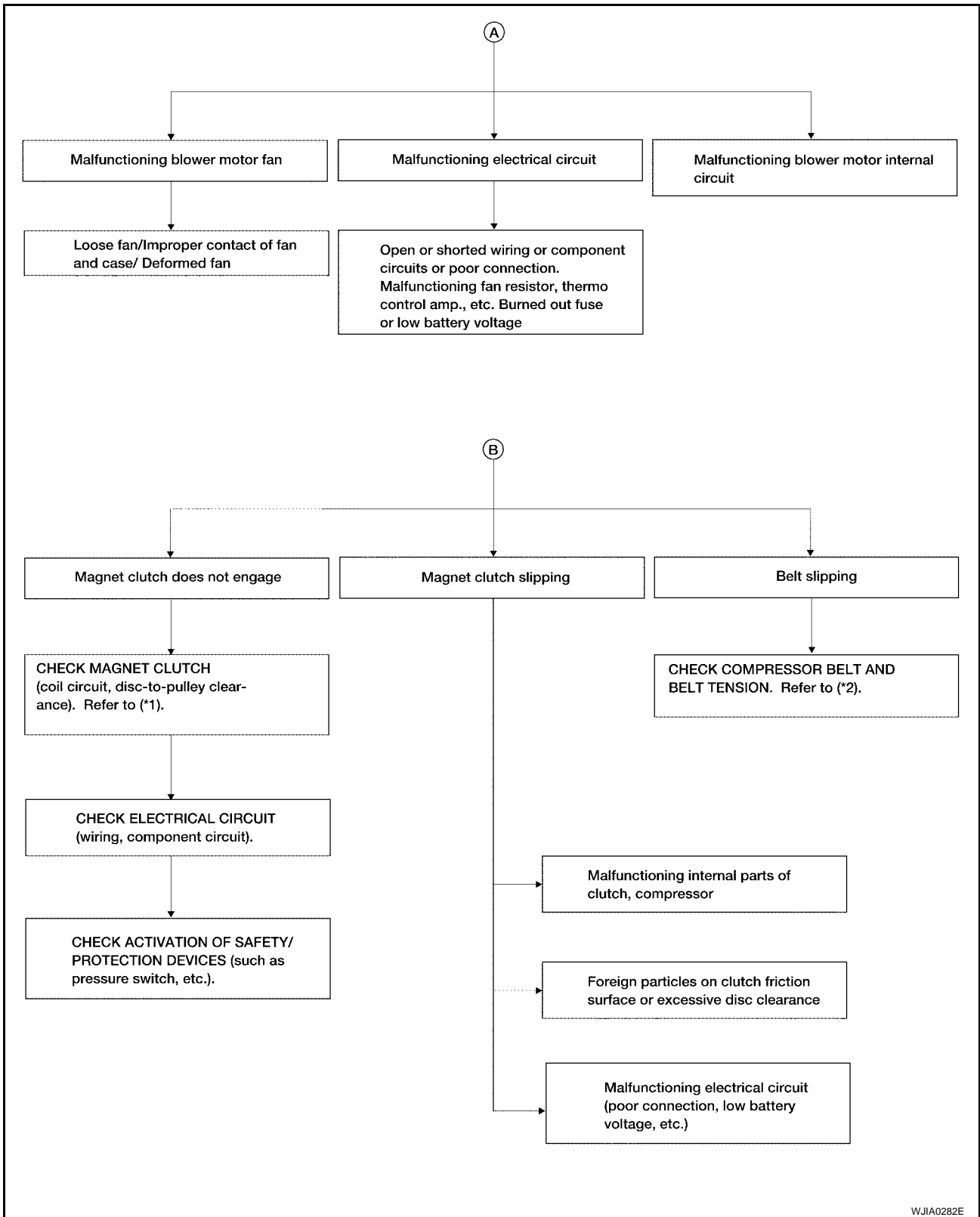
*1: [MTC-54](#)

*2: [MTC-54](#)

*3: [MTC-55](#)

MHA649A

TROUBLE DIAGNOSIS



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*1: [MTC-44](#)

*2: [MA-15](#) (KA24DE models) or [MA-24](#) (VG33E and VG33ER models)




WJIA0282E

TROUBLE DIAGNOSIS

PERFORMANCE CHART

Test Condition

Testing must be performed as follows:

Vehicle location	Indoors or in the shade (in a well-ventilated place)
Doors	Closed
Door windows	Open
Hood	Open
TEMP. switch	Max. COLD
Mode switch	 (Ventilation) set
REC switch	 (Recirculation) set
 (blower) speed	4-speed
Engine speed	1,500 rpm

Operate the air conditioning system for 10 minutes before taking measurements.

Test Reading

Recirculating-to-discharge Air Temperature Table

Inside air (Recirculating air) at blower assembly inlet		Discharge air temperature at center ventilator °C (°F)
Relative humidity %	Air temperature °C (°F)	
50 - 60	20 (68)	6.6 - 8.3 (44 - 47)
	25 (77)	10.4 - 12.4 (51 - 54)
	30 (86)	14.2 - 16.7 (58 - 62)
	35 (95)	18.2 - 21 (65 - 70)
	40 (104)	22.0 - 25.2 (72 - 77)
60 - 70	20 (68)	8.3 - 9.8 (47 - 50)
	25 (77)	12.4 - 14.4 (54 - 58)
	30 (86)	16.7 - 18.9 (62 - 66)
	35 (95)	21.0 - 23.6 (70 - 74)
	40 (104)	25.2 - 28.1 (77 - 83)

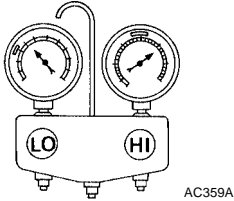
Ambient Air Temperature-to-operating Pressure Table

Ambient air		High-pressure (Discharge side) kPa (kg/cm ² , psi)	Low-pressure (Suction side) kPa (kg/cm ² , psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	20 (68)	961 - 1,187 (9.8 - 12.1, 139 - 172)	108 - 157 (1.1 - 1.6, 16 - 23)
	25 (77)	1,295 - 1,599 (13.2 - 16.3, 186 - 228)	161.8 - 215.8 (1.65 - 2.2, 23.5 - 31.3)
	30 (86)	1,285 - 1,599 (13.1 - 16.0, 186 - 228)	167 - 216 (1.7 - 2.2, 24 - 31)
	35 (95)	1,520 - 1,863 (15.5 - 19.0, 220 - 279)	235 - 284 (2.4 - 2.9, 34 - 41)
	40 (104)	1,765 - 2,158 (18 - 22, 256 - 313)	289.3 - 353.1 (2.95 - 3.6, 41.9 - 51.2)

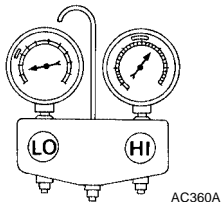
TROUBLE DIAGNOSIS

TROUBLE DIAGNOSES FOR ABNORMAL PRESSURE

Both High- and Low-pressure Sides are Too High.

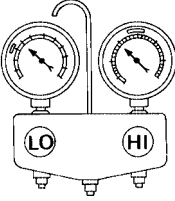
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Both high and low-pressure sides are too high.</p> <p>A</p> 	<ul style="list-style-type: none"> Pressure is reduced soon after water is splashed on condenser. 	<p>Excessive refrigerant charge in refrigeration cycle</p>	<p>Reduce refrigerant until specified pressure is obtained.</p>
	<p>Air suction by cooling fan is insufficient.</p>	<p>Insufficient condenser cooling performance</p> <p style="text-align: center;">↓</p> <ol style="list-style-type: none"> Condenser fins are clogged. Improper fan rotation of cooling fan 	<ul style="list-style-type: none"> Clean condenser. Check and repair cooling fan as necessary.
	<ul style="list-style-type: none"> Low-pressure pipe is not cold. When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm², 28 psi). It then decreases gradually thereafter. 	<p>Poor heat exchange in condenser (After compressor operation stops, high pressure decreases too slowly.)</p> <p style="text-align: center;">↓</p> <p>Air in refrigeration cycle</p>	<p>Evacuate repeatedly and recharge system.</p>
	<p>Engine tends to overheat.</p>	<p>Engine cooling systems malfunction.</p>	<p>Check and repair each engine cooling system.</p>
	<ul style="list-style-type: none"> An area of the low-pressure pipe is colder than areas near the evaporator outlet. Plates are sometimes covered with frost. 	<ul style="list-style-type: none"> Excessive liquid refrigerant on low-pressure side Excessive refrigerant discharge flow Expansion valve is open a little compared with the specification. <p style="text-align: center;">↓</p> <ol style="list-style-type: none"> Improper thermal valve installation Improper expansion valve adjustment 	<p>Replace expansion valve.</p>

High-pressure Side is Too High and Low-pressure Side is Too Low.

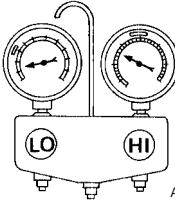
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>High-pressure side is too high and low-pressure side is too low.</p> <p>B</p> 	<p>Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot.</p>	<p>High-pressure tube or parts located between compressor and condenser are clogged or crushed.</p>	<ul style="list-style-type: none"> Check and repair or replace malfunctioning parts. Check lubricant for contamination.

TROUBLE DIAGNOSIS

High-pressure Side is Too Low and Low-pressure Side is Too High.

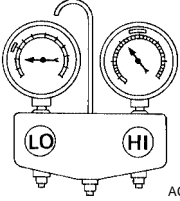
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
High-pressure side is too low and low-pressure side is too high. C 	High and low-pressure sides become equal soon after compressor operation stops.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings	Replace compressor.
	No temperature difference between high and low-pressure sides	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.

Both High- and Low-pressure Sides are Too Low.

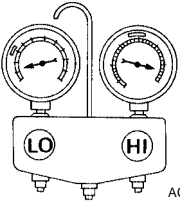
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Both high- and low-pressure sides are too low. D 	<ul style="list-style-type: none"> There is a big temperature difference between receiver drier outlet and inlet. Outlet temperature is extremely low. Liquid tank inlet and expansion valve are frosted. 	Compressor discharge capacity does not change. (Compressor stroke is set at maximum.)	<ul style="list-style-type: none"> Replace liquid tank. Check lubricant for contamination.
	<ul style="list-style-type: none"> Temperature of expansion valve inlet is extremely low as compared with areas near liquid tank. Expansion valve inlet may be frosted. Temperature difference occurs somewhere in high-pressure side 	High-pressure pipe located between receiver drier and expansion valve is clogged.	<ul style="list-style-type: none"> Check and repair malfunctioning parts. Check lubricant for contamination.
	<ul style="list-style-type: none"> Expansion valve and liquid tank are warm or only cool when touched. 	Low refrigerant charge ↓ Leaking fittings or components	Check refrigerant for leaks. Refer to MTC-74, "Checking for Refrigerant Leaks" .
	There is a big temperature difference between expansion valve inlet and outlet while the valve itself is frosted.	Expansion valve closes a little compared with the specification. ↓ 1. Improper expansion valve adjustment 2. Malfunctioning thermal valve 3. Outlet and inlet may be clogged.	<ul style="list-style-type: none"> Remove foreign particles by using compressed air. Check lubricant for contamination.
	An area of the low-pressure pipe is colder than areas near the evaporator outlet.	Low-pressure pipe is clogged or crushed.	<ul style="list-style-type: none"> Check and repair malfunctioning parts. Check lubricant for contamination.
	Air flow volume is not enough or is too low.	Evaporator is frozen. Compressor discharge capacity does not change. (Compressor stroke is set at maximum length.)	<ul style="list-style-type: none"> Check intake sensor operation. Refer to MTC-61, "Intake Sensor". Replace compressor

TROUBLE DIAGNOSIS

Low-pressure Side Sometimes Becomes Negative.

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Low-pressure side sometimes becomes negative.</p> <p>E</p>  <p style="text-align: right; font-size: small;">AC354A</p>	<ul style="list-style-type: none"> ● Air conditioning system does not function and does not cyclically cool the compartment air. ● The system constantly functions for a certain period of time after compressor is stopped and restarted. 	<p>Refrigerant does not discharge cyclically.</p> <p style="text-align: center;">↓</p> <p>Moisture is frozen at expansion valve outlet and inlet.</p> <p style="text-align: center;">↓</p> <p>Water is mixed with refrigerant.</p>	<ul style="list-style-type: none"> ● Drain water from refrigerant or replace refrigerant. ● Replace liquid tank.

Low-pressure Side Becomes Negative.

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Low-pressure side becomes negative.</p> <p>F</p>  <p style="text-align: right; font-size: small;">AC362A</p>	<p>Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.</p>	<p>High-pressure side is closed and refrigerant does not flow.</p> <p style="text-align: center;">↓</p> <p>Expansion valve or liquid tank is frosted.</p>	<p>Leave the system at rest until no frost is present. Start it again to check whether or not the problem is caused by water or foreign particles.</p> <ul style="list-style-type: none"> ● If water is the cause, initially cooling is okay. Then the water freezes causing a blockage. Drain water from refrigerant or replace refrigerant. ● If due to foreign particles, remove expansion valve and remove particles with dry and compressed air (not shop air). ● If either of the above methods cannot correct the problem, replace expansion valve. ● Replace liquid tank. ● Check lubricant for contamination.

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TROUBLE DIAGNOSIS

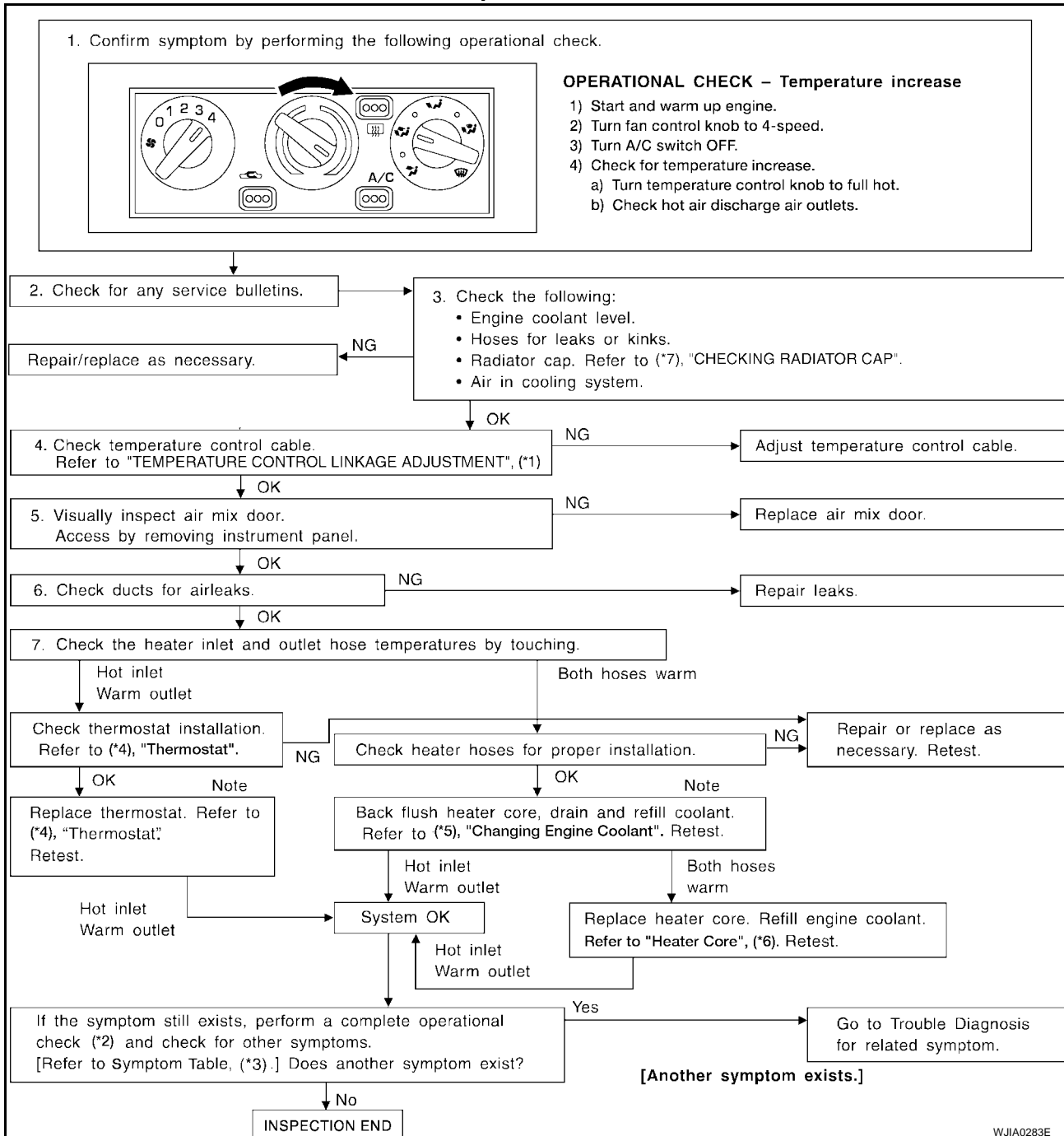
EJS001GK

Insufficient Heating TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT HEATING

Symptom:

- Insufficient heating

Inspection Flow



WJJA0283E

*1: [MTC-59](#)

*2: [MTC-32](#)

*3: [MTC-25](#)

*4: [CO-13](#) (KA24DE models) or [CO-28](#) (VG33E and VG33ER models)

*5: [MA-16](#) (KA24DE models) or [MA-26](#) (VG33E and VG33ER models)

*6: [MTC-64](#)

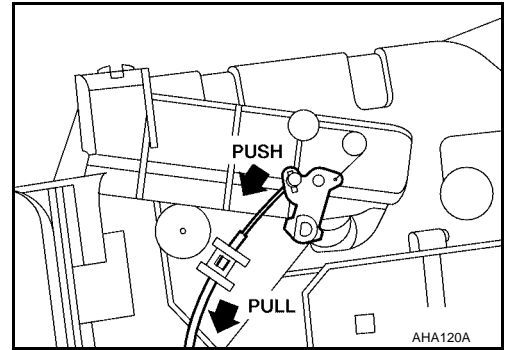
*7: [CO-8](#) (KA24DE models) or [CO-23](#) (VG33E and VG33ER models)

TROUBLE DIAGNOSIS

TEMPERATURE CONTROL LINKAGE ADJUSTMENT

Temperature Control Cable

- When adjusting ventilator door rod and defrost door rod, first disconnect mode control cable from side link. Reconnect and readjust mode control cable.
- Turn temperature control switch to max. COLD position. Set air mix door lever in full hot mode. Pull on outer cable in direction of arrow and then clamp it.
- After positioning temperature control cable, check that it operates properly.



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TROUBLE DIAGNOSIS

EJS001GL

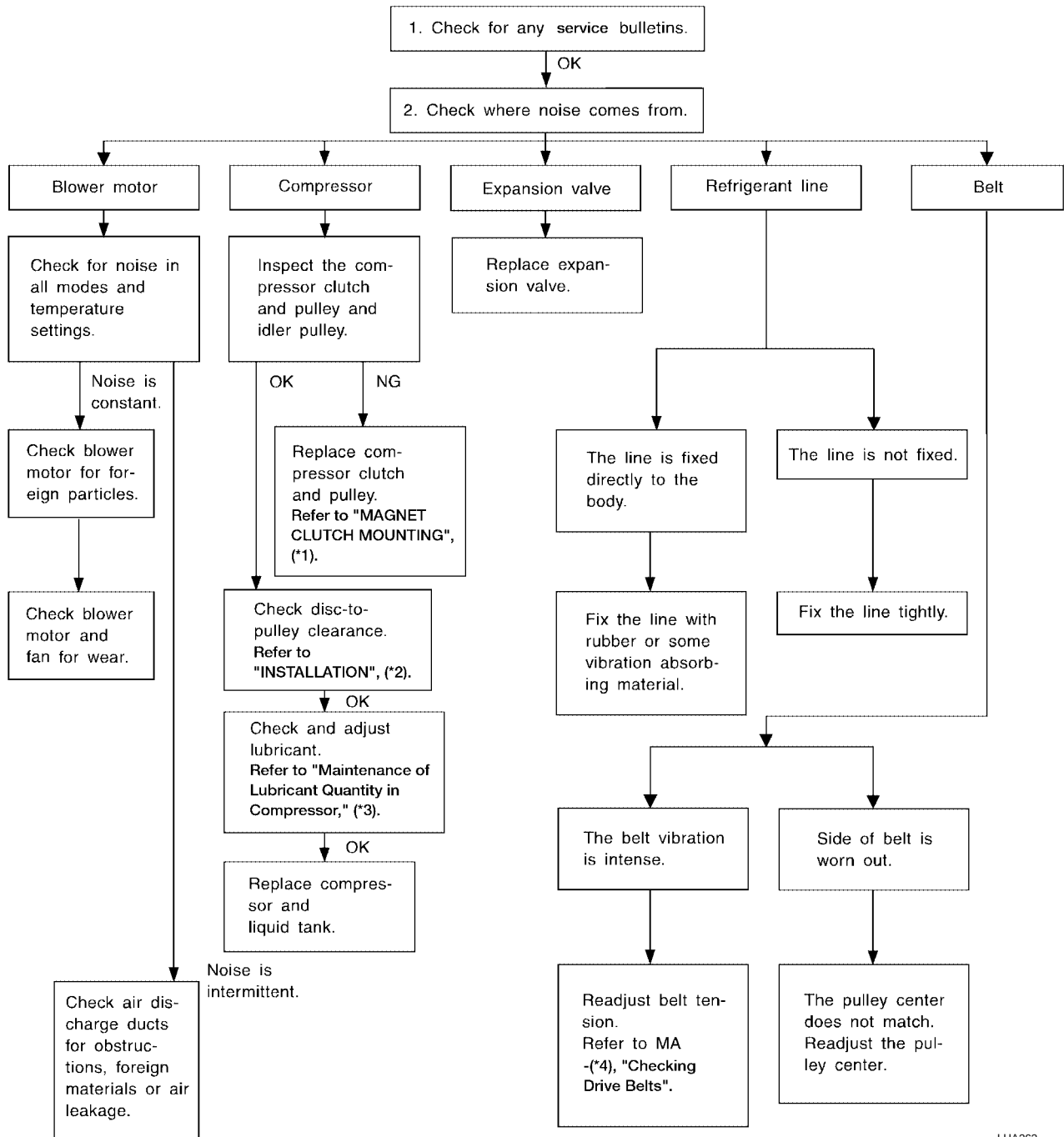
Noise

TRUBLE DIAGNOSIS PROCEDURE FOR NOISE

Symptom:

- Noise

Inspection Flow



*1: [MTC-69](#)

*2: [MTC-71](#)

*3: [MTC-20](#)

*4: [MA-15](#) (KA24DE models) or [MA-24](#) (VG33E and VG33ER models)

LHA262

TROUBLE DIAGNOSIS

EJS001H0

Intake Sensor COMPONENT DESCRIPTION

Intake Sensor

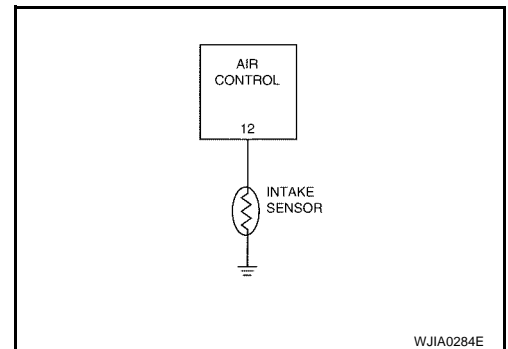
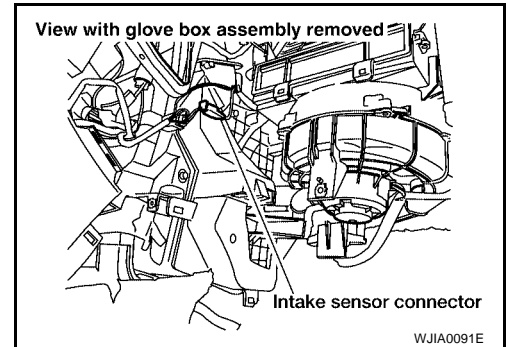
The intake sensor is located on the heater and cooling unit. It converts temperature of air after it passes through the evaporator into a resistance value which is then input to the A/C control unit. After disconnecting intake sensor harness connector, measure resistance between terminals 1 and 2 at sensor harness side, using the table below.

Temperature °C (°F)	Resistance kΩ
-15 (5)	12.34
-10 (14)	9.62
-5 (23)	7.56
0 (32)	6.00
5 (41)	4.80
10 (50)	3.87
15 (59)	3.15
20 (68)	2.57
25 (77)	2.12
30 (86)	1.76
35 (95)	1.47
40 (104)	1.23
45 (113)	1.04

If NG, replace intake sensor.

DIAGNOSTIC PROCEDURE

SYMPTOM: Intake sensor circuit is open or shorted.



1. CHECK INTAKE SENSOR CIRCUIT BETWEEN INTAKE SENSOR AND BODY GROUND

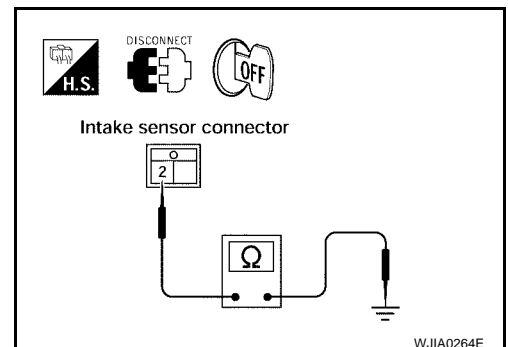
Disconnect intake sensor harness connector.

Terminal		Body ground	Continuity
Connector	Wire color		
M60-2	B		Yes

OK or NG

OK >> GO TO 2.

NG >> Repair harness or connector.



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TROUBLE DIAGNOSIS

2. CHECK INTAKE SENSOR CIRCUIT BETWEEN INTAKE SENSOR AND A/C CONTROL UNIT

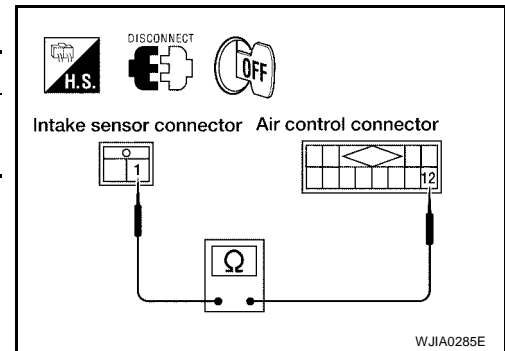
Disconnect A/C control unit harness connector.

Terminals				Continuity
Connector	Wire color	Connector	Wire color	
M60-1	RG	M95-12	RG	Yes

OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.



3. CHECK INTAKE SENSOR

Refer to [MTC-61, "Intake Sensor"](#).

OK or NG

OK >> Replace A/C control unit.

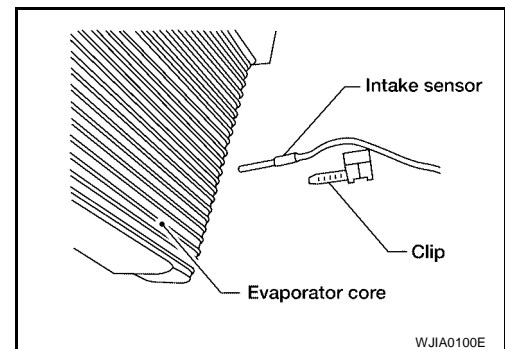
NG >> Replace intake sensor.

REMOVAL AND INSTALLATION

1. Remove the evaporator. Refer to [MTC-73, "REMOVAL"](#).
2. Remove the intake sensor clip and then the sensor.

CAUTION:

Be careful not to damage the core surface.



IN-CABIN MICROFILTER

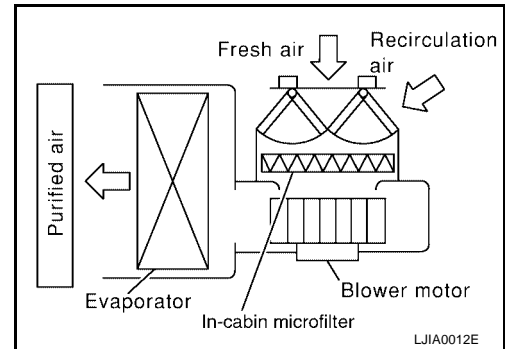
IN-CABIN MICROFILTER

PF2:27277

Removal and Installation FUNCTION

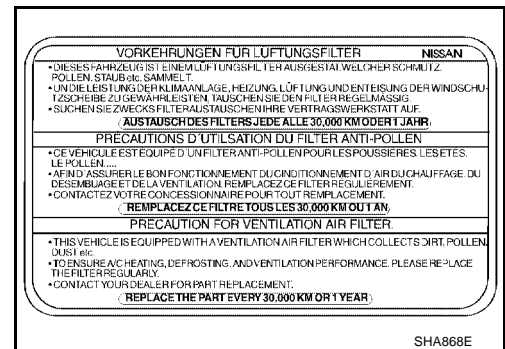
EJS001H1

Air inside passenger compartment is kept clean at either recirculation or fresh mode by installing in-cabin microfilter into blower unit.



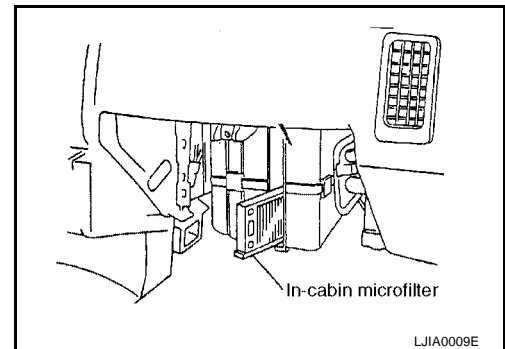
REPLACEMENT TIMING

Replace in-cabin microfilter.
Refer to [MA-7, "SCHEDULE 1"](#) and [MA-10, "SCHEDULE 2"](#).
Caution label is affixed inside the glove box.



REPLACEMENT PROCEDURES

1. Remove glove box assembly. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#).
2. Remove in-cabin microfilter cover.
3. Take out the i-cabin microfilter from blower unit.
4. Replace with new in-cabin microfilter and reinstall on blower unit.
5. Reinstall glove box assembly.



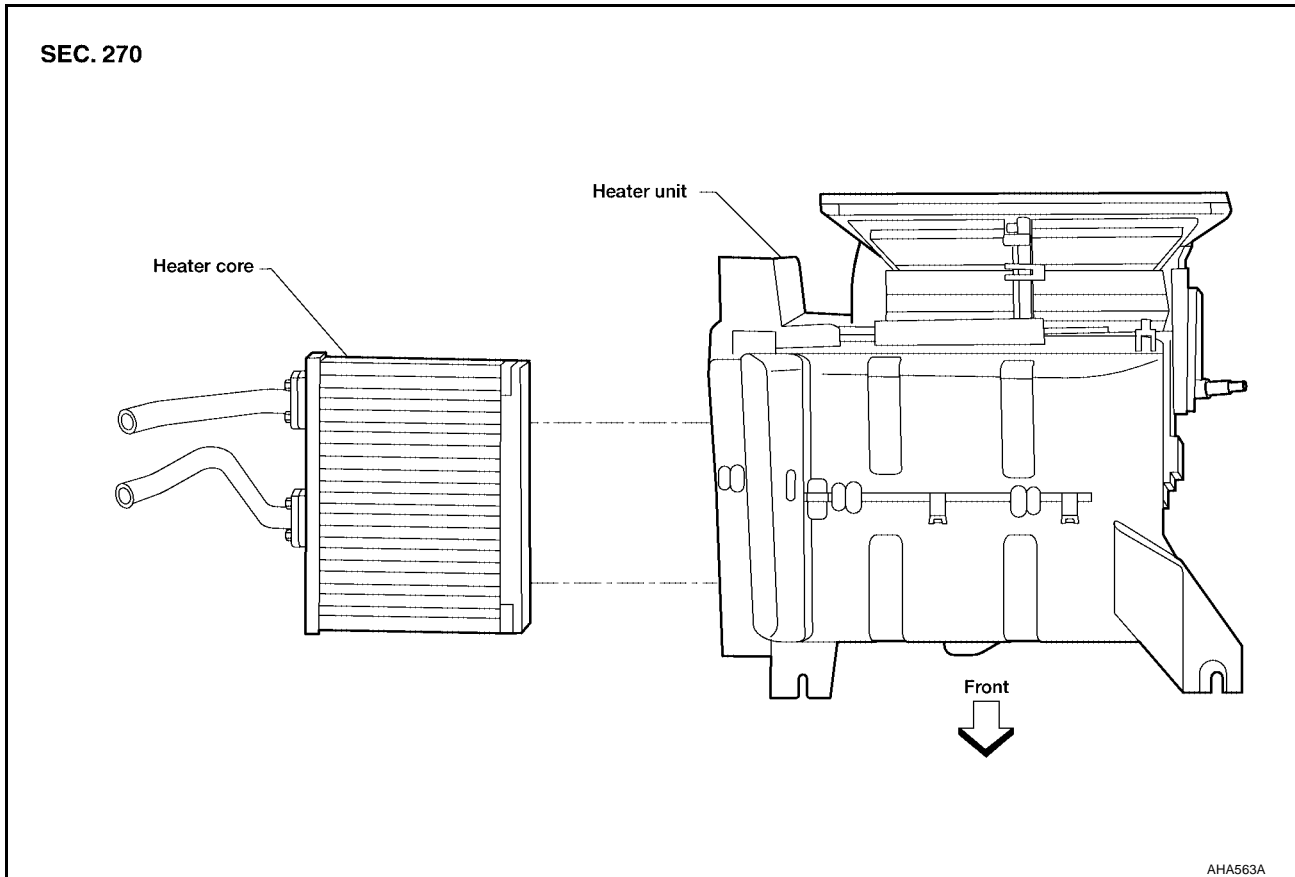
HEATER CORE

HEATER CORE

PFP:27140

Removal and Installation

EJS001GM



REMOVAL

1. Drain cooling system. Refer to [MA-16, "DRAINING ENGINE COOLANT"](#) , (KA24DE models) or [MA-26, "DRAINING ENGINE COOLANT"](#) (VG33E and VG33ER models).
2. Disconnect the two heater hoses from the engine compartment side.
3. Remove the cooling unit. Refer to [MTC-73, "REMOVAL"](#) .
4. Remove the steering member assembly. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) .
5. Remove the heater unit.
6. Remove the heater core.

INSTALLATION

Installation is the reverse order of removal. Inspect system for coolant leaks. Refer to [MA-17, "REFILLING ENGINE COOLANT"](#) (KA24DE models) or [MA-26, "REFILLING ENGINE COOLANT"](#) (VG33E and VG33ER models).

REFRIGERANT LINES

REFRIGERANT LINES

PFP:92600

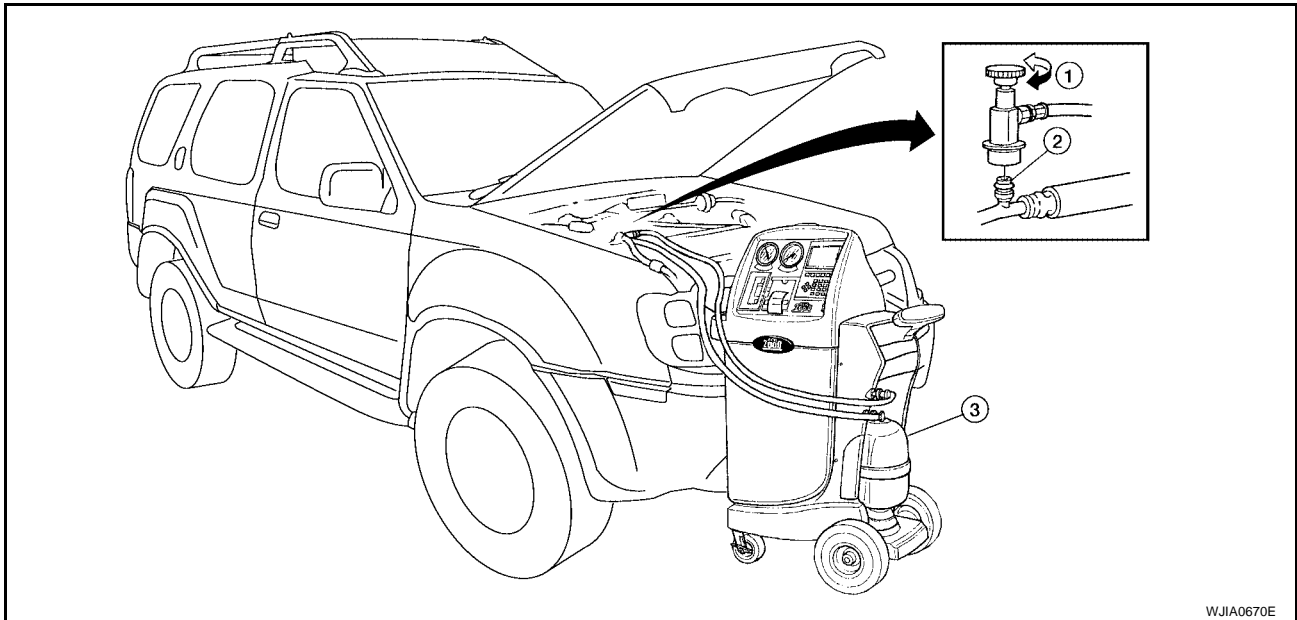
HFC-134a (R-134a) Service Procedure SETTING OF SERVICE TOOLS AND EQUIPMENT

EJS00190

WARNING:

Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Remove R-134a from the A/C system using certified service equipment meeting requirements of SAE J2210 (R-134a recycling equipment) or J2209 (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.

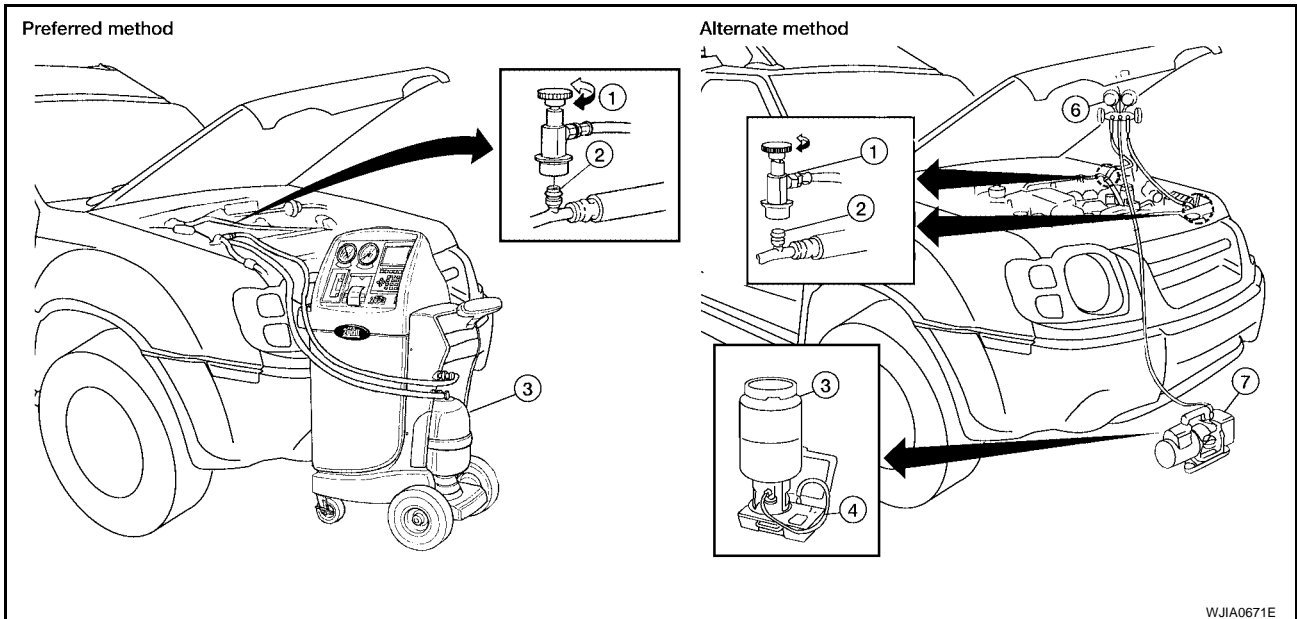
Discharging Refrigerant



WJIA0670E

1. Shut-off valve
2. A/C service valve
3. Recovery/Recycling equipment ACR2000 (J-43600) with refrigerant identifier

Evacuating System and Charging Refrigerant



WJIA0671E

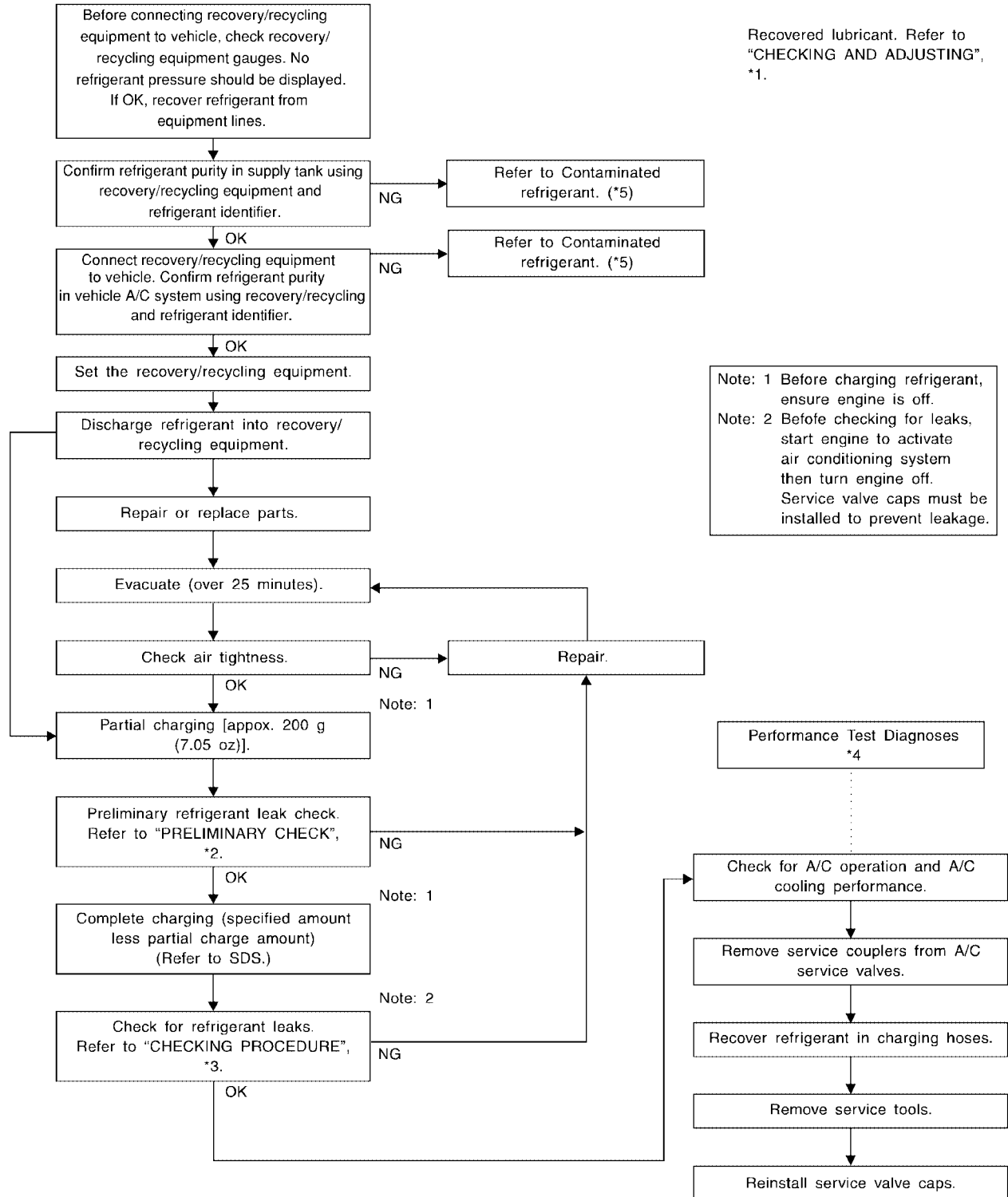
1. Shut-off valve
2. A/C service valve
3. Recovery/Recycling equipment ACR2000 (J-43600) with refrigerant identifier
4. Refrigerant container (HFC-134a)
5. Weight scale (J-39650)
6. Manifold gauge set (J-39183)
7. Evacuating vacuum pump (J-39699)

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REFRIGERANT LINES



*1 [MTC-20, "CHECKING AND ADJUSTING"](#)

*2 [MTC-74, "PRELIMINARY CHECK"](#)

*3 [MTC-75, "CHECKING PROCEDURE"](#)

*4 [MTC-52, "PERFORMANCE TEST DIAGNOSIS"](#)

*5 [MTC-3, "Contaminated Refrigerant"](#)

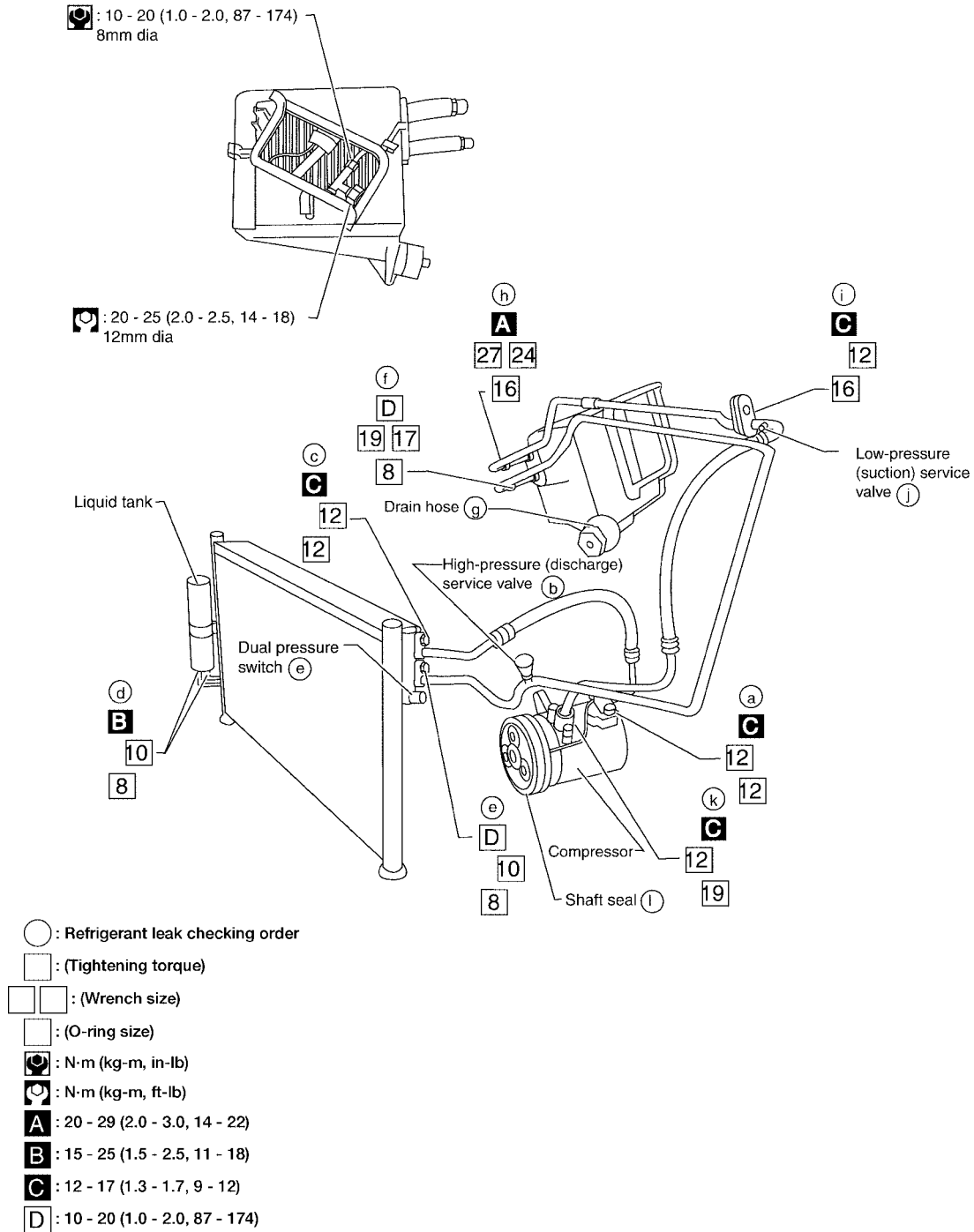
WJIA0530E

REFRIGERANT LINES

Components

EJS001GN

SEC. 271 • 274 • 276



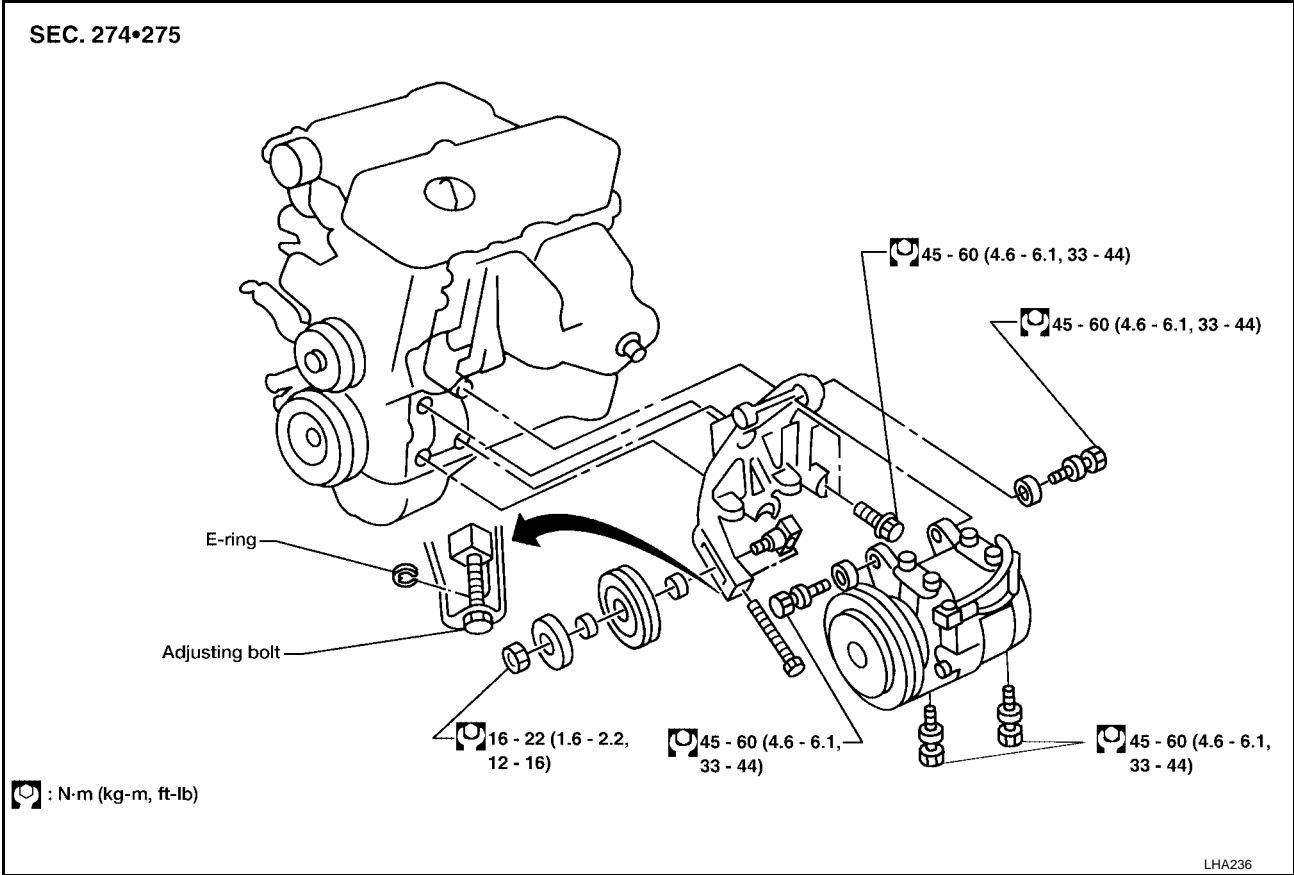
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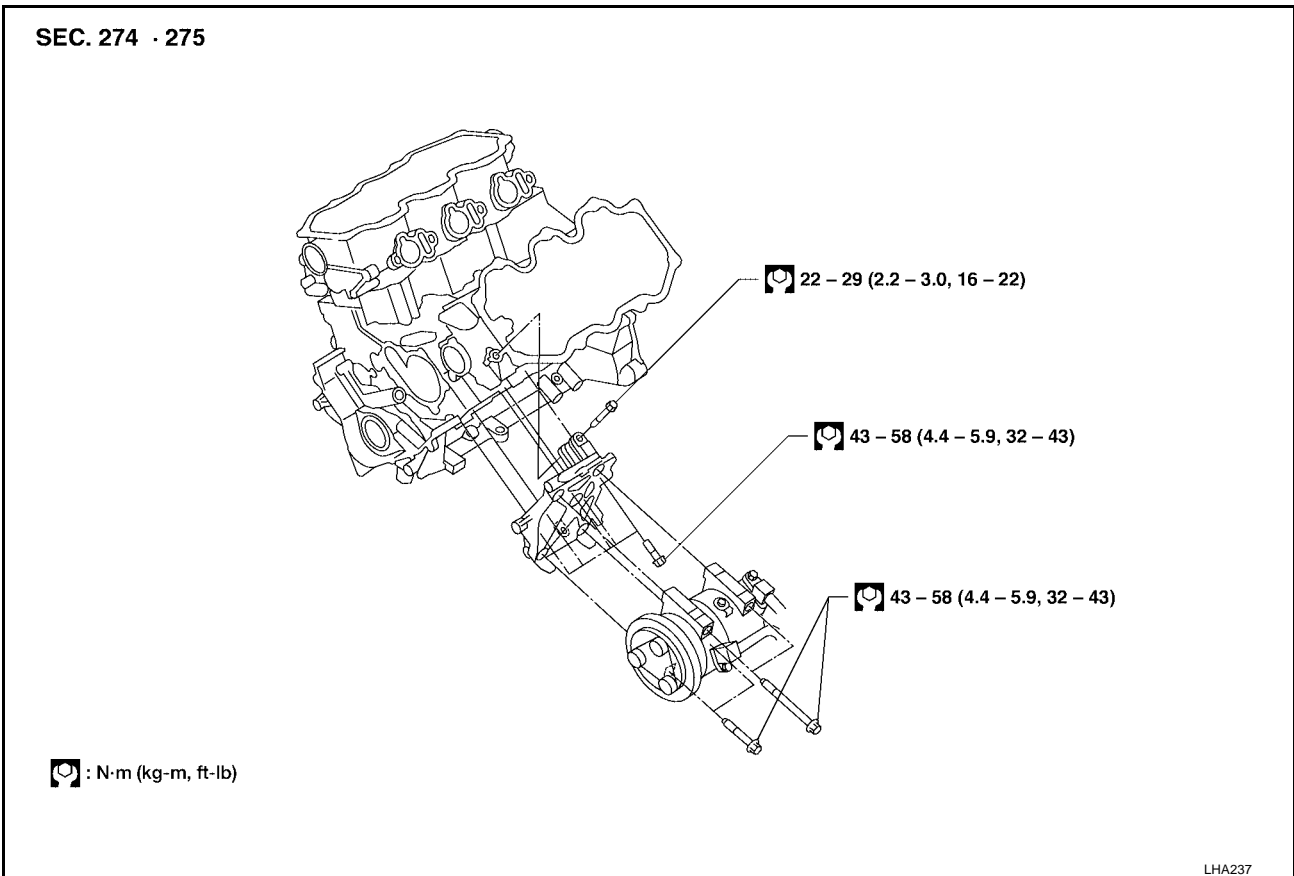
REFRIGERANT LINES

Removal and Installation for Compressor KA24DE MODELS

EJS001GO



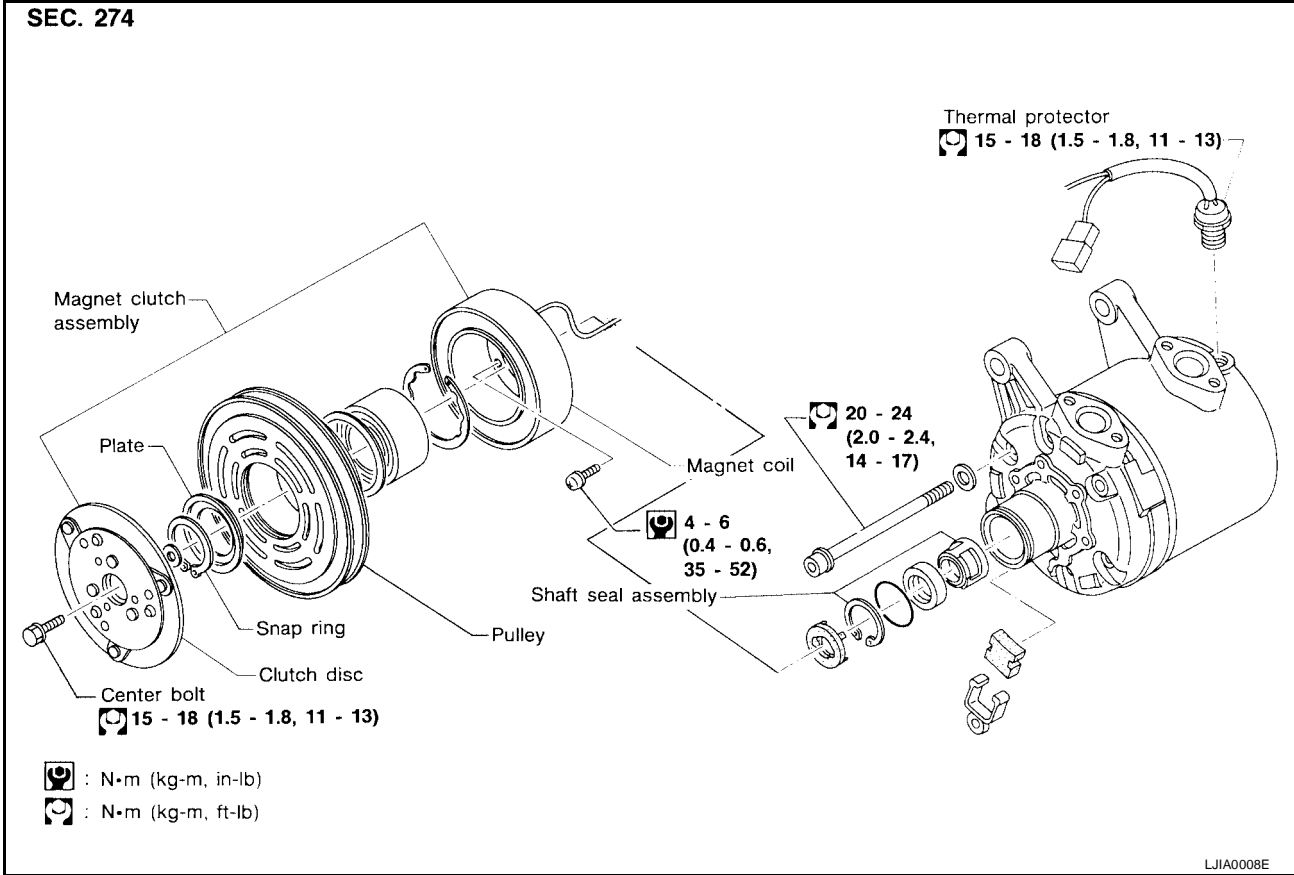
VG33E AND VG33ER MODELS



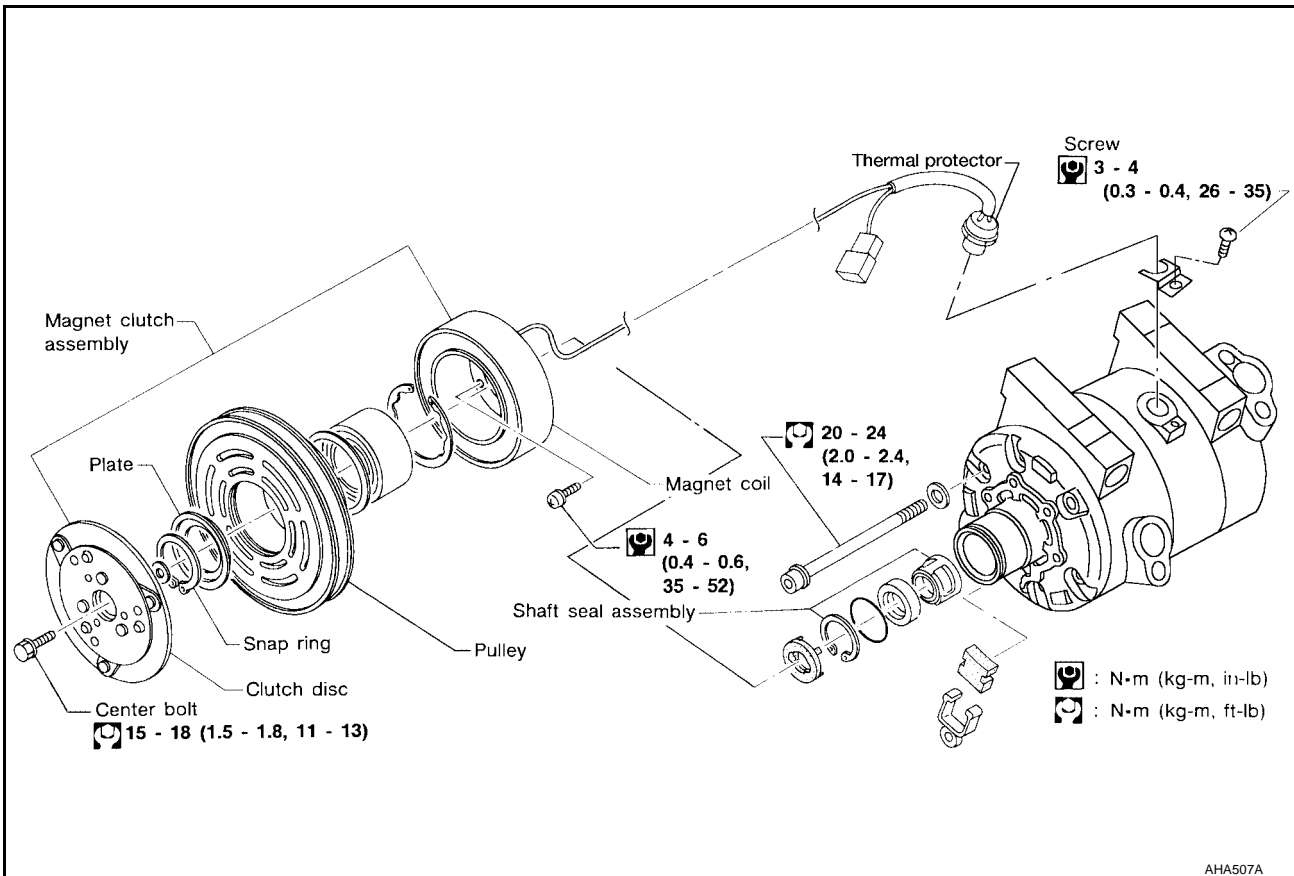
REFRIGERANT LINES

Removal and Installation for Compressor Clutch KA24DE MODELS

EJS001GP



VG33E AND VG33ER MODELS



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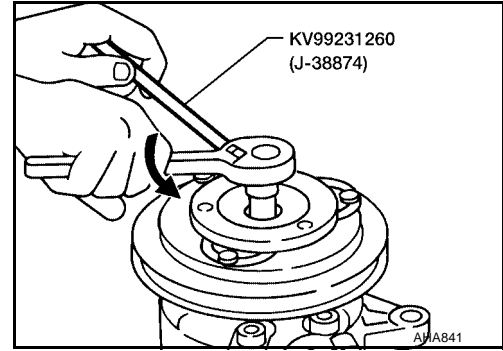
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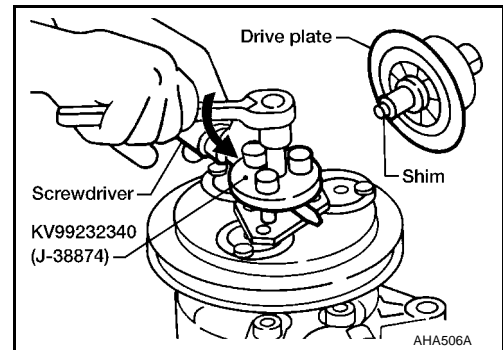
REFRIGERANT LINES

REMOVAL

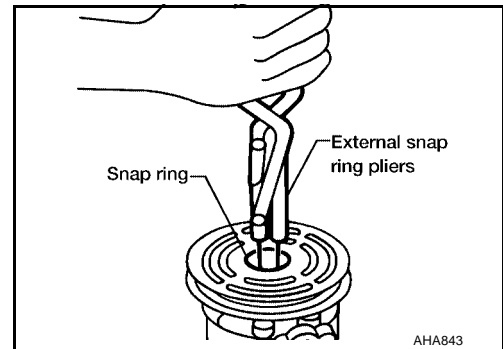
- When removing center bolt, hold clutch disc with clutch disc wrench.



- 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. Then, tighten the center bolt to remove the drive plate. While tightening the center bolt, insert a round bar (screwdriver, etc.) between two of the pins (as shown in the figure) to prevent drive plate rotation. After removing the drive plate, remove the shims from either the drive shaft or the drive plate.



- Remove the snap ring using external snap ring pliers.

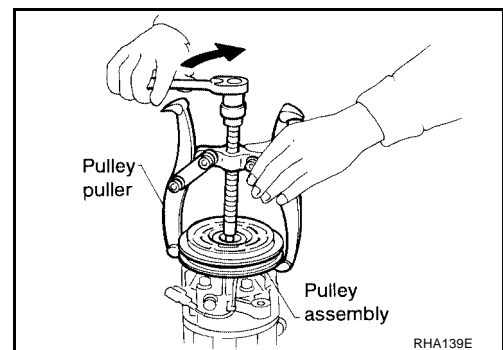


- For pulley removal use pulley puller. Use a commercially available pulley puller. Position the center of the puller on the end of the drive shaft. Remove the pulley assembly with the puller.

For Pressed Pulleys:

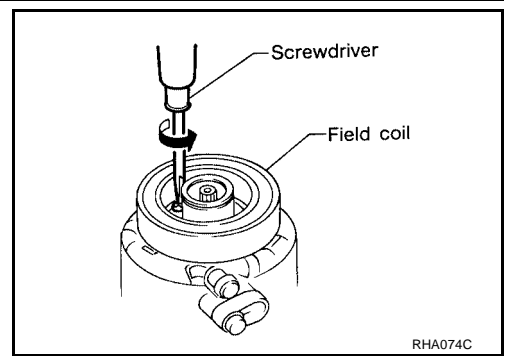
To prevent deformation of the pulley groove, the puller claws should be hooked under (not into) the pulley groove.

- Remove the field coil harness clip using a screwdriver.



REFRIGERANT LINES

- Remove the three field coil fixing screws and remove the field coil.

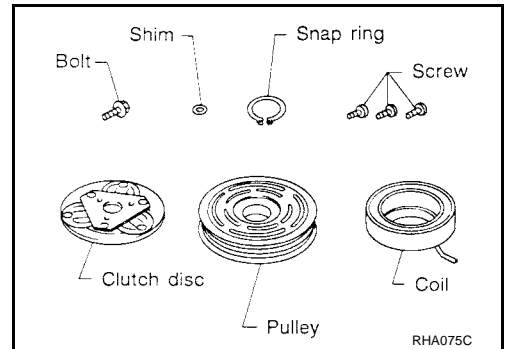


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INSPECTION

Clutch Disc

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



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Pulley

Check the appearance of the pulley assembly. If 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.

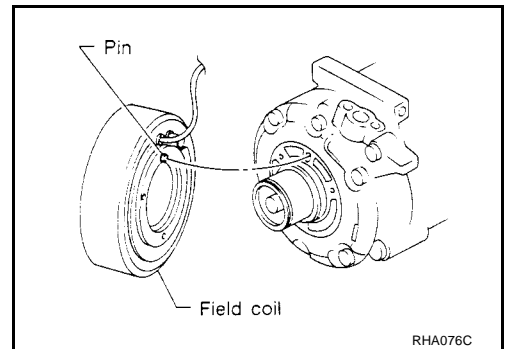
Coil

Check coil for loose connection or cracked insulation.

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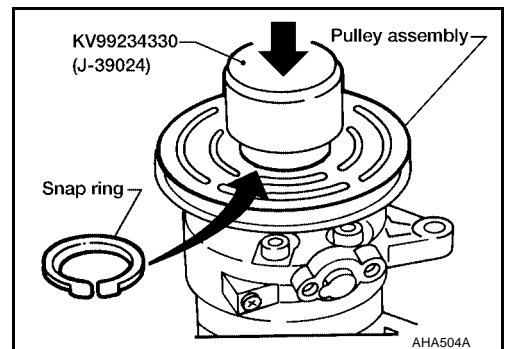
INSTALLATION

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



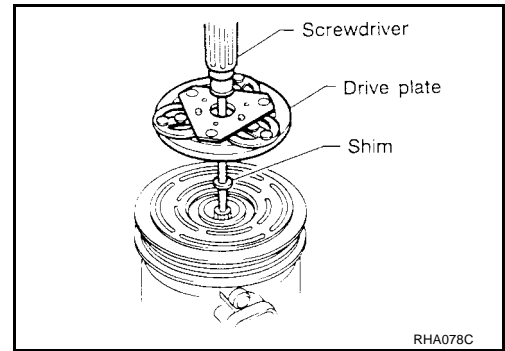
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- Install the pulley assembly using the installer and a hand press, and then install the snap ring using snap ring pliers.

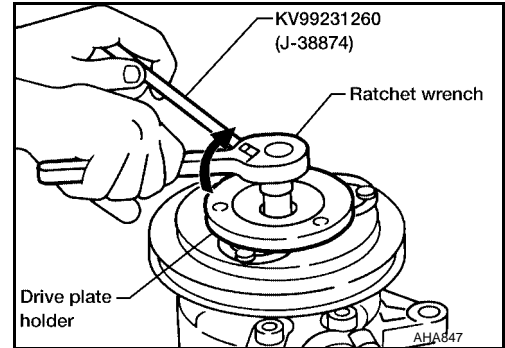


REFRIGERANT LINES

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



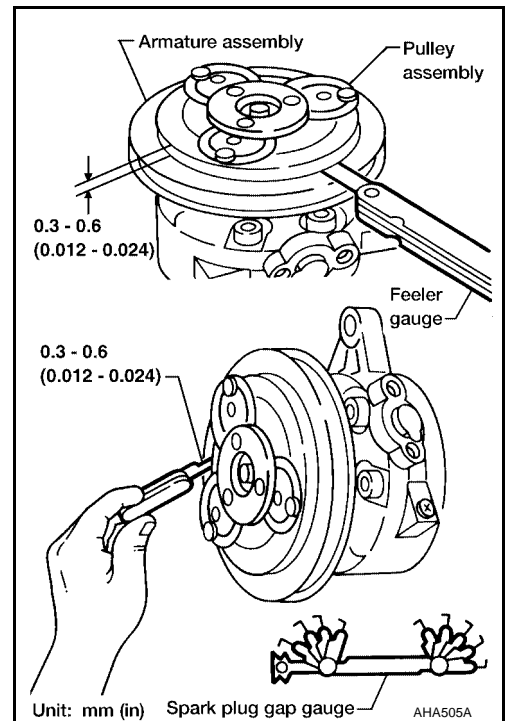
- Using the holder to prevent drive plate rotation, tighten the bolt to 12 to 15 N·m (1.2 to 1.5 kg·m, 9 to 11 ft·lb) torque.
- **After tightening the bolt, check that the pulley rotates smoothly.**



- Check clearance all the way around the clutch disc.

Disc-to-pulley clearance : 0.3 - 0.6 mm (0.012 - 0.024 in)

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



Break-in Operation

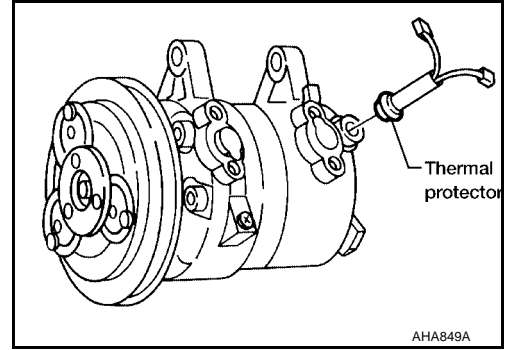
When replacing magnet clutch assembly, always conduct the break-in operation. This is done by engaging and disengaging the clutch about 30 times. Break-in operation raises the level of transmitted torque.

REFRIGERANT LINES

Thermal Protector Inspection

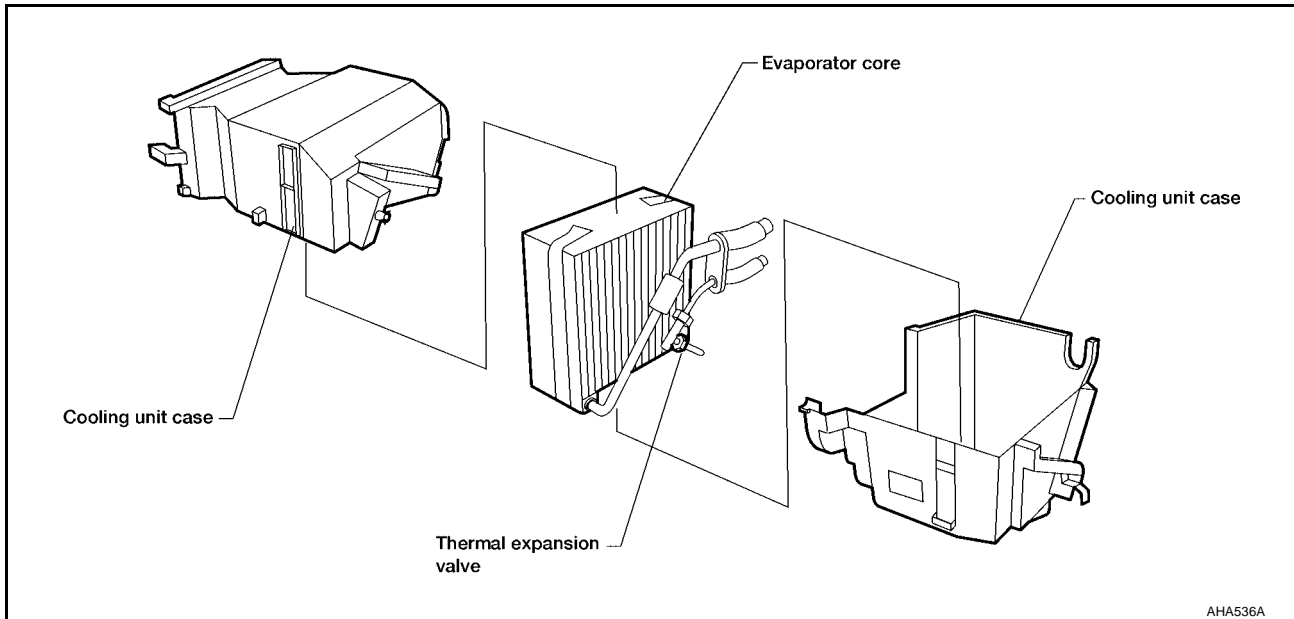
EJS001GT

- When servicing, do not allow foreign matter to get into compressor.
- Check continuity between two terminals.



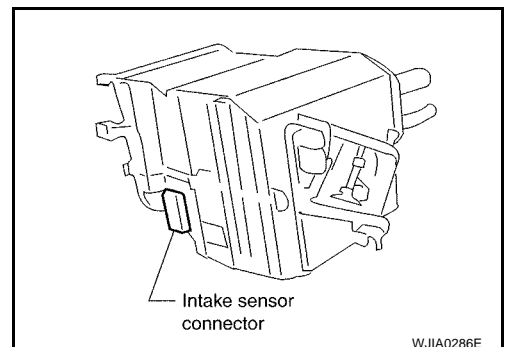
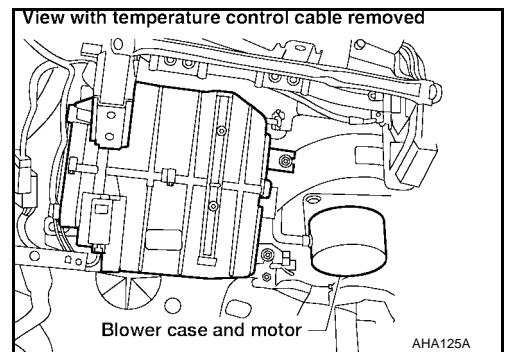
Removal and Installation for Evaporator

EJS001GU



REMOVAL

1. Discharge the A/C system. Refer to [MTC-65, "Discharging Refrigerant"](#).
2. Disconnect the two evaporator core refrigerant lines from the engine compartment side.
 - Cap the refrigerant lines to prevent moisture from entering the system.
3. Remove the glove box and mating trim. Refer to [IP-10, "Removal and Installation"](#).
4. Disconnect the intake sensor connector.
5. Remove the cooling unit.
6. Separate the cooling unit case, and remove the evaporator.



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REFRIGERANT LINES

INSTALLATION

Installation is the reverse order of removal.

Recharge the A/C system.

Inspect system for refrigerant leaks. Refer to [MTC-74, "Checking for Refrigerant Leaks"](#) .

Checking for Refrigerant Leaks

EJS0019X

PRELIMINARY CHECK

- 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 25 - 50 mm (1 - 2 in)/sec. and no further than 6 mm (1/4 in) from the component.

NOTE:

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

Electronic Refrigerant Leak Detector

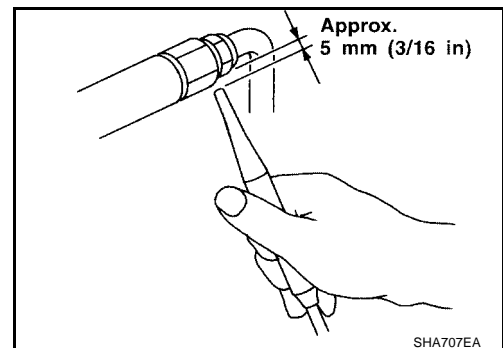
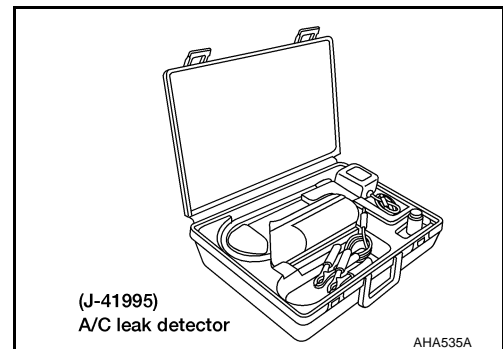
EJS0019Y

PRECAUTIONS FOR HANDLING LEAK DETECTOR

When performing a refrigerant leak check, use a J-41995 A/C leak detector or equivalent. Ensure that the instrument is calibrated and set properly per the operating instructions.

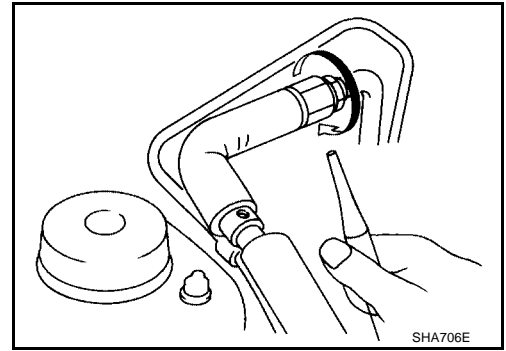
The leak detector is a delicate device. In order to use the leak detector properly, read the operating instructions and perform any specified maintenance.

- **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 any substance. This can also cause false readings and may damage the detector.**
1. Position probe approximately 5 mm (3/16 in) away from point to be checked.

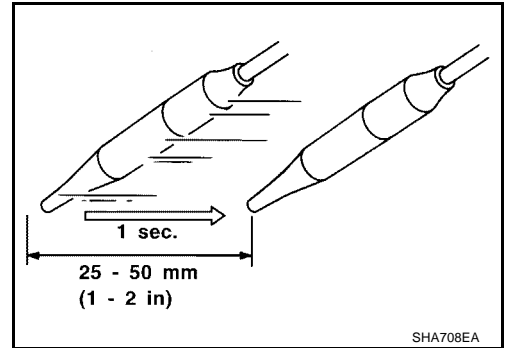


REFRIGERANT LINES

- When testing, circle each fitting completely with probe.



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



CHECKING PROCEDURE

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

- Turn engine off.
- Connect a suitable A/C manifold gauge set to the A/C service ports.
- 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. Refer to [MTC-65, "HFC-134a \(R-134a\) Service Procedure"](#).

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).

- Conduct the leak test from the high side (compressor discharge a to evaporator f) to the low side (evaporator drain hose g to compressor suction k). Refer to [MTC-67, "Components"](#). Perform a leak check for the following areas carefully. Clean the component to be checked and move the leak detector 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 pressure switch, tube fitting, weld seams and the fusible plug mounts.

- **Service valves**

Check all around the service valves. Ensure service valve caps are secured on the service valves (to prevent leaks).

NOTE:

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

- **Cooling unit (Evaporator)**

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

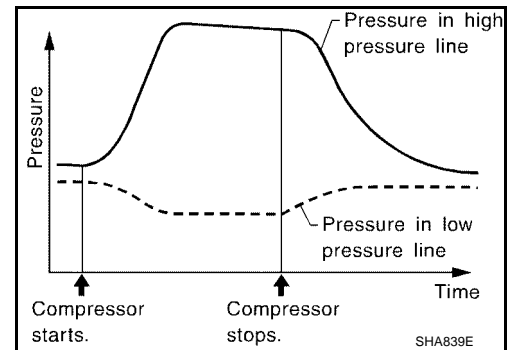
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REFRIGERANT LINES

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 and connection.
If no leaks are found, perform steps 7 through 10.
7. Start engine.
8. Set the heater A/C control as follows:
 - a. A/C switch ON
 - b. Face mode
 - c. Recirculation switch ON
 - 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 the recovery/recycling equipment to the vehicle, check the recovery/recycling equipment gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover refrigerant from equipment lines and then check refrigerant purity.
12. Confirm refrigerant purity in supply tank using the recovery/recycling equipment and refrigerant identifier. Refer to [MTC-3, "Contaminated Refrigerant"](#) .
13. Confirm refrigerant purity in vehicle A/C system using the recovery/recycling equipment and refrigerant identifier. Refer to [MTC-3, "Contaminated Refrigerant"](#) .
14. Discharge A/C system using approved recovery/recycling equipment. Refer to [MTC-65, "Discharging Refrigerant"](#) . Repair the leaking fitting or component as necessary.
15. Evacuate and recharge A/C system. Refer to [MTC-65, "Evacuating System and Charging Refrigerant"](#) . Perform the leak test to confirm no refrigerant leaks.
16. Conduct A/C performance test to ensure system works properly.

Fluorescent Dye Leak Detector

EJS0019Z

PRECAUTIONS FOR FLUORESCENT DYE LEAK DETECTION

- 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 (J-41995) to pinpoint refrigerant leaks.
- For your safety and your customer's satisfaction, read and follow all manufacturer's operating instructions and precautions prior to performing the work.
- Refer to [MTC-4, "Precautions for Leak Detection Dye"](#) .

CHECKING SYSTEM FOR LEAKS USING THE FLUORESCENT LEAK DETECTOR

1. Check A/C system for leaks using the UV lamp and safety glasses (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 TXV) 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, then check the cloth with the UV lamp for dye residue.
3. Confirm any suspected leak areas with an approved electronic refrigerant leak detector.
4. After the leak is repaired, remove any residual dye using dye cleaner (J-43872) to prevent future misdiagnosis.

REFRIGERANT LINES

5. Perform a system performance check and verify the leak repair with an approved electronic refrigerant leak detector.

DYE INJECTION

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

Refer to [MTC-4, "Precautions for Leak Detection Dye"](#).

1. Check A/C system static (at rest) Pressure. Pressure must be at least 345 kPa (3.52 kg/cm², 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 not to allow dye to spray or drip when disconnecting the injector from the system.

NOTE:

If repairing 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.

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SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications COMPRESSOR

EJS001A4

Model	DKV-14C
Type	Vane rotary
Displacement cm ³ (cu in)/rev.	140 (8.54)
Direction of rotation	Clockwise (Viewed from drive end)
Drive belt	A type

LUBRICANT

Model	ZEXEL make DKV-14C
Name	Nissan A/C System Lubricant PAG Type R
Part No.*	KLH00-PAGR0
Capacity (total in system) mℓ (US fl oz, Imp fl oz)	200 (6.8, 7.0)

*: Always check with the Parts Department for the latest parts information.

REFRIGERANT

Type	R-134a	
Capacity	kg (lb)	0.60 - 0.70 (1.32 - 1.54)
	g (oz)	600 - 700 (21.16 - 24.69)

Inspection and Adjustment ENGINE IDLING SPEED (WHEN A/C IS ON)

EJS001A5

- Refer to [EC-35](#) (KA24DE models), [EC-596](#) (VG33E models), or [EC-1196](#) (VG33ER models) "Idle Speed/Ignition Timing/Idle Mixture Ratio Adjustment".

BELT TENSION

- Refer to [MA-15, "Checking Drive Belts"](#) (KA24DE models) or [MA-24, "Checking Drive Belts"](#) (VG33E or VG33ER models).

MAGNET CLUTCH

Model	DKV-14C
Clutch disc-pulley clearance mm (in)	0.3 - 0.6 (0.012 - 0.024)