

# HEATER & AIR CONDITIONER

## SECTION **HA**

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## PRECAUTIONS

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

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

NEHA0060

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER" used along with a seat belt, helps to reduce the risk or severity of injury to the driver and front passenger in a frontal collision. The Supplemental Restraint System consists of air bag modules (located in the center of the steering wheel and in the instrument panel on the passenger side), seat belt pre-tensioners, a diagnosis sensor unit, warning lamp, wiring harness, and spiral cable.

The vehicle (except Crew Cab model) is equipped with a passenger air bag deactivation switch. Because no rear seat exists where a rear-facing child restraint can be placed, the switch is designed to turn off the passenger air bag so that a rear-facing child restraint can be used in the front passenger seat. The switch is located in the center of the instrument panel, near the ashtray. When the switch is turned to the ON position, the passenger air bag is enabled and could inflate in a frontal collision. When the switch is turned to the OFF position, the passenger air bag is disabled and will not inflate in a frontal collision. A passenger air bag OFF indicator on the instrument panel lights up when the passenger air bag is switched OFF. The driver air bag always remains enabled and is not affected by the passenger air bag deactivation switch.

Information necessary to service the system safely is included in the **RS 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 should be performed by an authorized NISSAN 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 RS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. Spiral cable and wiring harnesses (except "SEAT BELT PRE-TENSIONER") covered with yellow insulation either just before the harness connectors or for the complete harness are related to the SRS.
- The vehicle (except Crew Cab model) is equipped with a passenger air bag deactivation switch which can be operated by the customer. When the passenger air bag is switched OFF, the passenger air bag is disabled and will not inflate in a frontal collision. When the passenger air bag is switched ON, the passenger air bag is enabled and could inflate in a frontal collision. After SRS maintenance or repair, make sure the passenger air bag deactivation switch is in the same position (ON or OFF) as when the vehicle arrived for service.

# PRECAUTIONS

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

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

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### 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 HA-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:
  - a) When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.
  - b) 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.
  - c) 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.
  - d) 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.
  - e) Do not allow lubricant (Nissan A/C System Oil Type R) to come in contact with styrofoam parts. Damage may result.

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## 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 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.

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## General Refrigerant Precautions

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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

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# PRECAUTIONS

## Precautions for Leak Detection Dye

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

NEHA0292

- 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.

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

LHA242

### A/C Identification Label

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

#### NOTE:

Vehicles with factory installed fluorescent dye have a green label.

### Precautions for Refrigerant Connection

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

- Thermal expansion valve connections.

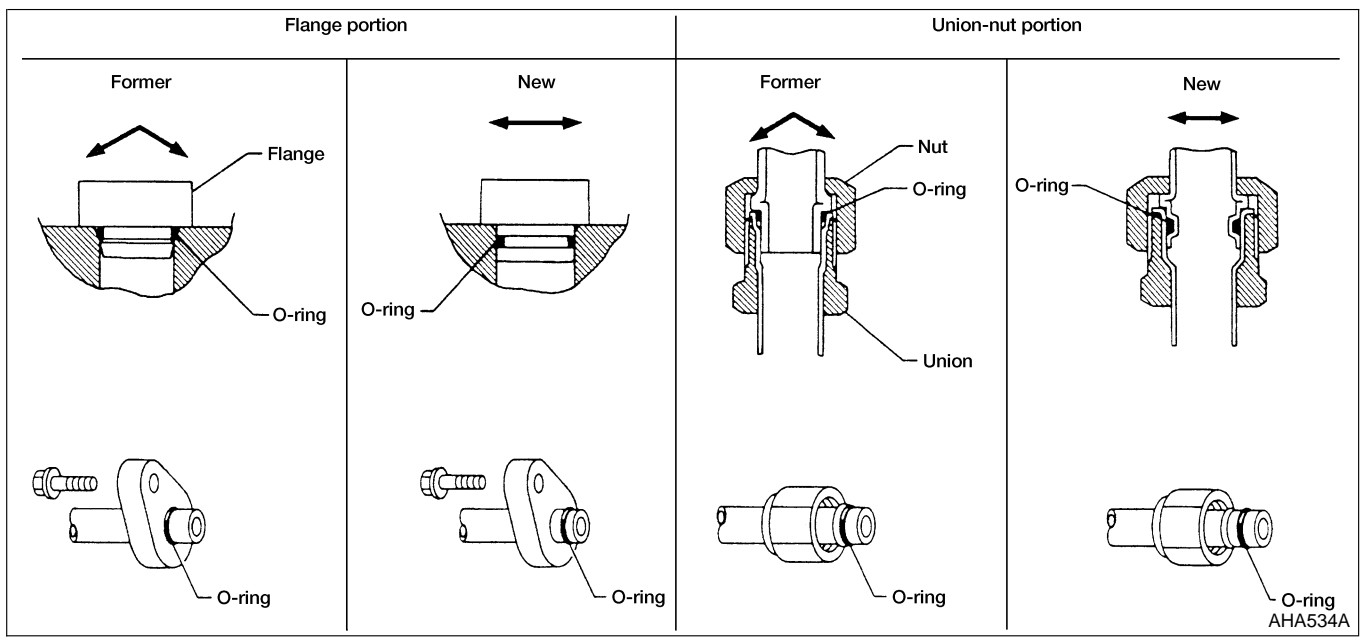
#### FEATURES OF NEW TYPE REFRIGERANT CONNECTION

NEHA0063S01

- 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.

# PRECAUTIONS

Precautions for Refrigerant Connection (Cont'd)



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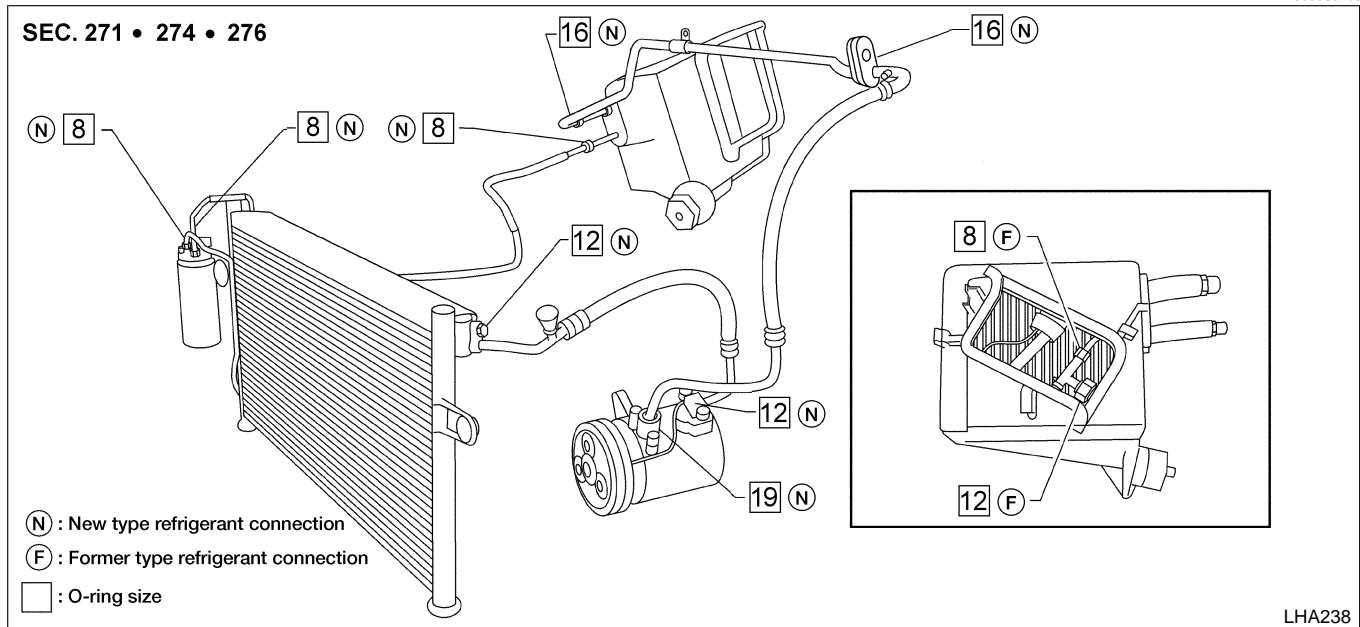
# PRECAUTIONS

Precautions for Refrigerant Connection (Cont'd)

## O-RING AND REFRIGERANT CONNECTION KA24DE Models

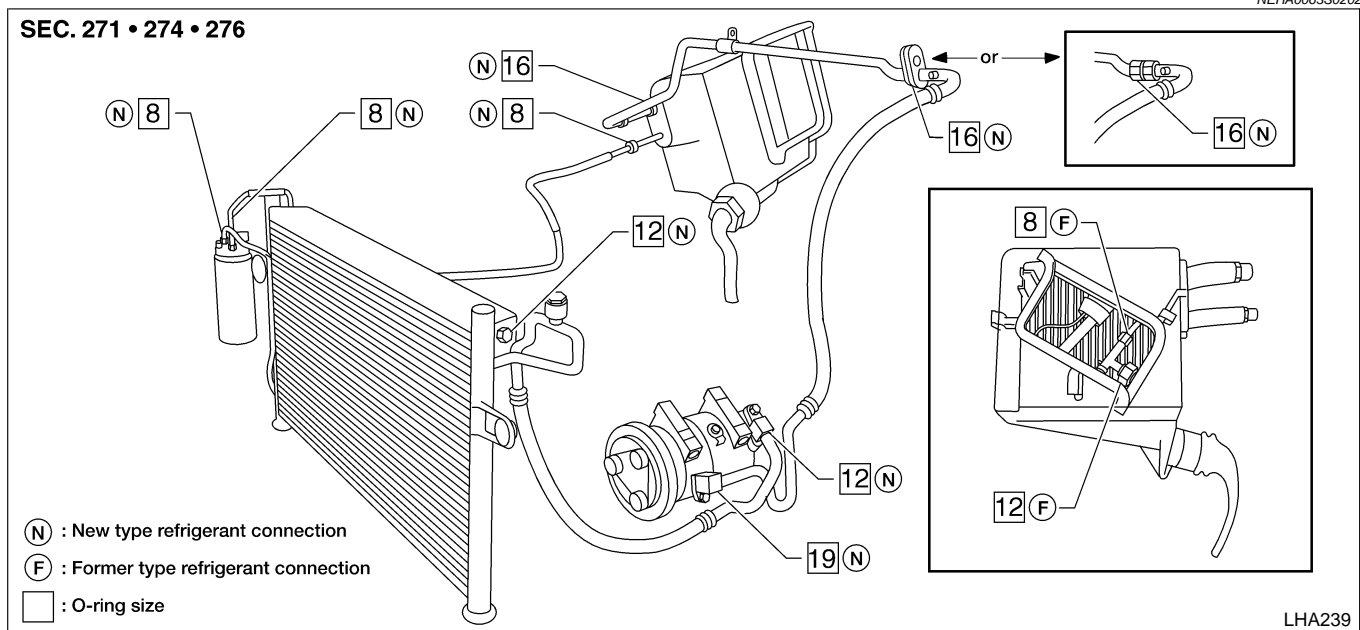
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NEHA0063S0203



## VG33E and VG33ER Models

NEHA0063S0202



### 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

Precautions for Refrigerant Connection (Cont'd)

## O-Ring Part Numbers and Specifications

-NEHA0063S0201

	Conne- tion type	O-ring size	Part No.*	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-PAGR0
- 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.
- 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.

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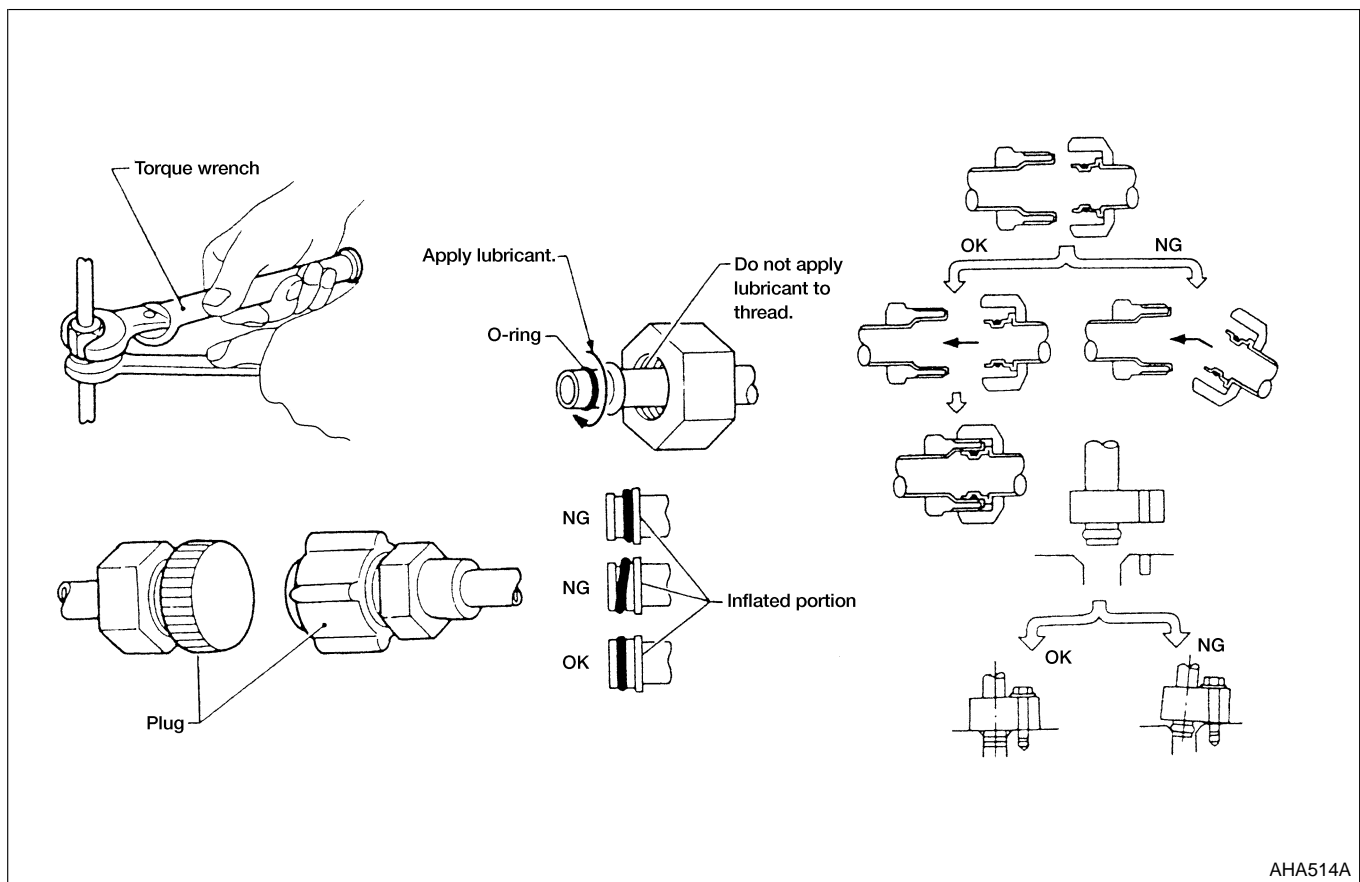
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# PRECAUTIONS

## Precautions for Servicing Compressor



## Precautions for Servicing Compressor

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- 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, follow "Maintenance of Lubricant Quantity in Compressor" exactly. Refer to "Maintenance of Lubricant Quantity in Compressor", HA-68.
- 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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NEHA0065S01

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

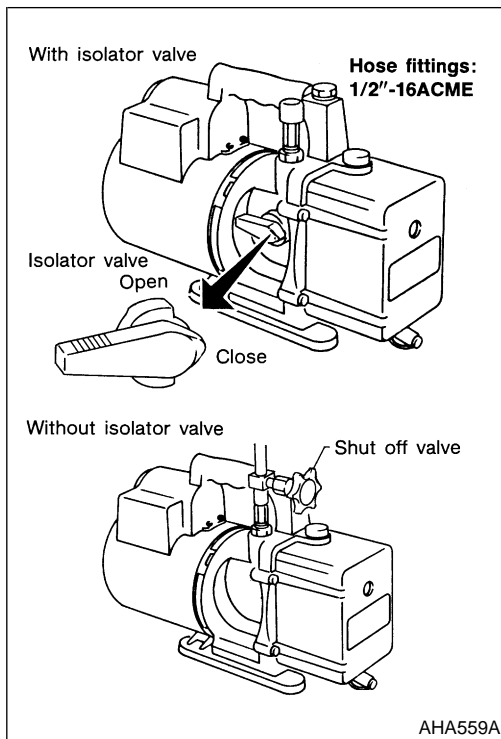
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Follow the manufacturer's instructions for tester operation and tester maintenance.



# PRECAUTIONS

Precautions for Service Equipment (Cont'd)



## VACUUM PUMP

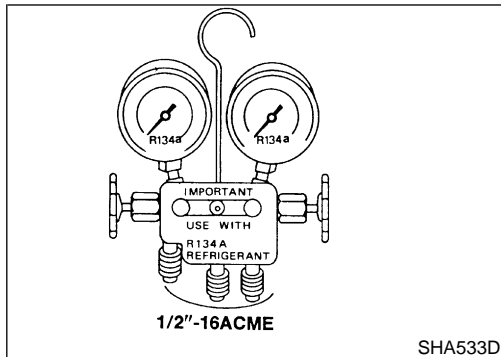
NEHA0065S03

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.

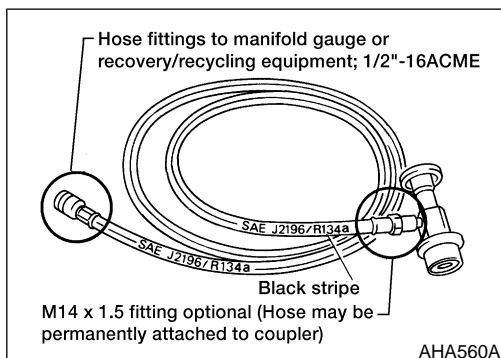
Some one-way valves open when vacuum is applied and close under a no vacuum condition. Such valves may restrict the pump's ability to pull a deep vacuum and are not recommended.



## MANIFOLD GAUGE SET

NEHA0065S04

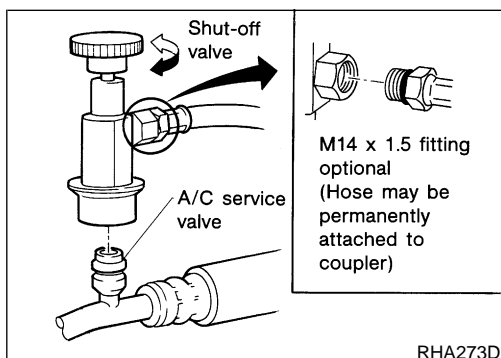
Be certain that the gauge face indicates R-134a or 134a. Make sure the gauge set has 1/2" ACME threaded connections for service hoses. Confirm the set has been used only with refrigerant HFC-134a (R-134a) along with specified lubricant.



## SERVICE HOSES

NEHA0065S05

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



## SERVICE COUPLERS

NEHA0065S06

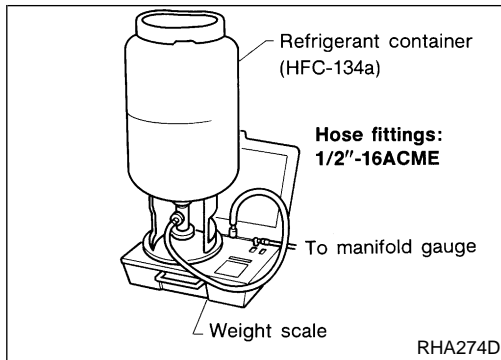
Never attempt to connect HFC-134a (R-134a) service couplers to an CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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

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## PRECAUTIONS

### Precautions for Service Equipment (Cont'd)



### REFRIGERANT WEIGHT SCALE

NEHA0065S07

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

NEHA0065S10

Calibrate the scale every 3 months.

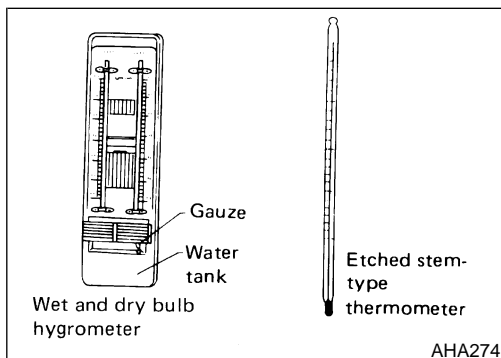
To calibrate the weight scale on the ACR4 (J-39500-NI):

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

NEHA0065S08

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.



### THERMOMETER AND HYGROMETER

NEHA0065S09

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.

# PRECAUTIONS

## Wiring Diagrams and Trouble Diagnosis

NEHA0066

When you read wiring diagrams, refer to the following:

- Refer to **GI-11**, "HOW TO READ WIRING DIAGRAMS".
- Refer to **EL-9**, "POWER SUPPLY ROUTING" .

When you perform trouble diagnosis, refer to the following:

- Refer to **GI-34**, "How to Follow Test Groups in Trouble Diagnoses".
- Refer to **GI-23**, "HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT".

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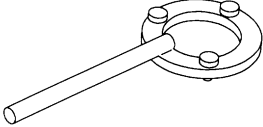
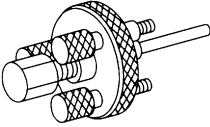
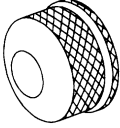
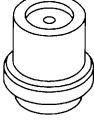
# PREPARATION

Special Service Tools

## 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	 A wrench with a long handle and a circular head with four pins. NT204	Removing shaft nut and clutch disc
KV99232340 (J-38874) Clutch disc puller	 A tool with a central shaft and four threaded ends with conical tips. NT206	Removing clutch disc
KV99234330 (J-39024) Pulley installer	 A cylindrical tool with a textured outer ring. NT207	Installing pulley
KV99233130 (J-39023) Pulley puller	 A cylindrical tool with a central hole and a flange. NT208	Removing pulley

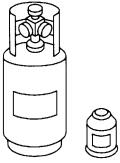

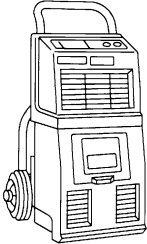
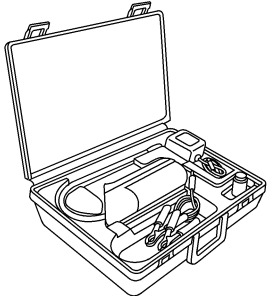
# PREPARATION

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

## 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.

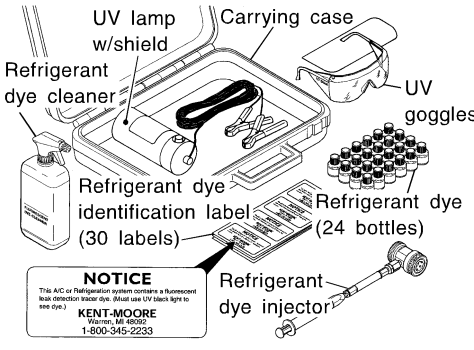
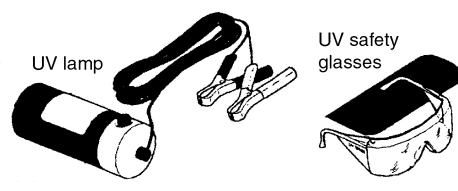
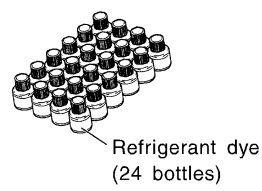
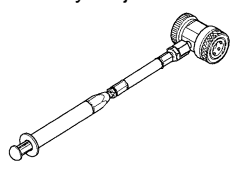

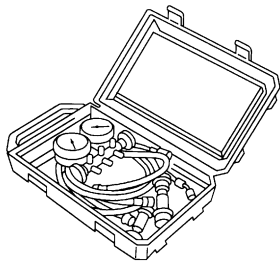
=NEHA0068

Tool number (Kent-Moore No.) Tool name	Description
HFC-134a (R-134a) refrigerant	 <p>Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size ● large container 1/2"-16 ACME</p> <p>NT196</p>
KLH00-PAGR0 ( — ) NISSAN A/C System Lubricant Type R	 <p>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)</p> <p>NT197</p>
(J-39500-NI) Recovery/Recycling Recharging equipment (ACR4)	 <p>Function: Refrigerant Recovery and Recycling and Recharging</p> <p>NT195</p>
(J-41995) Electrical leak detector	 <p>Power supply: ● DC 12 V (Cigarette lighter) Function: Checks for refrigerant leaks.</p> <p>AHA281A</p>

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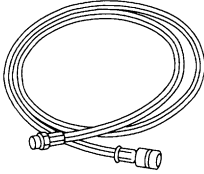
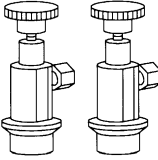
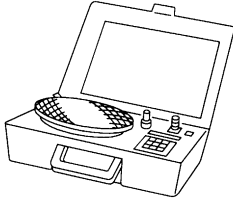
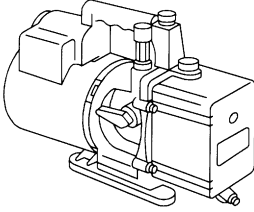
# PREPARATION

## HFC-134a (R-134a) Service Tools and Equipment (Cont'd)

Tool number (Kent-Moore No.) Tool name	Description	
(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	 <p>UV lamp w/shield</p> <p>Carrying case</p> <p>Refrigerant dye cleaner</p> <p>Refrigerant dye identification label (30 labels)</p> <p>Refrigerant dye (24 bottles)</p> <p>UV goggles</p> <p>Refrigerant dye injector</p> <p><b>NOTICE</b> This A/C or Refrigeration system contains a fluorescent leak detection tracer dye. (Must use UV black light to see dye.) <b>KENT-MOORE</b> Warren, MI 48090 1-800-345-2233</p>	Power supply: DC 12V (Battery terminal)
(J-42220) Fluorescent dye leak detector	 <p>UV lamp</p> <p>UV safety glasses</p>	Power supply: DC 12V (Battery terminal) For checking refrigerant leak when fluorescent dye is installed in A/C system. Includes: UV lamp and UV safety glasses
(J-41447) R134a Fluorescent Leak Detection Dye (Box of 24, 1/4 ounce bottles)	 <p>Dye</p> <p>Refrigerant dye (24 bottles)</p>	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	 <p>Dye injector</p>	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 cou- plers)		Identification: ● The gauge face indicates R-134a. Fitting size: Thread size ● 1/2"-16 ACME

# PREPARATION

HFC-134a (R-134a) Service Tools and Equipment (Cont'd)

Tool number (Kent-Moore No.) Tool name	Description	
Service hoses <ul style="list-style-type: none"> <li>● High side hose (J-39501-72)</li> <li>● Low side hose (J-39502-72)</li> <li>● Utility hose (J-39476-72)</li> </ul>	 <p style="text-align: center;">NT201</p> <p>Hose color:</p> <ul style="list-style-type: none"> <li>● Low hose: Blue with black stripe</li> <li>● High hose: Red with black stripe</li> <li>● Utility hose: Yellow with black stripe or green with black stripe</li> </ul> <p>Hose fitting to gauge:</p> <ul style="list-style-type: none"> <li>● 1/2"-16 ACME</li> </ul>	GI MA EM LC
Service couplers <ul style="list-style-type: none"> <li>● High side coupler (J-39500-20)</li> <li>● Low side coupler (J-39500-24)</li> </ul>	 <p style="text-align: center;">NT202</p> <p>Hose fitting to service hose:</p> <ul style="list-style-type: none"> <li>● M14 x 1.5 fitting is optional or permanently attached.</li> </ul>	EC FE
(J-39650) Refrigerant weight scale	 <p style="text-align: center;">NT200</p> <p>For measuring of refrigerant</p> <p>Fitting size: Thread size</p> <ul style="list-style-type: none"> <li>● 1/2"-16 ACME</li> </ul>	CL MT AT
(J-39649) Vacuum pump (Including the isolator valve)	 <p style="text-align: center;">NT203</p> <p>Capacity:</p> <ul style="list-style-type: none"> <li>● Air displacement: 4 CFM</li> <li>● Micron rating: 20 microns</li> <li>● Oil capacity: 482 g (17 oz)</li> </ul> <p>Fitting size: Thread size</p> <ul style="list-style-type: none"> <li>● 1/2"-16 ACME</li> </ul>	TF PD AX

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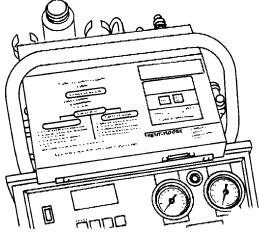
IDX

# PREPARATION

Commercial Service Tool

## Commercial Service Tool

=NEHA0067

Tool name	Description	Note
Refrigerant Identifier Equipment	 NT765	Checking refrigerant purity and for system contamination

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



## Refrigeration System

### REFRIGERATION CYCLE

NEHA0069

#### 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.

NEHA0069S01

#### 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.

NEHA0069S02

#### Refrigerant System Protection

##### Dual Pressure Switch (KA24DE Models) or Triple Pressure Switch (VG33E and VG33ER Models)

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

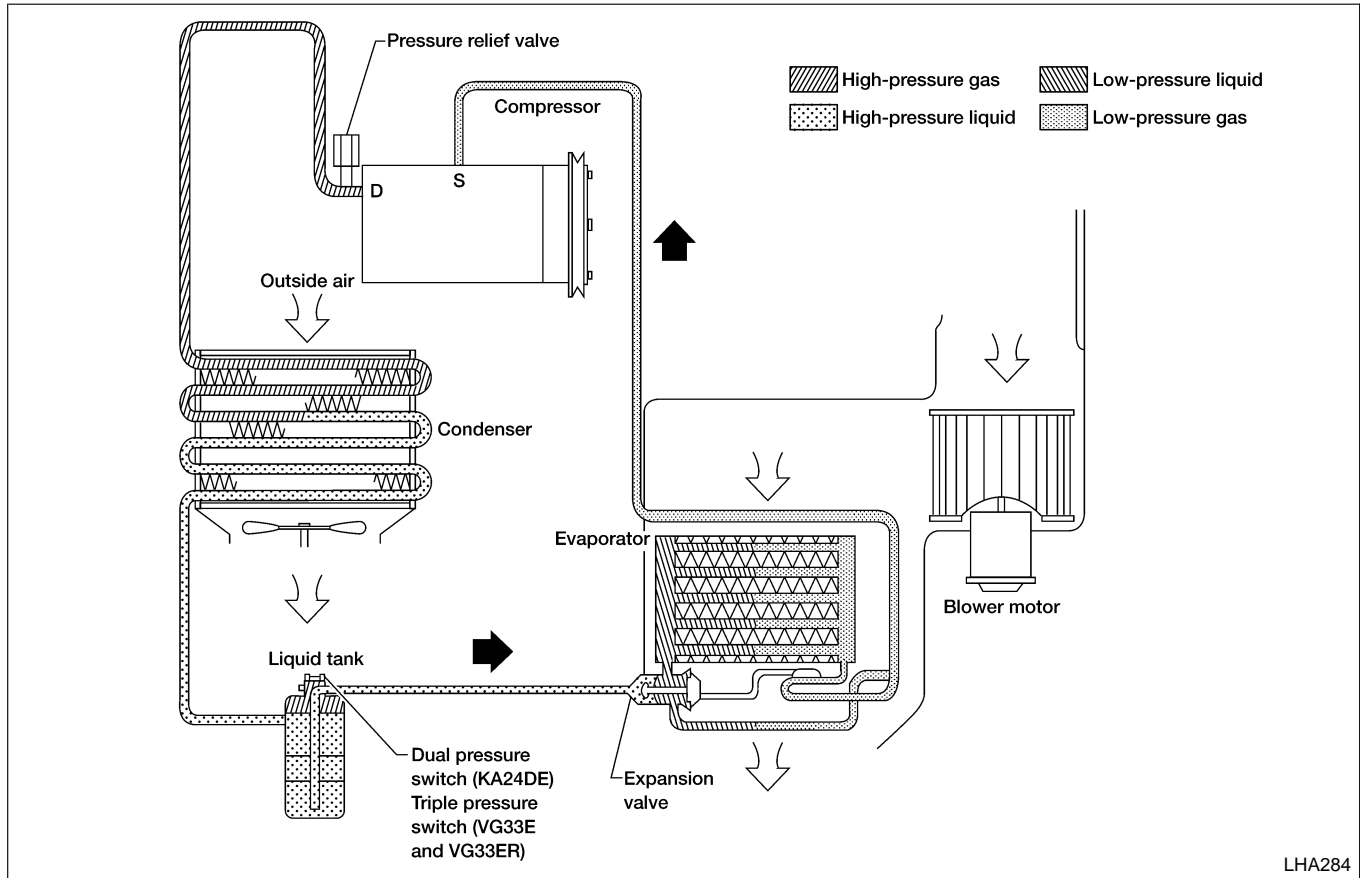
NEHA0069S03

NEHA0069S0301

#### 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/cm<sup>2</sup>, 540 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.

NEHA0069S0302



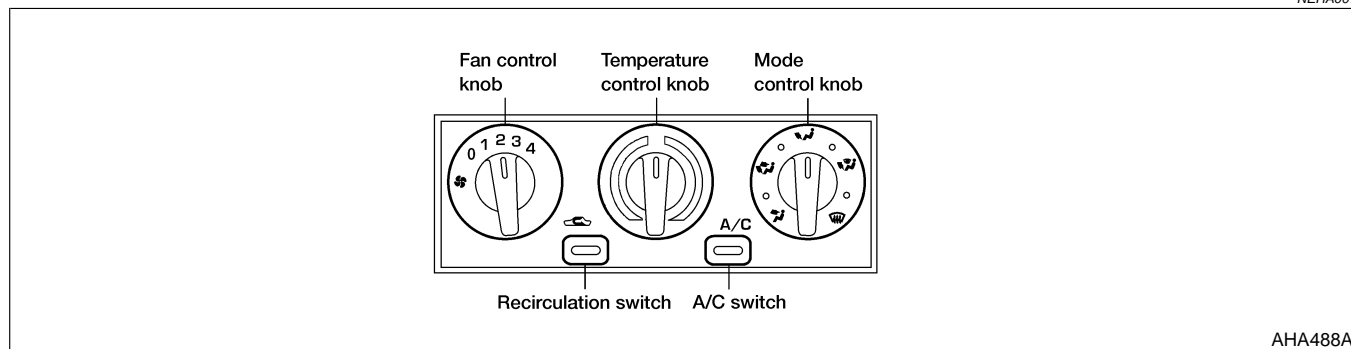
LHA284

# DESCRIPTION

Control Operation

## Control Operation

NEHA0072



AHA488A

### FAN CONTROL KNOB

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

NEHA0072S01

### MODE CONTROL KNOB

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

NEHA0072S03

### TEMPERATURE CONTROL KNOB

This knob allows adjustment of the outlet air temperature.

NEHA0072S04

### 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.

NEHA0072S05

### 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.

NEHA0072S06

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

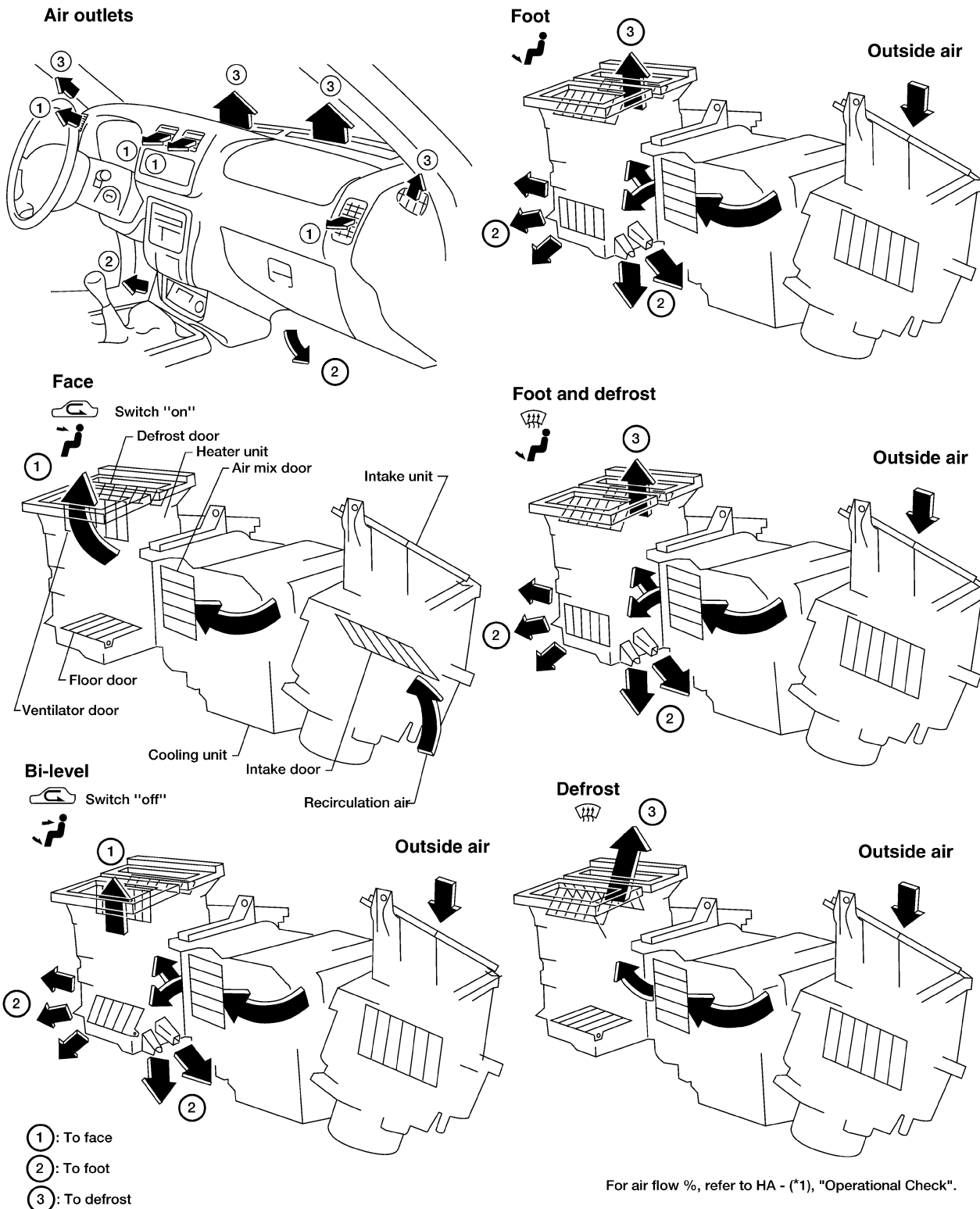
# DESCRIPTION

Discharge Air Flow

## Discharge Air Flow

NEHA0073

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WHA293

\*1 HA-29

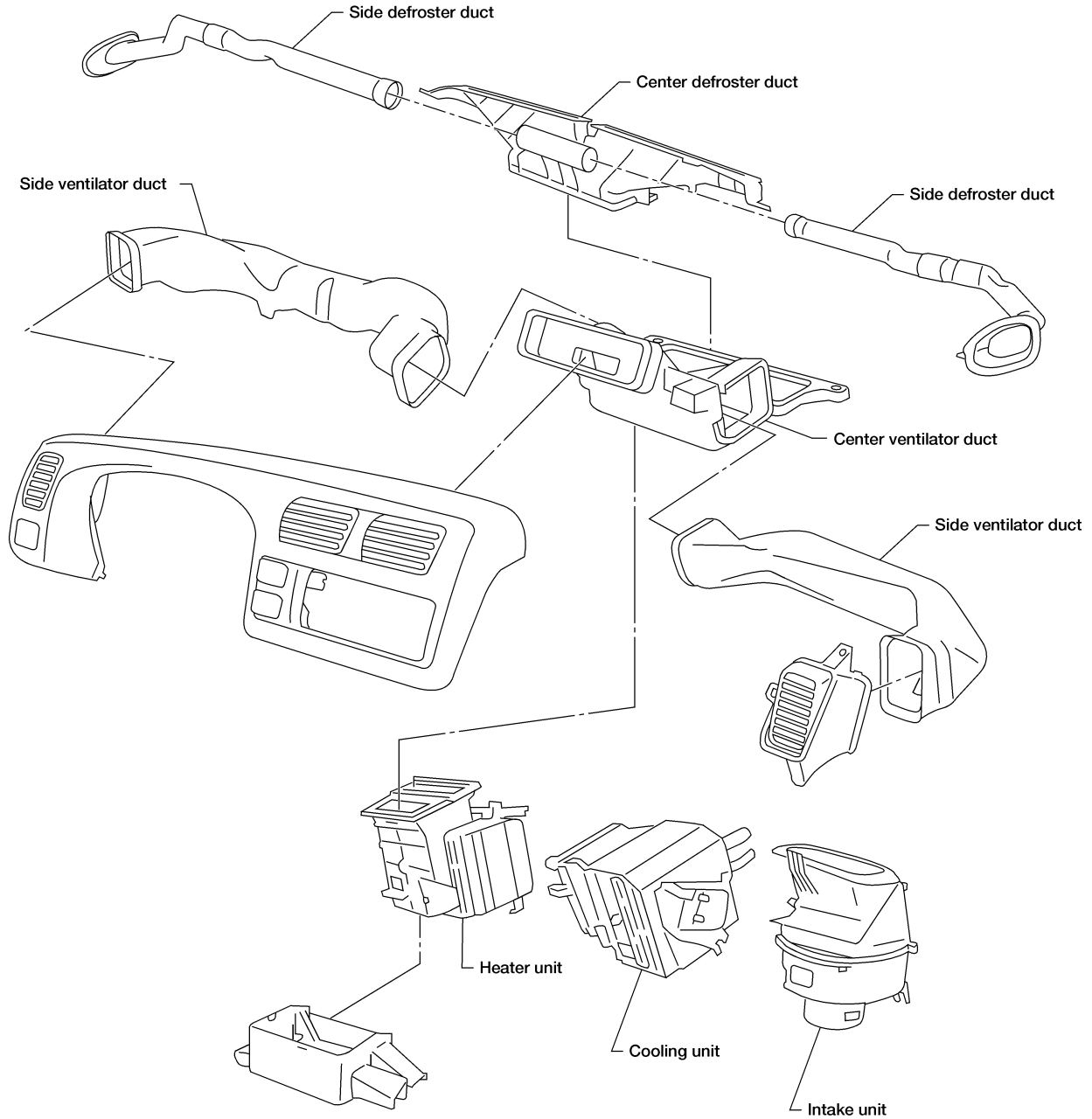
# DESCRIPTION

Component Layout

## Component Layout

NEHA0272

SEC. 270 • 271 • 272 • 273 • 685



AHA123A

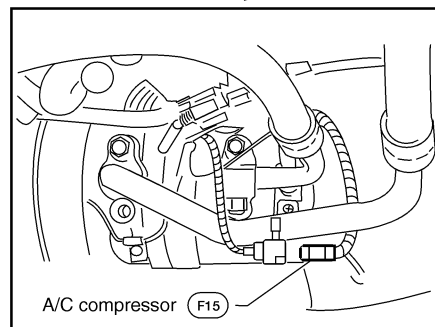
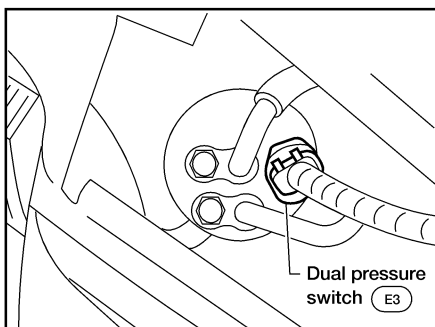
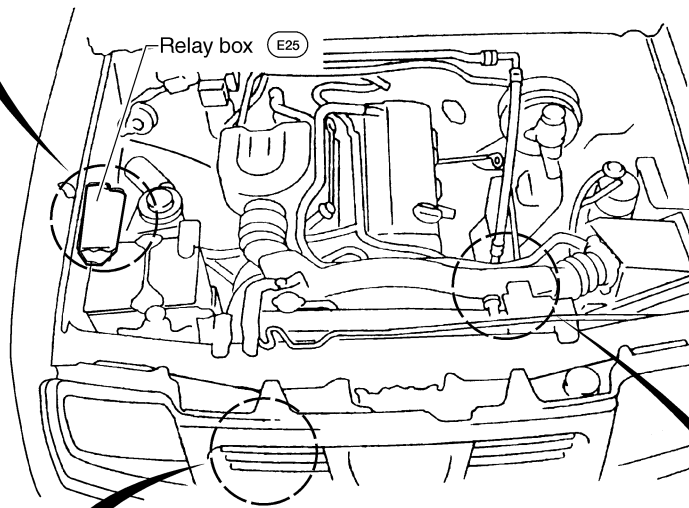
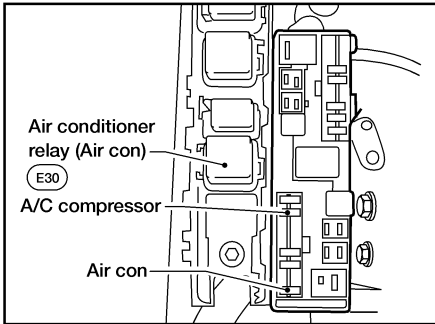
## Component Location

### ENGINE COMPARTMENT KA24DE Models

NEHA0085

NEHA0085S01

NEHA0085S0101



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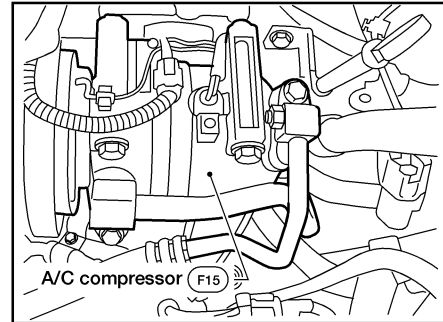
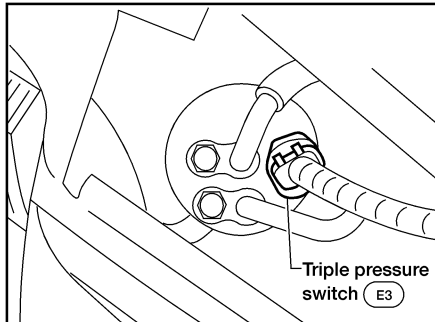
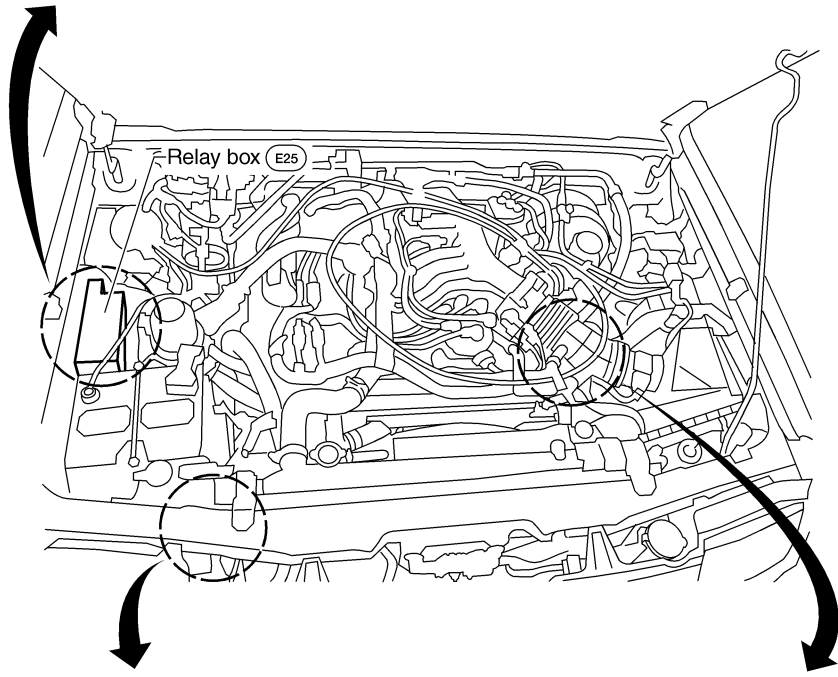
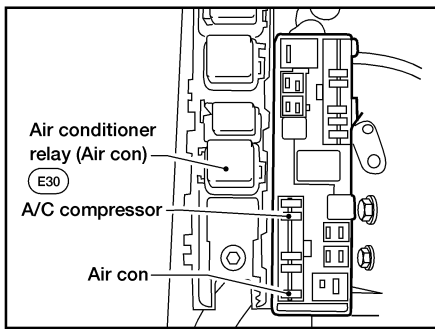
# TROUBLE DIAGNOSES

Component Location (Cont'd)

## ENGINE COMPARTMENT VG3E Models

NEHA0085S05

=NEHA0085S0501



AHA453A

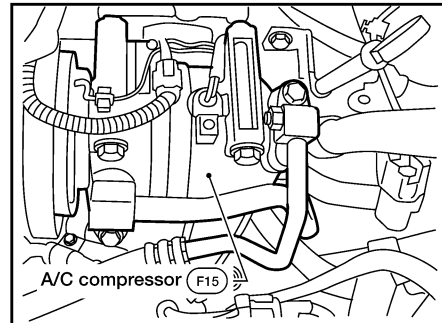
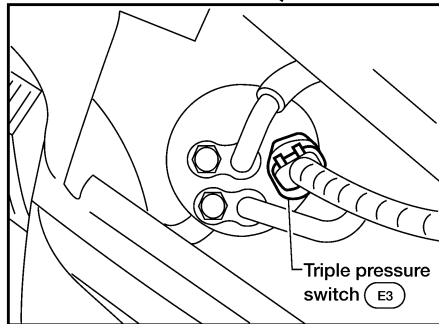
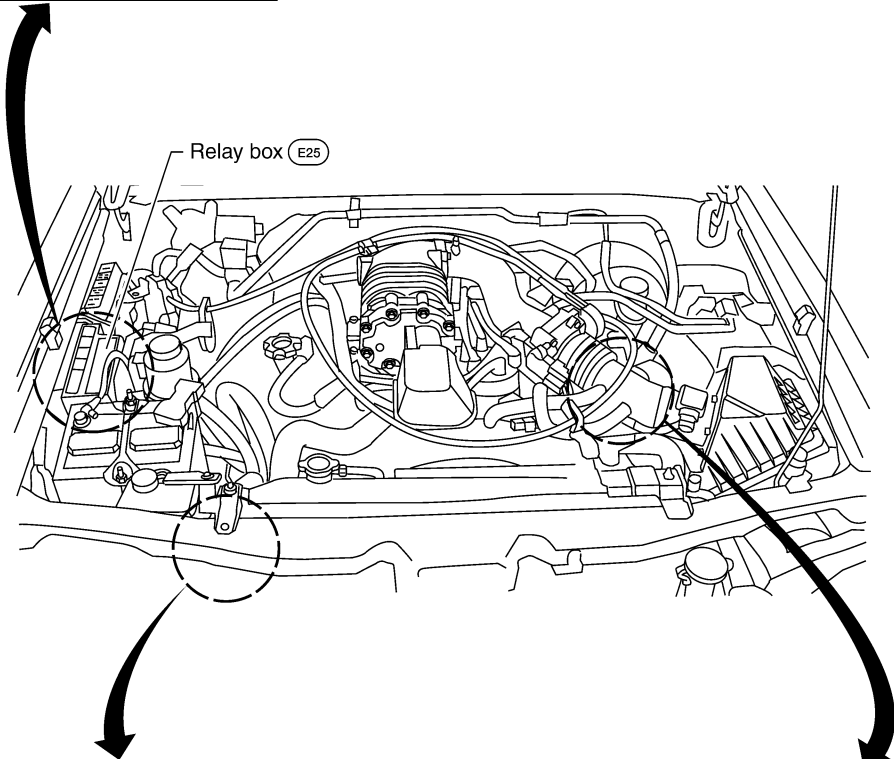
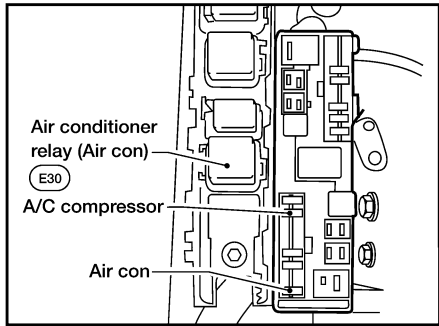
# TROUBLE DIAGNOSES

Component Location (Cont'd)

## ENGINE COMPARTMENT VG33ER Models

NEHA0085S06

NEHA0085S0601



- GI
- MA
- EM
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- SC
- EL
- IDX

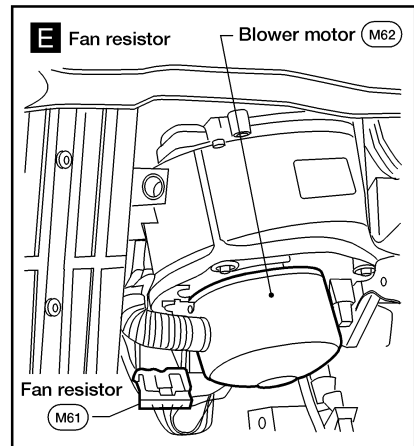
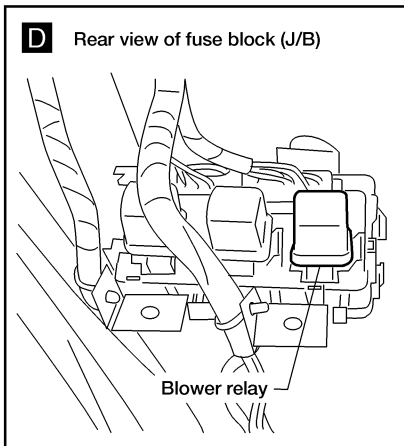
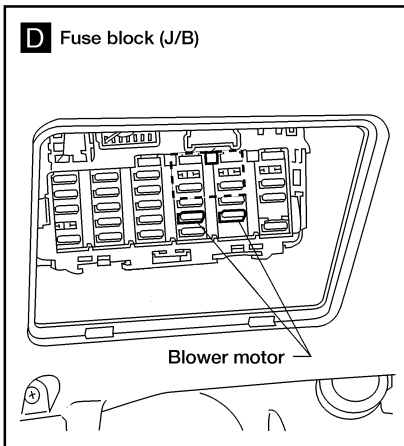
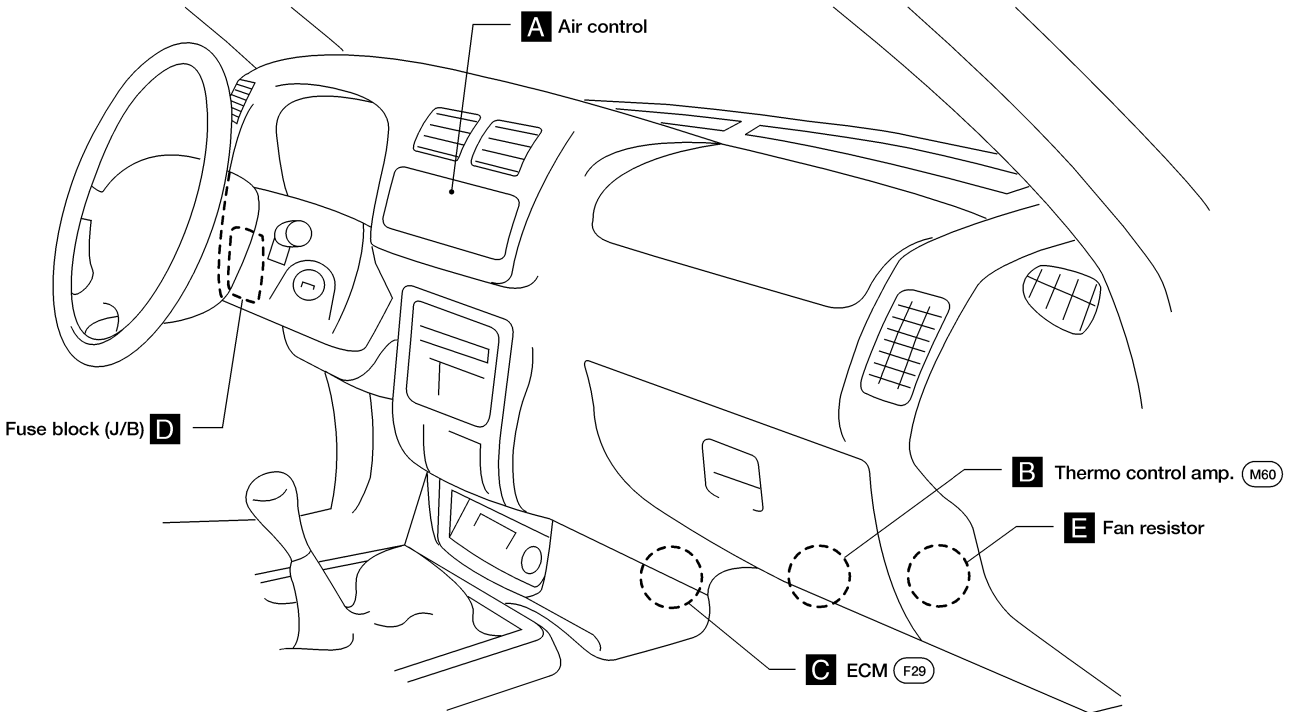
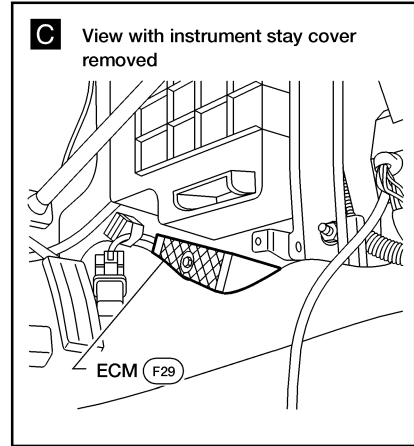
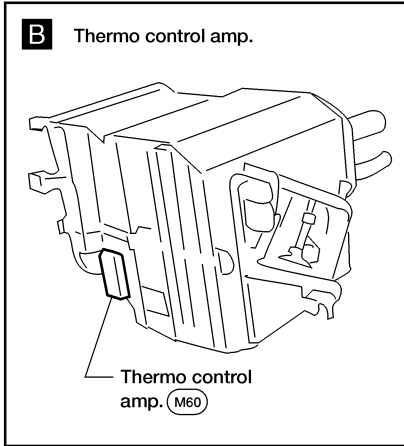
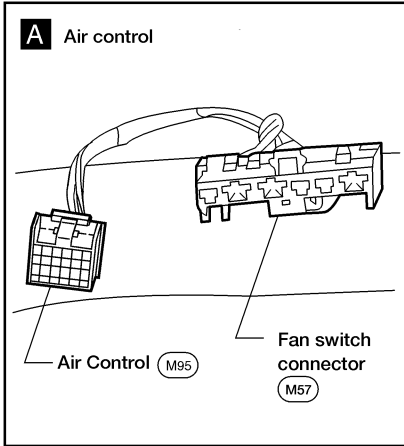
WHA273

# TROUBLE DIAGNOSES

Component Location (Cont'd)

## PASSENGER COMPARTMENT

NEHA0085S02



LHA231



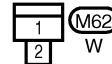
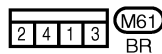
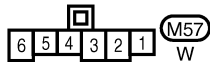
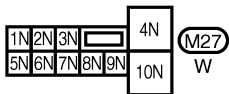
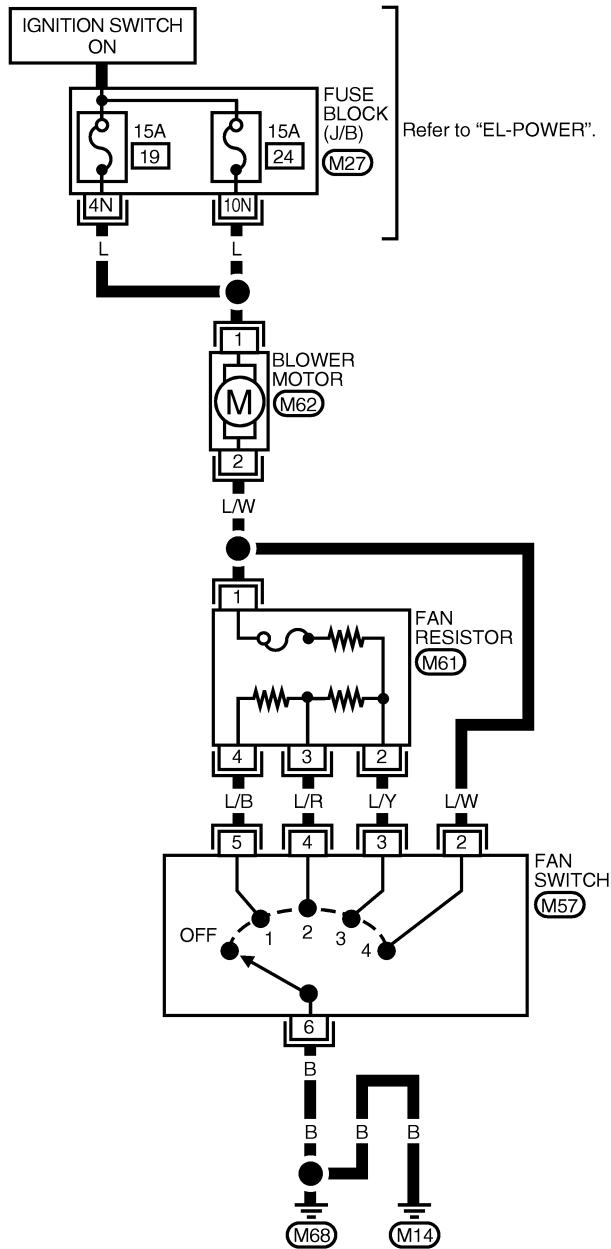
# TROUBLE DIAGNOSES

Wiring Diagram — Heater —

## Wiring Diagram — Heater —

NEHA0288

### HA-HEATER-01



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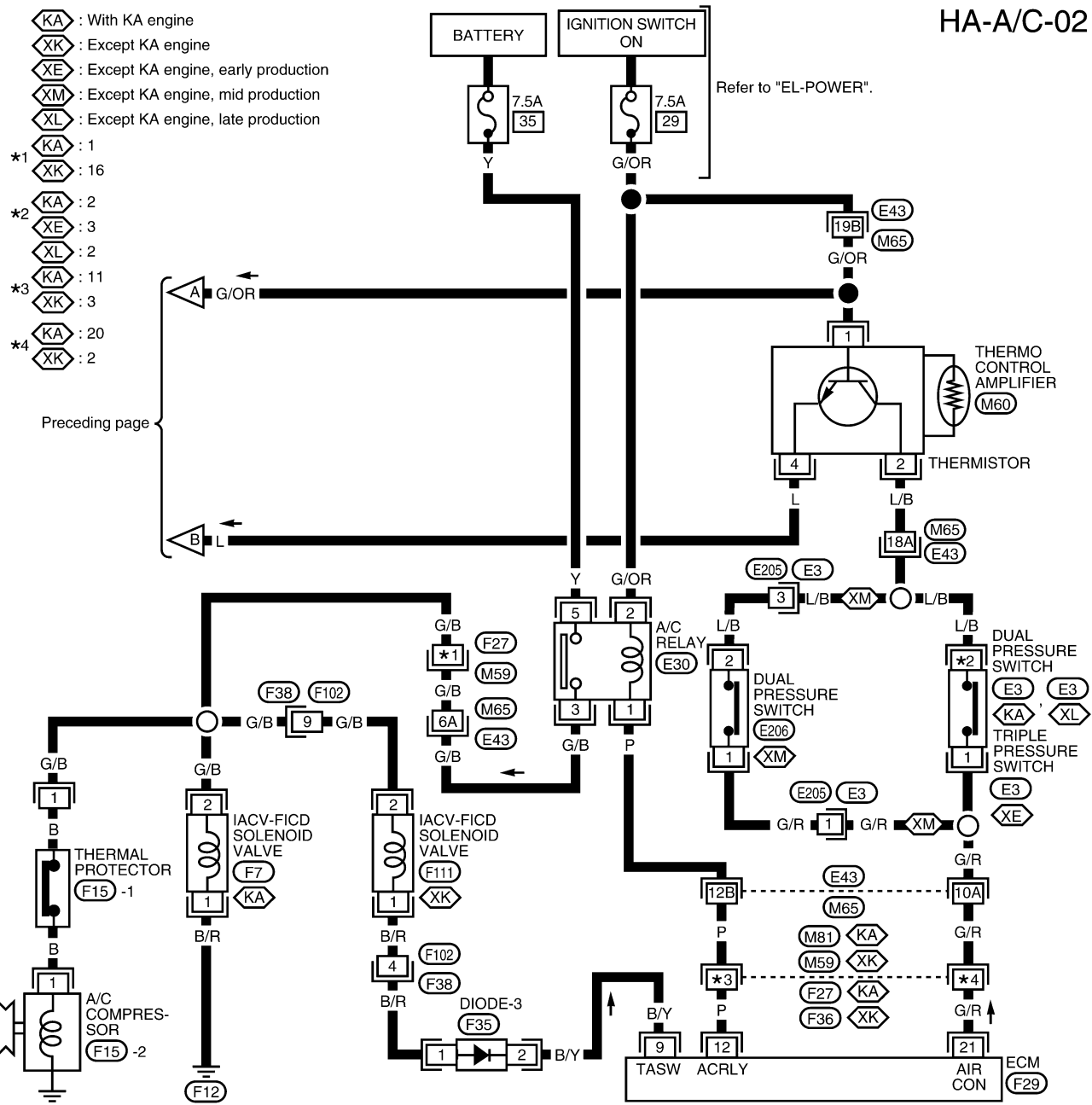
AHA447A



# TROUBLE DIAGNOSES

Wiring Diagram — A/C — (Cont'd)

## HA-A/C-02

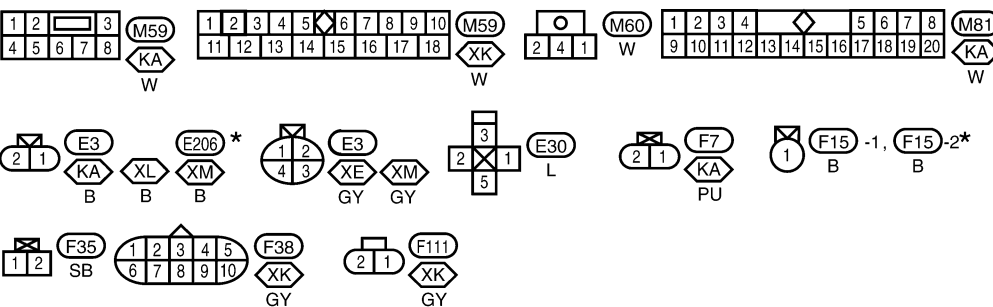


- KA : With KA engine
- XK : Except KA engine
- XE : Except KA engine, early production
- XM : Except KA engine, mid production
- XL : Except KA engine, late production
- \*1 KA : 1
- XK : 16
- \*2 KA : 2
- XE : 3
- XL : 2
- \*3 KA : 11
- XK : 3
- \*4 KA : 20
- XK : 2

Preceding page

Refer to "EL-POWER".

Refer to the following.  
 M65, E43 - SUPER MULTIPLE JUNCTION (SMJ)  
 F29 - ELECTRICAL UNITS



\* : This connector is not shown in "HARNES LAYOUT" of EL section.

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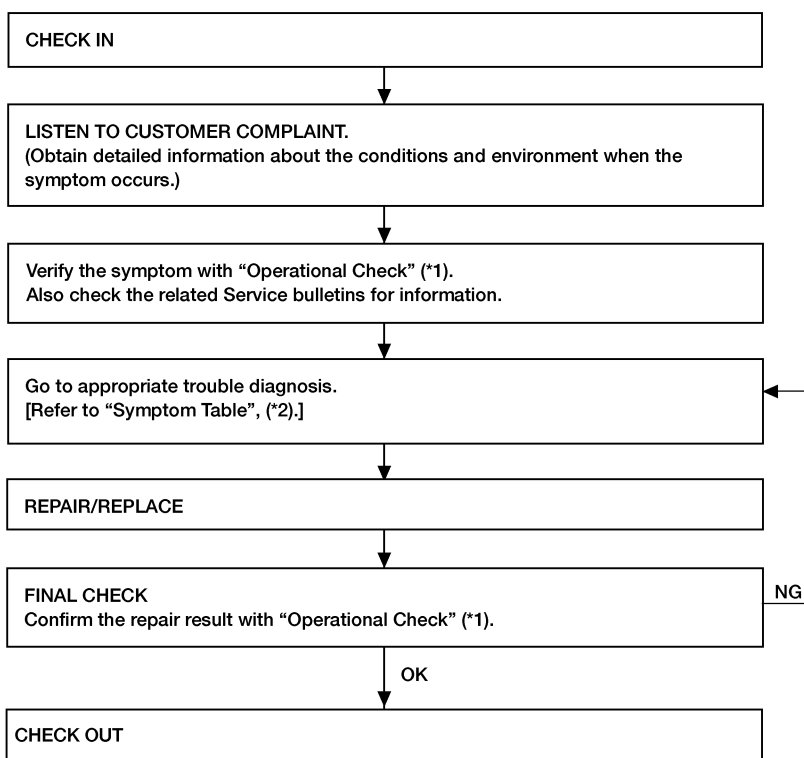
# TROUBLE DIAGNOSES

How to Perform Trouble Diagnoses for Quick and Accurate Repair

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

NEHA0075

NEHA0075S01



LHA244

\*1: HA-29

\*2: HA-28

## Symptom Table

NEHA0235

Symptom	Reference page
● Blower motor does not rotate.	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR BLOWER MOTOR". HA-31
● Mode door does not change positions.	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR MODE DOOR". HA-38
● Intake door position does not change.	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR INTAKE DOOR". HA-40
● Magnet clutch does not engage when A/C switch and fan switch are ON.	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH". HA-43
● Insufficient cooling	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT COOLING". HA-55
● Insufficient heating	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT HEATING". HA-63
● Noise	● Go to "TROUBLE DIAGNOSIS PROCEDURE FOR NOISE". HA-65

## Operational Check

=NEHA0076

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 (recirculation), temperature decrease, temperature increase, and A/C compressor.

### CONDITIONS:

Engine running at normal operating temperature.

NEHA0076S01

### PROCEDURE:

NEHA0076S02

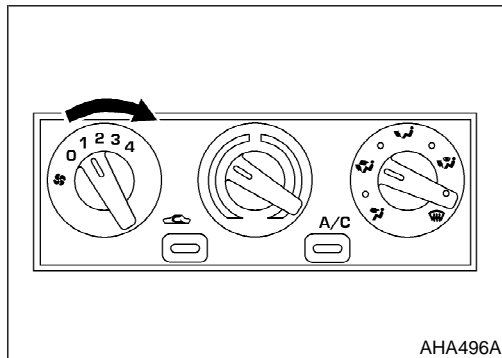
#### 1. Check Blower Motor

NEHA0076S0208

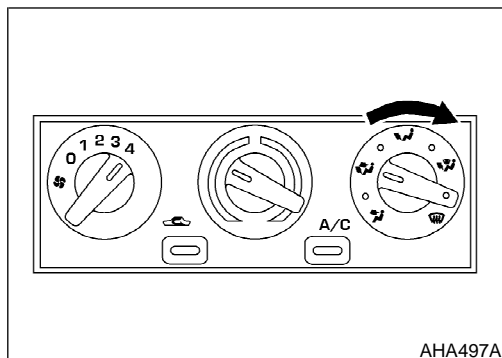
- 1) Turn fan control knob to 1-speed.  
Blower should operate on 1-speed.
- 2) Then turn fan control knob to 2-speed, and continue checking blower speed until all four speeds are checked.
- 3) Leave blower on 4-speed.

If NG, go to "TROUBLE DIAGNOSIS PROCEDURE FOR BLOWER MOTOR", HA-31.

If OK, continue with the check.



AHA496A



AHA497A

#### 2. Check Discharge Air

NEHA0076S0202

- 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 "Discharge Air Flow", HA-19.

If NG, go to "TROUBLE DIAGNOSIS PROCEDURE FOR MODE DOOR", HA-38.

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

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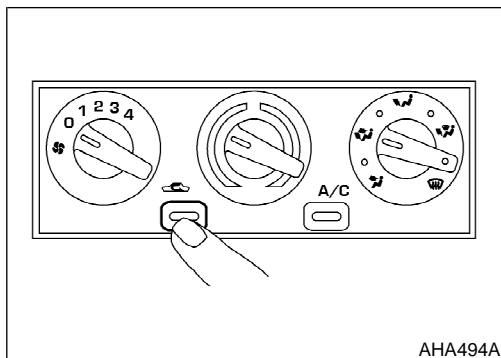
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# TROUBLE DIAGNOSES

## Operational Check (Cont'd)



AHA494A

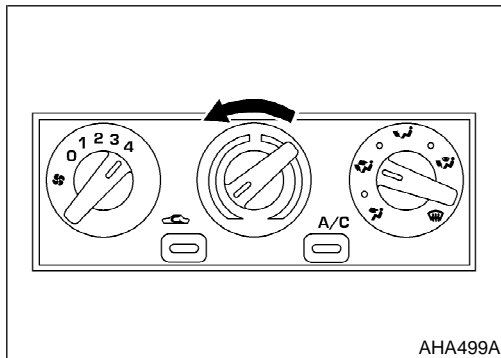
### 3. Check Recirculation

NEHA0076S0203

- 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 "TROUBLE DIAGNOSIS PROCEDURE FOR INTAKE DOOR", HA-40.

If OK, continue with next check.



AHA499A

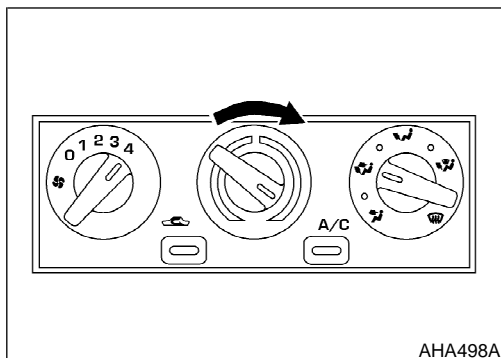
### 4. Check Temperature Decrease

NEHA0076S0204

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

If NG, go to "TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT COOLING", HA-55.

If OK, continue with next check.



AHA498A

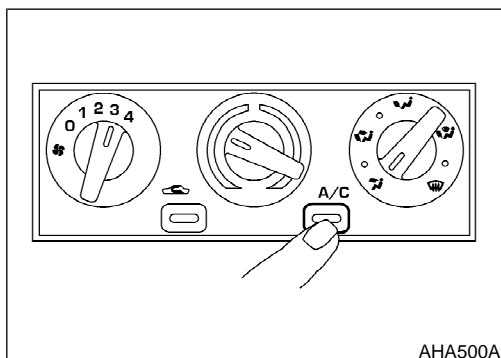
### 5. Check Temperature Increase

NEHA0076S0205

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

If NG, go to "TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT HEATING", HA-63.

If OK, continue with next check.



AHA500A

### 6. Check A/C Switch

NEHA0076S0206

- 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 "TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH", HA-43.

If OK, continue with next check.

If all operational checks are OK (symptom cannot be duplicated), go to **GI-24**, "Incident Simulation Tests", and perform tests as outlined to simulate driving conditions environment. If symptom appears, refer to "Symptom Table", HA-28 and perform applicable trouble diagnoses procedures.

## Blower Motor

### TROUBLE DIAGNOSIS PROCEDURE FOR BLOWER MOTOR

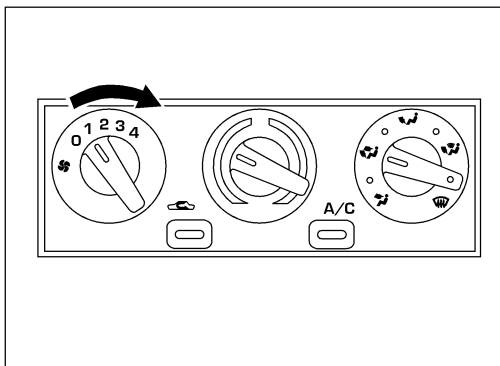
=NEHA0138

**Symptom:**

- Blower motor does not rotate.

**Inspection Flow**

1. Confirm symptom by performing the following operational check.



**OPERATIONAL CHECK – Blower motor**

- 1) Start engine.
- 2) Turn fan control knob to 1-speed.
- 3) Check if blower motor is operating at 1-speed.
- 4) Turn fan control knob to 2-speed and continue checking blower speed until all speeds are checked.

If OK (symptom cannot be duplicated), perform complete Operational Check (\*2).  
 If NG (symptom is confirmed), continue with STEP-2 following.

2. Check for any Service bulletins.

OK

3. Check blower motor circuit. (\*1)

OK

4. If the symptom still exists, perform a complete “Operational Check” (\*2) and check for other symptoms. [Refer to “Symptom Table”, (\*3).] Does another symptom exist?

Yes

Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

No

INSPECTION END.

LHA245

\*1: HA-32

\*2: HA-29

\*3: HA-28

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# TROUBLE DIAGNOSES

Blower Motor (Cont'd)

## BLOWER MOTOR CIRCUIT

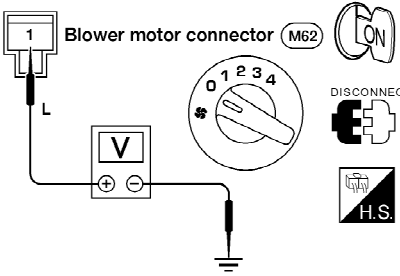
-NEHA0089

### 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 <b>EL-9</b> , "POWER SUPPLY ROUTING".		
<b>Are fuses OK?</b>		
OK	▶	GO TO 3.
NG	▶	GO TO 9.

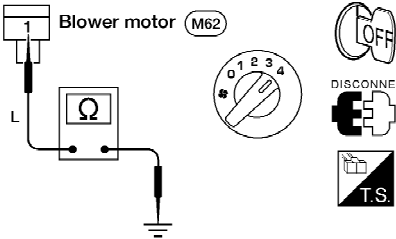
3	CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT	
1. Disconnect blower motor harness connector. 2. Check voltage between blower motor harness connector M62 terminal 1 and ground.		
		
<b>Does battery voltage exist?</b>		
Yes	▶	GO TO 4.
No	▶	<b>Check the following.</b> If NG, repair harness or connector. <ul style="list-style-type: none"> <li>● Harness for open or short between blower motor and fuse block (J/B).</li> <li>● Harness connectors M27 and M62</li> </ul>

AHA485A

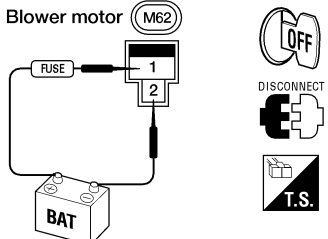


# TROUBLE DIAGNOSES

Blower Motor (Cont'd)

<b>4</b>	<b>CHECK BLOWER MOTOR GROUND CIRCUIT</b>	
<p>1. Disconnect blower motor harness connector.                  2. Turn fan control knob to 4-speed.                  3. Check continuity between blower motor harness connector M62 terminal 2 and ground.</p>		
		
<p><b>Continuity should exist.</b></p>		
<p><b>OK or NG</b></p>		
OK	▶	GO TO 5.
NG	▶	<p><b>Check the following. If NG, repair harness or connector.</b></p> <ul style="list-style-type: none"> <li>● Harness for open or short between blower motor and fuse block (J/B).</li> <li>● Harness connectors M27 and M62</li> </ul>

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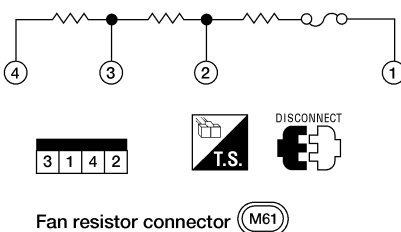
<b>5</b>	<b>CHECK BLOWER MOTOR</b>	
<p>1. Disconnect blower motor harness connector.                  2. Apply 12 volts to blower motor terminal 1 and ground to blower motor terminal 2.</p>		
		
<p><b>Does blower motor rotate?</b></p>		
Yes	▶	Reconnect blower motor connector and go to "TROUBLE DIAGNOSIS PROCEDURE FOR BLOWER MOTOR", HA-31.
No	▶	Replace blower motor.

# TROUBLE DIAGNOSES

Blower Motor (Cont'd)

## 6 CHECK FAN RESISTOR

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



AHA458A

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

AHA459A

**OK or NG**

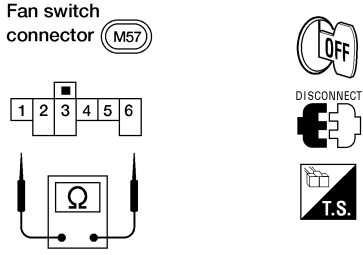
OK	▶	GO TO 7.
NG	▶	Replace fan resistor.

# TROUBLE DIAGNOSES

Blower Motor (Cont'd)

**7 CHECK FAN SWITCH**

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



Fan switch connector (M57)

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

AHA456A

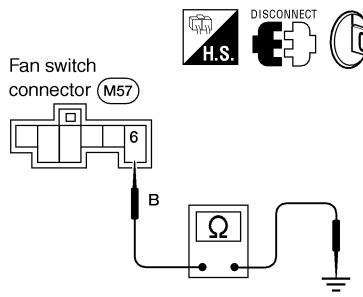
AHA457A

**OK or NG**

OK	▶	GO TO 8.
NG	▶	Replace fan switch.

**8 CHECK FAN SWITCH GROUND**

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



Fan switch connector (M57)

**Continuity should exist.**

AHA078A

**OK or NG**

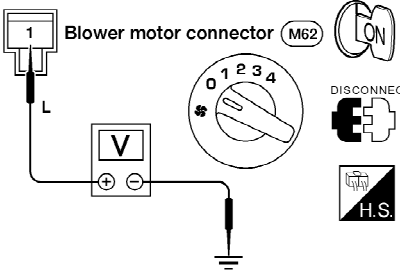
OK	▶	<p><b>Check the following.</b></p> <p>If NG, repair harness or connectors.</p> <ul style="list-style-type: none"> <li>● Harness connectors M57, M61 and M62</li> <li>● Harness for open or short between blower motor and fan switch, fan resistor</li> </ul>
NG	▶	Repair harness or connector.

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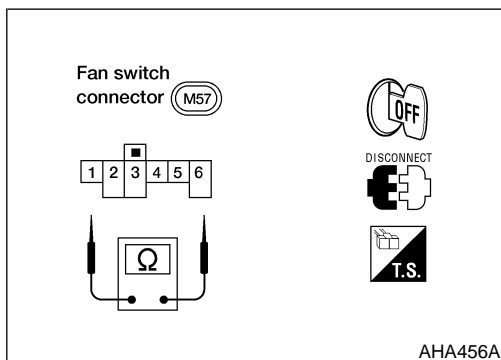
# TROUBLE DIAGNOSES

Blower Motor (Cont'd)

<b>9</b>	<b>REPLACE FUSE</b>	
1. Replace fuse(s). 2. Activate the blower motor system.		
<b>Do the fuses blow when the front blower motor is activated?</b>		
Yes	▶	GO TO 10.
No	▶	<b>INSPECTION END</b>

<b>10</b>	<b>CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR A SHORT</b>	
1. Disconnect battery cable and blower motor harness connector M62. 2. Check continuity between front blower motor harness terminal 1 and ground.		
		
<b>Continuity should not exist.</b>		
<b>Does continuity exist?</b>		
Yes	▶	<b>Check the following. If NG, repair harness or connector.</b> Harness connectors M27 and M62 Harness for open or short between blower motor and fuse block (J/B).
No	▶	Check front blower motor. Refer to "Blower Motor", HA-37. If necessary, clear intake unit. If OK, replace front blower motor.

AHA485A



## ELECTRICAL COMPONENTS INSPECTION

### Fan Switch

Check continuity between terminals at each switch position.

NEHA0246

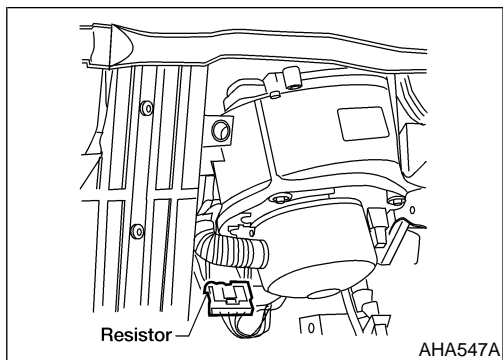
NEHA0246S01

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

AHA457A

# TROUBLE DIAGNOSES

Blower Motor (Cont'd)



## Blower Motor

NEHA0246S02

Confirm smooth rotation of the blower motor.

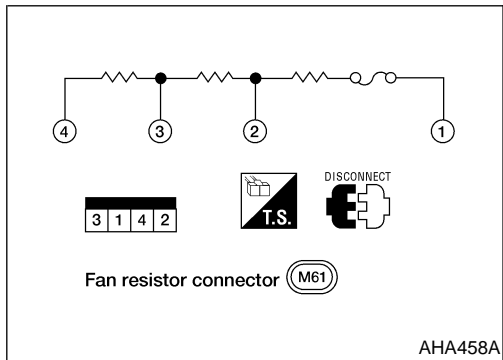
- Check that there are no foreign particles inside the intake unit.

GI

MA

EM

LC



## Fan Resistor

NEHA0246S04

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

EC

FE

CL

Check resistance between terminals.

MT

AT

TF

PD

AX

SU

BR

ST

RS

BT

HA

SC

EL

IDX

# TROUBLE DIAGNOSES

Mode Door

## Mode Door

### TRouble DIAGNOSIS PROCEDURE FOR MODE DOOR

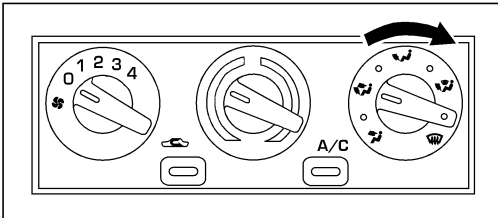
=NEHA0240

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.

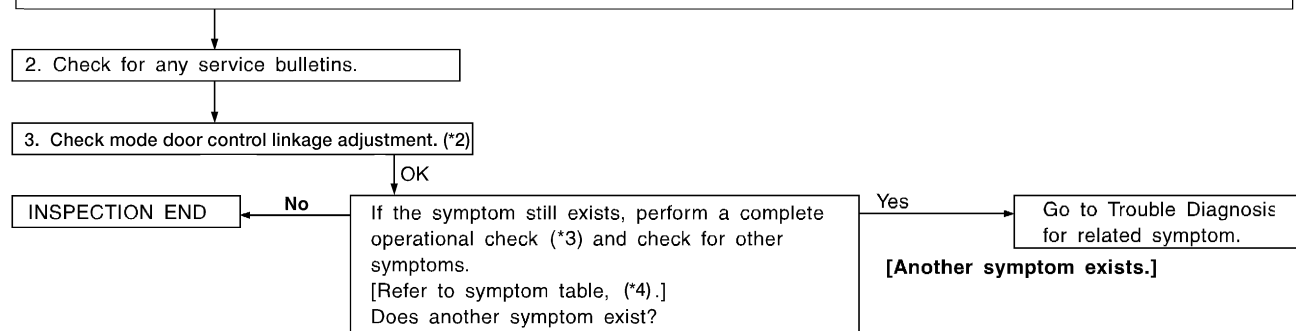
2) Confirm that discharge air comes out according to the air distribution table at left. Refer to “Discharge Air Flow” in “DESCRIPTION” (\*1).

#### 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.



AHA480A

\*1: HA-19

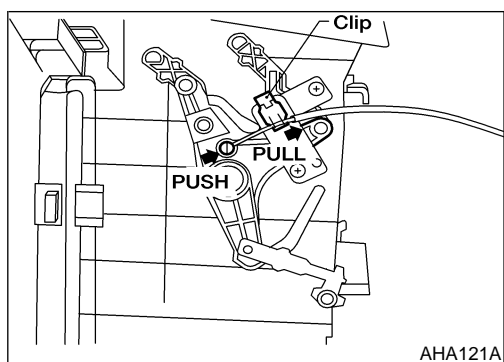
\*3: HA-29

\*4: HA-28

\*2: HA-39

# TROUBLE DIAGNOSES


Mode Door (Cont'd)



## MODE DOOR CONTROL LINKAGE ADJUSTMENT

NEHA02-42

### 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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IDX

# TROUBLE DIAGNOSES

Intake Door Motor

## Intake Door Motor

### TRouble DIAGNOSIS PROCEDURE FOR INTAKE DOOR

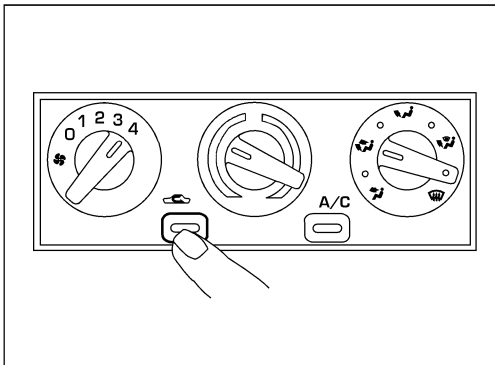
=NEHA0135

#### Symptom:

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

#### Inspection Flow

1. Confirm symptom by performing the following operational check.



#### OPERATIONAL CHECK – Recirculation

- 1) Start engine.
- 2) Turn fan control knob to 4-speed.
- 3) Press RECIRC switch.  
Recirculation indicator should light.
- 4) Listen for intake door position change (you should hear blower sound change slightly).

#### NOTE:

Confirm that the RECIRCULATION (REC) switch is canceled in the DEF (  ) and D/F (  ) mode.

If OK (symptom cannot be duplicated), perform complete operational check (\*2).

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

2. Check for any service bulletins.

3. Check intake door motor. (\*1)

INSPECTION END

OK

If the symptom still exists, perform a complete operational check (\*2) and check for other symptoms.  
[Refer to symptom table, (\*3).]  
Does another symptom exist?

Yes

Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

AHA481A

\*1: HA-42

\*2: HA-29

\*3: HA-28



# TROUBLE DIAGNOSES

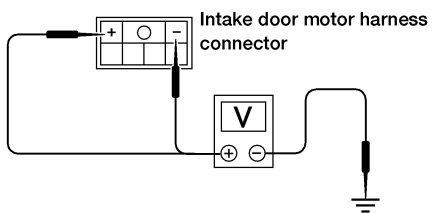

Intake Door Motor (Cont'd)

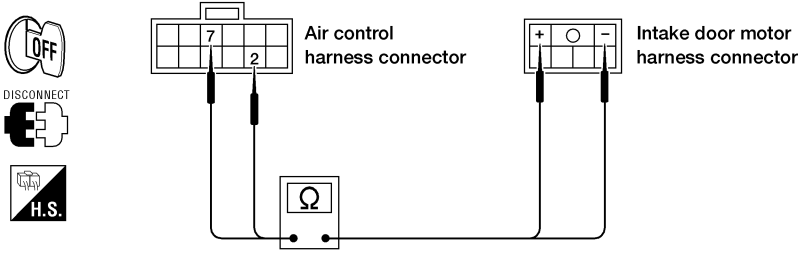

-NEHA0299

## INTAKE DOOR CIRCUIT

### SYMPTOM:

- Intake door does not operate.

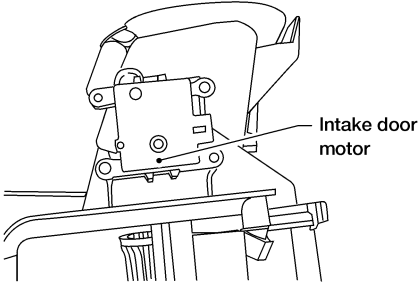
<b>1</b>	<b>CHECK POWER FOR INTAKE DOOR MOTOR</b>																				
<ol style="list-style-type: none"> <li>1. Disconnect intake door motor harness connector.</li> <li>2. Turn ignition switch ON.</li> <li>3. Check voltage between intake door motor harness connector M96 terminals + (Y/B), - (Y) and ground as shown.</li> </ol>																					
			<table border="1" style="margin: auto;"> <thead> <tr> <th rowspan="2">RECIRC switch</th> <th colspan="2">Terminal No.</th> <th rowspan="2">Voltage V</th> </tr> <tr> <th>(+)</th> <th>(-)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">OFF (FRE)</td> <td>(+)</td> <td rowspan="2">Body ground</td> <td>12</td> </tr> <tr> <td>(-)</td> <td>0</td> </tr> <tr> <td rowspan="2">ON (REC)</td> <td>(+)</td> <td rowspan="2">Body ground</td> <td>0</td> </tr> <tr> <td>(-)</td> <td>12</td> </tr> </tbody> </table>	RECIRC switch	Terminal No.		Voltage V	(+)	(-)	OFF (FRE)	(+)	Body ground	12	(-)	0	ON (REC)	(+)	Body ground	0	(-)	12
RECIRC switch	Terminal No.		Voltage V																		
	(+)	(-)																			
OFF (FRE)	(+)	Body ground	12																		
	(-)		0																		
ON (REC)	(+)	Body ground	0																		
	(-)		12																		
LHA268																					
<b>OK or NG</b>																					
OK	▶	GO TO 3.																			
NG	▶	GO TO 2.																			

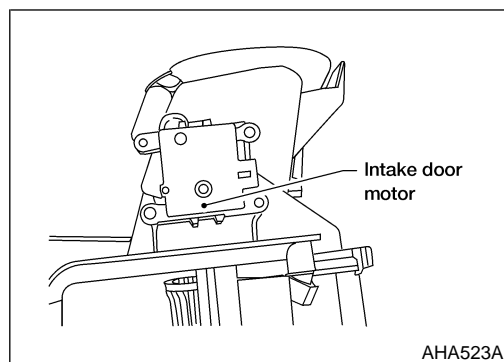
<b>2</b>	<b>CHECK INTAKE DOOR CIRCUIT</b>		
<ol style="list-style-type: none"> <li>1. Turn ignition switch OFF.</li> <li>2. Disconnect air control harness connector.</li> <li>3. Check continuity between air control harness connector M95 terminals 2 (Y/B), 7 (Y) and intake door motor harness connector M96 terminals + (Y/B), - (Y).</li> </ol>			
		<b>Continuity should exist.</b>	
LHA269			
<b>NOTE:</b>			
Mode control knob should be in  position.			
<b>OK or NG</b>			
OK	▶	Check harness for open or short.	
NG	▶	Replace air control.	

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# TROUBLE DIAGNOSES

## Intake Door Motor (Cont'd)

<b>3</b>	<b>CHECK INTAKE DOOR MOTOR</b>
<ol style="list-style-type: none"><li>1. Reconnect intake door motor connector M96.</li><li>2. Turn ignition switch ON.</li><li>3. Observe intake door operation when the RECIRC switch is turned ON and OFF.</li><li>4. Intake door should change position.</li></ol>	
	
AHA523A	
<b>OK or NG</b>	
OK	▶ Check harness and connectors for open or short.
NG	▶ Replace intake door motor.



## CONTROL LINKAGE ADJUSTMENT

### Intake Door Motor

NEHA0294

NEHA0294S01

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.

## Magnet Clutch

### TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH

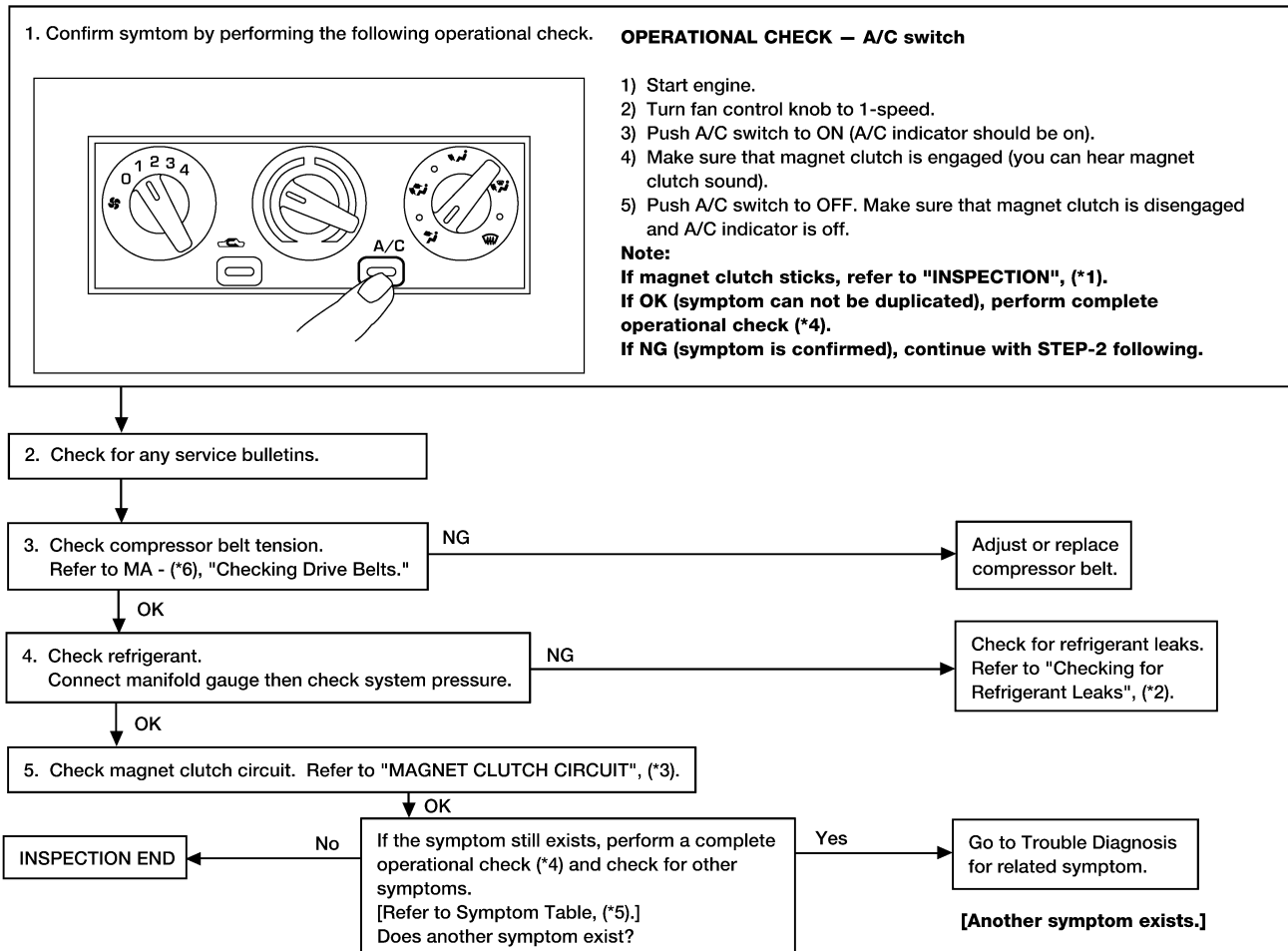
=NEHA0119

**Symptom:**

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

**Inspection Flow**

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\*1: HA-76  
 \*2: HA-81  
 \*3: HA-44

\*4: HA-29  
 \*5: HA-28  
 \*6: **MA-16** (KA24DE models) or

**MA-25** (VG33E and VG33ER models)

LHA258

# TROUBLE DIAGNOSES

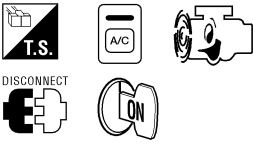
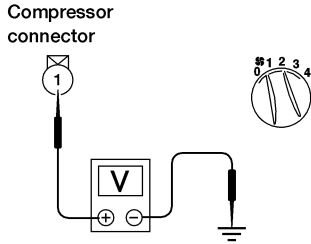
Magnet Clutch (Cont'd)

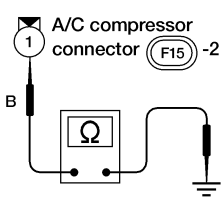

## MAGNET CLUTCH CIRCUIT

-NEHA0091

### SYMPTOM:

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

<b>1</b>	<b>CHECK A/C COMPRESSOR POWER SUPPLY CIRCUIT</b>	<p>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 F15-2 terminal 1 (B) and ground?</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Compressor connector</p>  </div> <div style="text-align: center;"> <p><b>Battery voltage should exist.</b></p> </div> </div> <p style="text-align: right; margin-top: 10px;">WHA232</p>
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<b>2</b>	<b>CHECK A/C COMPRESSOR GROUND</b>	<p>Check continuity between A/C compressor connector F15-2 terminal 1 and ground.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>A/C compressor connector (F15)-2</p> </div> <div style="text-align: center;">  </div> </div> <p style="color: blue; margin-top: 10px;"><b>Continuity should exist.</b></p> <p style="text-align: center; margin-top: 10px;"><b>OK or NG</b></p> <p style="text-align: right; margin-top: 10px;">AHA466A</p>
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# TROUBLE DIAGNOSES

Magnet Clutch (Cont'd)

<b>3</b>	<b>CHECK CIRCUIT CONTINUITY</b>	<p>1. Disconnect A/C relay. 2. Check circuit continuity between A/C relay connector E30 terminal 3 and A/C compressor connector F15-2 terminal 1.</p> <div style="text-align: center;"> </div> <p style="text-align: right;">AHA084A</p> <p><b>Continuity should exist.</b></p> <p>3. Also, check harness for short.</p> <p style="text-align: center;"><b>OK or NG</b></p>	GI MA EM LC EC FE CL
OK	▶	GO TO 4.	
NG	▶	Repair harness or connector.	

<b>4</b>	<b>CHECK A/C RELAY POWER SUPPLY CIRCUIT</b>	<p>1. Disconnect A/C relay. 2. Does approx. 12 volts exist between A/C relay connector E30 terminals 2, 5 and ground?</p> <div style="text-align: center;"> </div> <p style="text-align: right;">AHA467A</p> <p style="text-align: center;"><b>Yes or No</b></p>	MT AT TF PD AX SU
Yes	▶	GO TO 5.	
No	▶	GO TO 13.	

<b>5</b>	<b>CHECK A/C RELAY</b>	<p>Refer to "A/C Relay", HA-52.</p> <p style="text-align: center;"><b>OK or NG</b></p>	BR ST RS
OK	▶	GO TO 6.	
NG	▶	Replace A/C relay.	

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AX  
SU  
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ST  
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BT  
HA  
SC  
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# TROUBLE DIAGNOSES



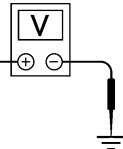

Magnet Clutch (Cont'd)

<b>6</b>	<b>CHECK A/C RELAY GROUND CONTROL CIRCUIT</b>	
<p>1. Reconnect A/C relay.                  2. Engine running and A/C ON.                  3. Does approx. 12 volts exist between ECM harness connector F29 terminal 12 (P) and ground?</p>		
LHA234		
<b>Yes or No</b>		
Yes	▶	GO TO 7.
No	▶	<b>Check the following. If NG, repair harness or connectors.</b> Harness connectors E30 and F29 Harness for open or short between A/C relay and ECM

<b>7</b>	<b>CHECK ECM OUTPUT VOLTAGE</b>	
<p>Does approx. 5 volts exist between thermo control amp. harness connector M60 terminal 2 and ground?</p>		
AHA089A		
<b>Yes or No</b>		
Yes	▶	GO TO 16.
No	▶	GO TO 8.

# TROUBLE DIAGNOSES

Magnet Clutch (Cont'd)

<b>8</b>	<b>CHECK CIRCUIT CONTINUITY</b>										
		<p>1. Disconnect dual pressure switch (KA24DE models) or triple pressure switch (VG33E and VG33ER models) harness connector E3.</p> <p>2. Check voltage from dual pressure switch E3 terminal 1 (G/R) to ground (KA24DE models) or from triple pressure switch E3 terminal 1 (G/R) to ground (VG33E and VG33ER models).</p> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;"> <p>KA24DE engine Dual pressure switch connector</p>  </div> <div style="text-align: center;"> <p>VG33E and VG33ER engine Triple pressure switch connector</p>  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p style="text-align: right; margin-top: 20px;">LHA275</p> <p style="color: blue; font-weight: bold; margin-top: 10px;">Do approx. 5 volts exist?</p> <p>3. Also, check harness for short.</p> <p style="text-align: center; margin-top: 10px;"><b>Yes or No</b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 25%;">Yes (KA24DE models)</td> <td style="width: 5%; text-align: center;">▶</td> <td style="width: 70%;">GO TO 9.</td> </tr> <tr> <td>Yes (VG33E and VG33ER models)</td> <td style="text-align: center;">▶</td> <td>GO TO 11.</td> </tr> <tr> <td>No</td> <td style="text-align: center;">▶</td> <td>Repair harness or connector.</td> </tr> </table>	Yes (KA24DE models)	▶	GO TO 9.	Yes (VG33E and VG33ER models)	▶	GO TO 11.	No	▶	Repair harness or connector.
Yes (KA24DE models)	▶	GO TO 9.									
Yes (VG33E and VG33ER models)	▶	GO TO 11.									
No	▶	Repair harness or connector.									

<b>9</b>	<b>CHECK DUAL PRESSURE SWITCH (KA24DE MODELS)</b>							
		<p>Refer to "Dual Pressure Switch (KA24DE Models)", HA-52.</p> <p style="text-align: center; margin-top: 10px;"><b>OK or NG</b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 25%;">OK</td> <td style="width: 5%; text-align: center;">▶</td> <td style="width: 70%;">GO TO 10.</td> </tr> <tr> <td>NG</td> <td style="text-align: center;">▶</td> <td>Replace dual pressure switch.</td> </tr> </table>	OK	▶	GO TO 10.	NG	▶	Replace dual pressure switch.
OK	▶	GO TO 10.						
NG	▶	Replace dual pressure switch.						

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# TROUBLE DIAGNOSES

Magnet Clutch (Cont'd)

<b>10</b>	<b>CHECK CIRCUIT CONTINUITY</b>
<p>1. Disconnect dual pressure switch harness connector E3.</p> <p>2. Check circuit continuity between thermo control amp. harness connector M60 terminal 2 and dual pressure switch connector E3 terminal 2.</p>	
AHA267A	
<p style="color: blue;"><b>Continuity should exist.</b></p> <p>3. Also check circuit continuity between dual pressure switch connector E3 terminal 1 and ECM connector F29 terminal 21.</p>	
AHA268A	
<b>Continuity should exist.</b>	
<b>OK or NG</b>	
OK	▶ Check ECM. Refer to <b>EC-39</b> , "Description".
NG	▶ Repair harness or connector.

<b>11</b>	<b>CHECK TRIPLE PRESSURE SWITCH (VG33E AND VG33ER MODELS)</b>
Refer to "Triple Pressure Switch (VG33E and VG33ER Models)", HA-53.	
<b>OK or NG</b>	
OK	▶ GO TO 12.
NG	▶ Replace triple pressure switch.



# TROUBLE DIAGNOSES

Magnet Clutch (Cont'd)

<b>12</b>	<b>CHECK CIRCUIT CONTINUITY</b>	
<p>1. Disconnect triple pressure switch harness connector E3.                  2. Check circuit continuity between thermo control amp. harness connector M60 terminal 2 and triple pressure switch harness connector E3 terminal 3.</p>		
AHA271A		
<p><b>Continuity should exist.</b></p> <p>3. Also check circuit continuity between triple pressure switch connector E3 terminal 1 and ECM connector F29 terminal 21.</p>		
AHA272A		
<b>Continuity should exist.</b>		
<b>OK or NG</b>		
OK	▶	Check ECM. Refer to <b>EC-639</b> (VG33E models) or <b>EC-1240</b> (VG33ER models), "Description".
NG	▶	Repair harness or connector.

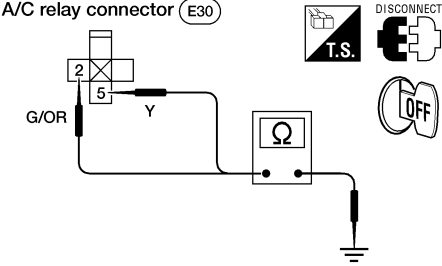
<b>13</b>	<b>CHECK FUSES</b>	
<p>Check 7.5A fuse (No. 29, located in the fuse and fusible link box) and 7.5A fuse (No. 35, located in the fuse and fusible link box). For fuse layout, refer to <b>EL-9</b>, "POWER SUPPLY ROUTING".</p>		
<b>Are fuses OK?</b>		
OK	▶	<p><b>Check the following.</b></p> <p>If NG, repair harness or connectors.</p> <ul style="list-style-type: none"> <li>● Harness for open or short between fuse block and A/C relay</li> <li>● Harness connectors M55, M60 and E30</li> </ul>
NG	▶	GO TO 14.

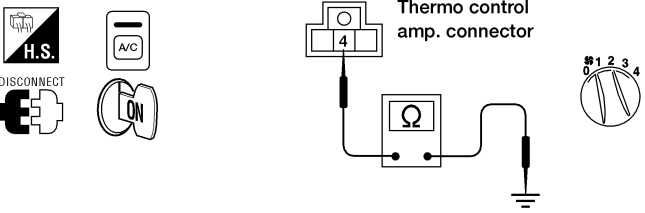
<b>14</b>	<b>REPLACE FUSE</b>	
<p>Replace fuse.</p>		
<b>Does fuse blow when A/C is activated?</b>		
Yes	▶	GO TO 15.
No	▶	<b>INSPECTION END</b>

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# TROUBLE DIAGNOSES


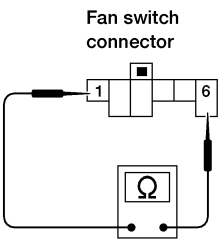
Magnet Clutch (Cont'd)

<b>15</b>	<b>CHECK A/C RELAY POWER SUPPLY CIRCUITS FOR SHORT</b>	<p>1. Disconnect battery cable and A/C relay.                  2. Check for continuity on A/C relay connector E30 terminals (2, 5) to ground.</p> <div style="text-align: center;">  </div> <p style="text-align: right;">AHA470A</p> <p style="text-align: center;"><b>Continuity should not exist.</b></p> <p style="text-align: center;"><b>OK or NG</b></p>
OK	▶	<p><b>Check the following.</b>                  If NG, repair harness or connectors.</p> <ul style="list-style-type: none"> <li>● Harness connectors M55, M60 and E30.</li> <li>● Harness for open or short between fuse and fusible link box and A/C relay, A/C switch, or thermo control amplifier.</li> </ul>
NG	▶	Repair harness or connector.

<b>16</b>	<b>THERMO CONTROL AMP. GROUND CIRCUIT</b>	<p>1. Turn ignition switch OFF, A/C switch ON and fan switch ON.                  2. Disconnect thermo control amp. connector M60.                  3. Check continuity between thermo control amp. connector M60 terminal 4 (L) and ground.</p> <div style="text-align: center;">  </div> <p style="text-align: right;">LHA233</p> <p style="text-align: center;"><b>Continuity should exist.</b></p> <p style="text-align: center;"><b>OK or NG</b></p>
OK	▶	GO TO 13.
NG	▶	GO TO 17.

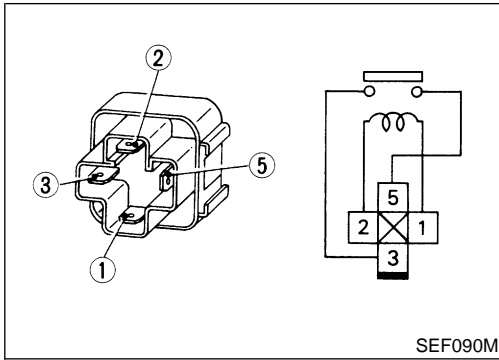
# TROUBLE DIAGNOSES

Magnet Clutch (Cont'd)

17	CHECK FAN SWITCH		
		<p>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.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;"> <p><b>Continuity should exist.</b></p> </div> </div> <p style="text-align: right;">LHA235</p> <p style="text-align: center;"><b>OK or NG</b></p>	<p>GI</p> <p>MA</p> <p>EM</p> <p>LC</p> <p>EC</p> <p>FE</p>
OK	▶	<p><b>Check the following.</b>                      If NG, repair harness or connectors.</p> <ul style="list-style-type: none"> <li>● Harness connectors M57 and M95.</li> <li>● Harness for open or short between fan switch and A/C switch.</li> <li>● If OK, replace air control.</li> </ul>	<p>CL</p>
NG	▶	Replace fan switch.	<p>MT</p> <p>AT</p> <p>TF</p> <p>PD</p> <p>AX</p> <p>SU</p> <p>BR</p> <p>ST</p> <p>RS</p> <p>BT</p> <p><b>HA</b></p> <p>SC</p> <p>EL</p> <p>IDX</p>

# TROUBLE DIAGNOSES

## Magnet Clutch (Cont'd)



### ELECTRICAL COMPONENTS INSPECTION

-NEHA0092

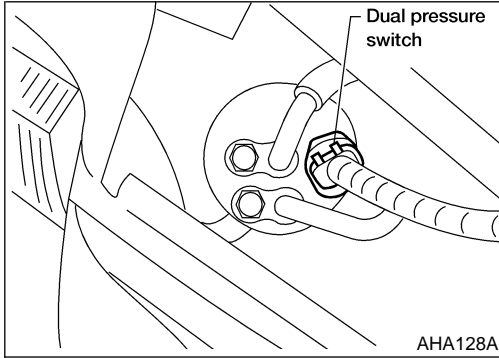
#### A/C Relay

NEHA0092S07

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 (KA24DE Models)

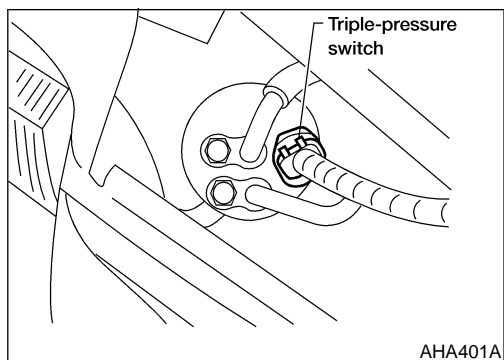
NEHA0092S09

Check continuity between terminals.

	Terminals	High-pressure side line pressure kPa (kg/cm <sup>2</sup> , psi)	Operation	Continuity
Low-pres- sure 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-pres- sure side				

# TROUBLE DIAGNOSES

Magnet Clutch (Cont'd)

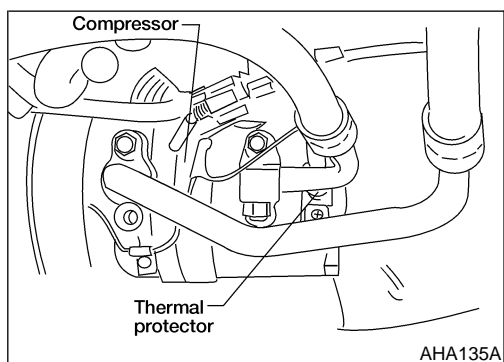


## Triple Pressure Switch (VG33E and VG33ER Models)

NEHA0092S10

Check continuity between terminals 1 and 3.

	Terminals	High-pressure side line pressure kPa (kg/cm <sup>2</sup> , psi)	Operation	Continuity
Low-pres- sure side	1 - 3	Increasing to 157 - 226 (1.6 - 2.3, 23 - 31)	ON	Yes
		Decreasing to 152.0 - 201.0 (1.55 - 2.05, 22.0 - 29.2)	OFF	No
Medium- pressure side	2 - 4	Increasing to 1,422 - 1,618 (14.5 - 16.5, 206 - 235)	ON	Yes
		Decreasing to 1,128 - 1,422 (11.5 - 14.5, 164 - 206)	OFF	No
High-pres- sure side	1 - 3	Decreasing to 1,667 - 2,059 (17 - 21, 242 - 299)	ON	Yes
		Increasing to 2,648 - 2,844 (27 - 29, 384 - 412)	OFF	No

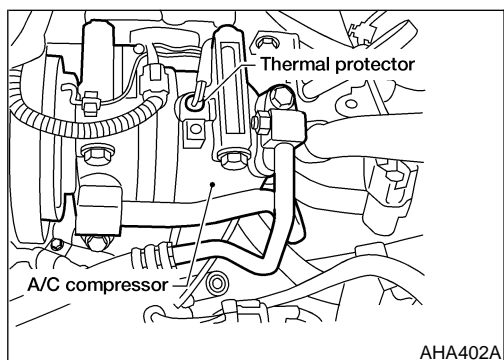


## Thermal Protector KA24DE Models

NEHA0092S11

NEHA0092S1101

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 Models

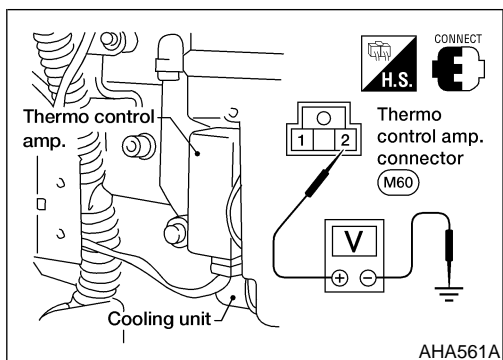
NEHA0092S1102

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

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# TROUBLE DIAGNOSES

## Magnet Clutch (Cont'd)



### Thermo Control Amp.

NEHA0092S12

- 1) Run engine and operate A/C system.
- 2) Connect the voltmeter from harness side.
- 3) Check the thermo control amp. operation as shown in the table.

Evaporator outlet air temperature °C (°F)	Thermo amp. operation	Tester (Approx.)
Decreasing to 2.5 - 3.5 (37 - 38)	Turn OFF	12V
Increasing to 4.0 - 5.0 (39 - 41)	Turn ON	0V

## Insufficient Cooling

### TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT COOLING

=NEHA0150

Symptom:

- Insufficient cooling

Inspection Flow

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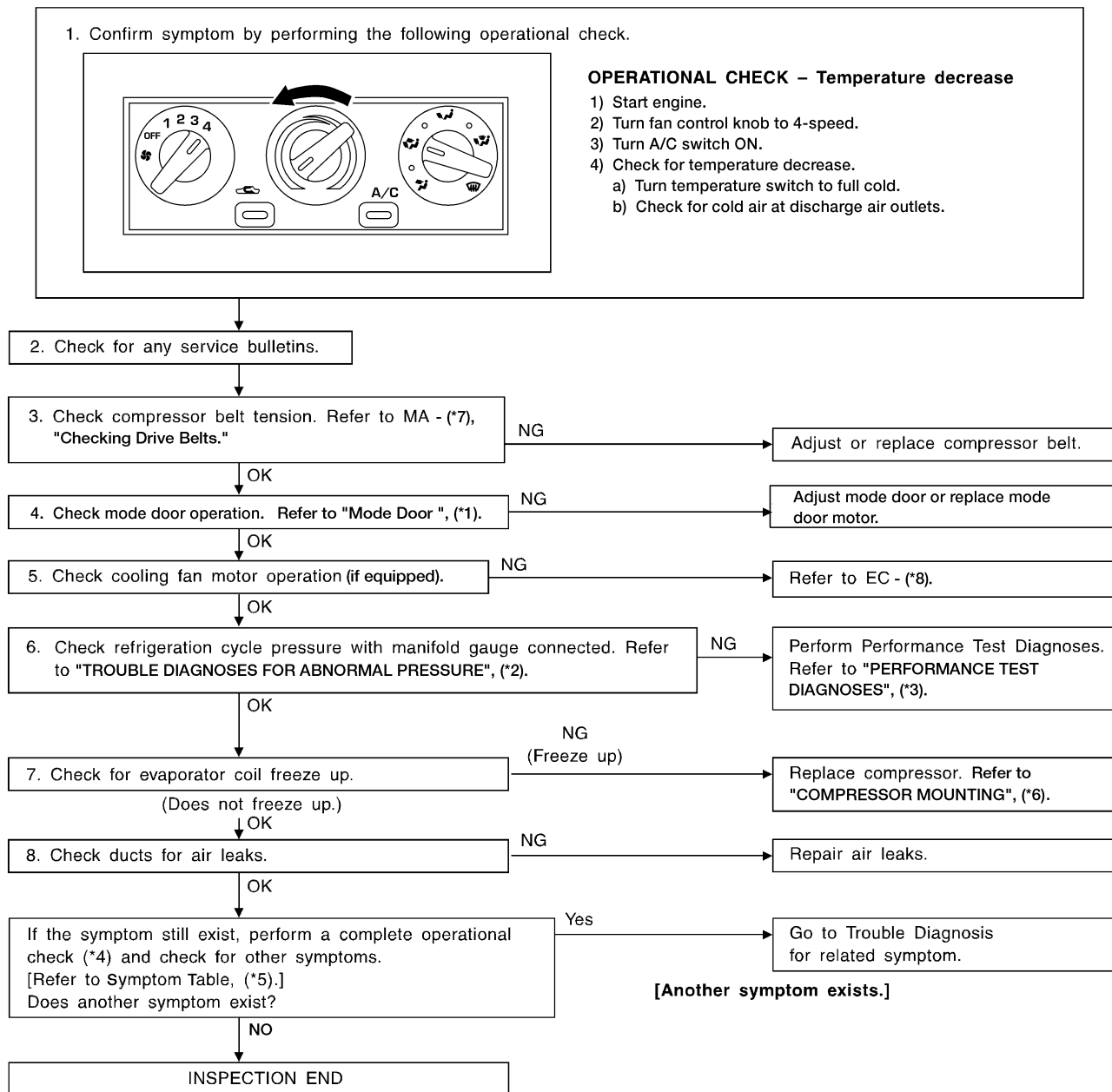
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WHA292

- \*1: HA-38
- \*2: HA-59
- \*3: HA-56
- \*4: HA-29
- \*5: HA-28

- \*6: HA-72
- \*7: **MA-16** (KA24DE models) or **MA-25** (VG33E and VG33ER models)
- \*8: **EC-574** (KA24DE models),

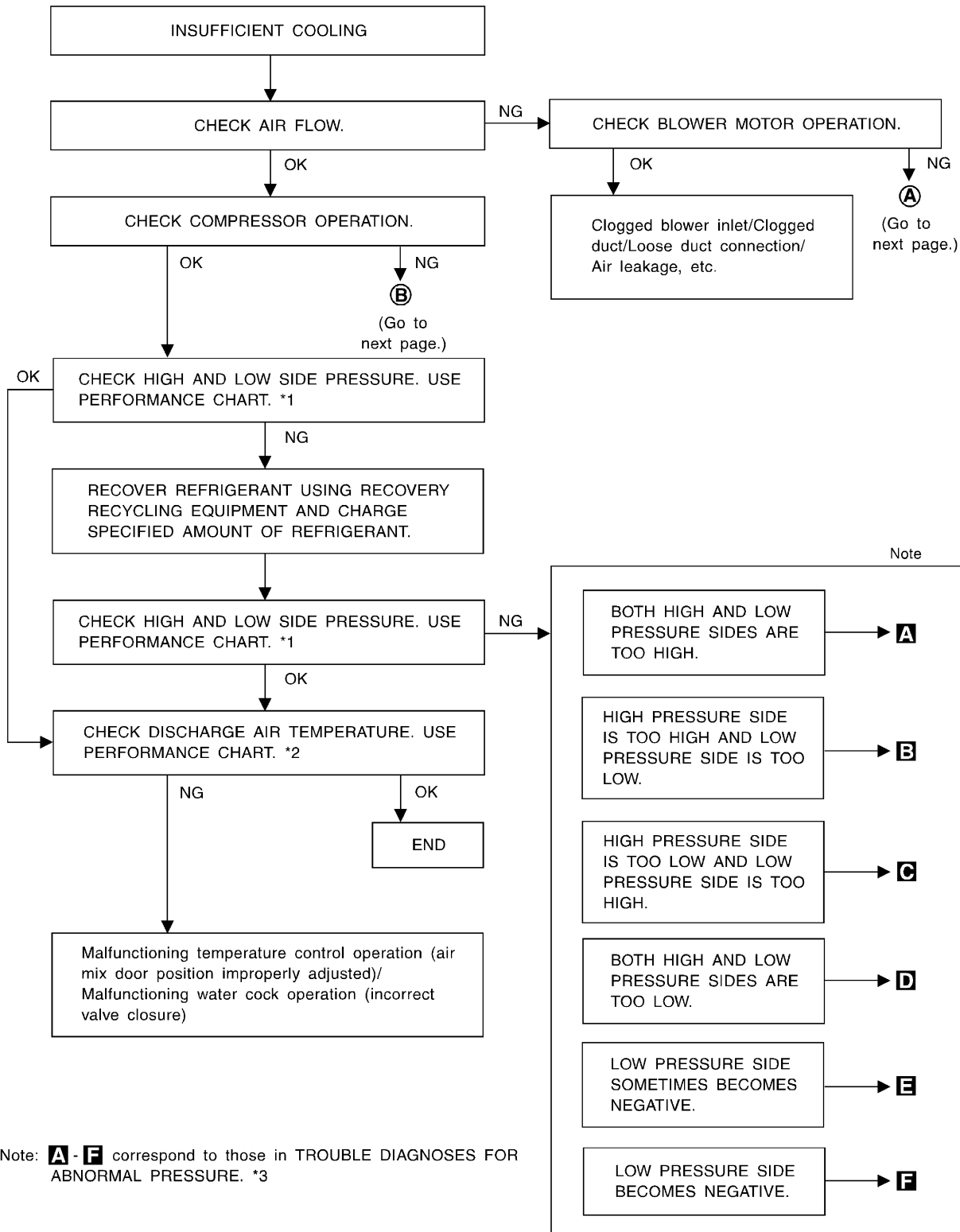
**EC-1072** (VG33E models with electric cooling fan), **EC-1084** (VG33E models without electric cooling fan) or **EC-1670** (VG33ER models)

# TROUBLE DIAGNOSES

Insufficient Cooling (Cont'd)

## PERFORMANCE TEST DIAGNOSES

-NEHA0295



Note: **A - F** correspond to those in TROUBLE DIAGNOSES FOR ABNORMAL PRESSURE. \*3

MHA649A

\*1: HA-58

\*2: HA-58

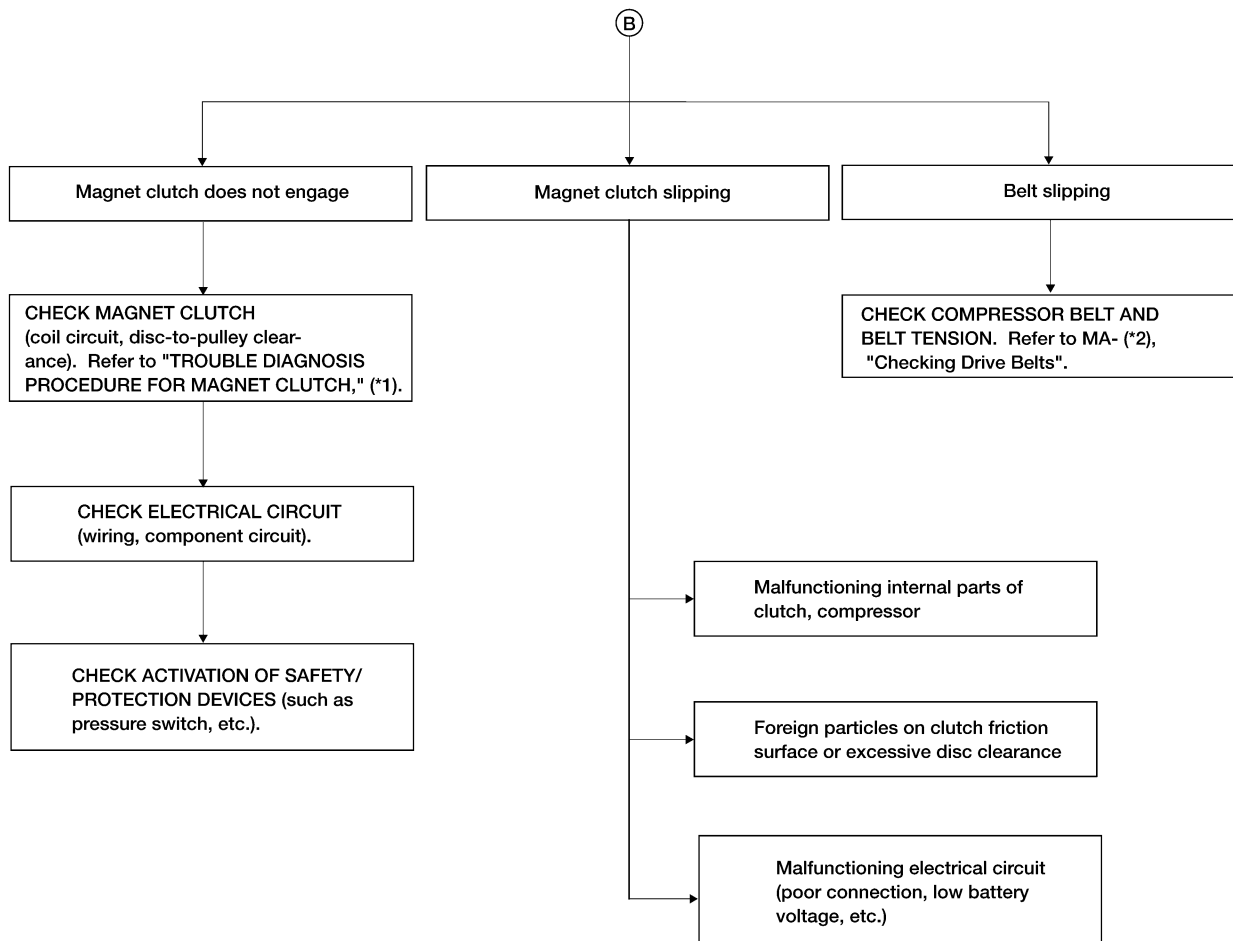
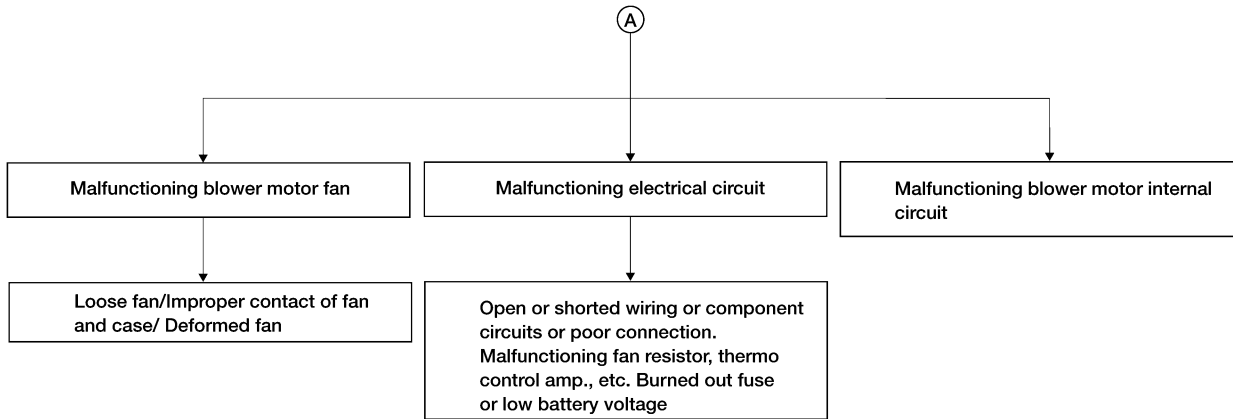
\*3: HA-59



# TROUBLE DIAGNOSES

Insufficient Cooling (Cont'd)

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LHA260

\*1: HA-43

\*2: **MA-16** (KA24DE models) or **MA-25** (VG33E and VG33ER models)

# TROUBLE DIAGNOSES

Insufficient Cooling (Cont'd)




## PERFORMANCE CHART

—NEHA0082

### Test Condition

NEHA0082S07

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

NEHA0082S06

#### Recirculating-to-Discharge Air Temperature Table

NEHA0082S0601

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)

# TROUBLE DIAGNOSES

Insufficient Cooling (Cont'd)

**Ambient Air Temperature-to-Operating Pressure Table**

=NEHA0082S0602

Ambient air		High-pressure (Discharge side) kPa (kg/cm <sup>2</sup> , psi)	Low-pressure (Suction side) kPa (kg/cm <sup>2</sup> , 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)

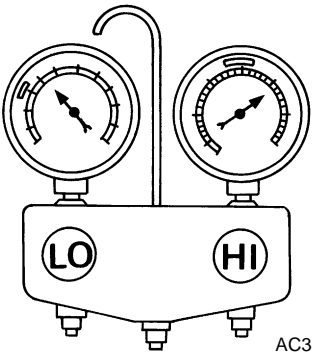
## TROUBLE DIAGNOSES FOR ABNORMAL PRESSURE

NEHA0278

Whenever system's high and/or low side pressure is abnormal, diagnose using a manifold gauge. The marker above the gauge scale in the following tables indicates the standard (normal) pressure range. Since the standard (normal) pressure, however, differs from vehicle to vehicle, refer to "Ambient Air Temperature-to-Operating Pressure Table", HA-59.

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

NEHA0278S01

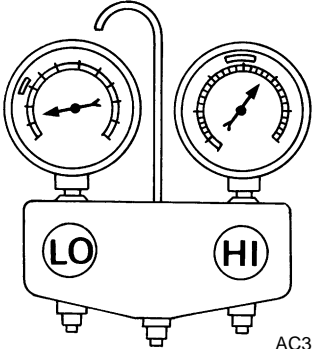
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Both high and low-pressure sides are too high.</p> <p><b>A</b></p>  <p>AC359A</p>	<ul style="list-style-type: none"> <li>Pressure is reduced soon after water is splashed on condenser.</li> </ul>	<p>Excessive refrigerant charge in 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>↓</p> <ol style="list-style-type: none"> <li>Condenser fins are clogged.</li> <li>Improper fan rotation of cooling fan</li> </ol>	<ul style="list-style-type: none"> <li>Clean condenser.</li> <li>Check and repair cooling fan as necessary.</li> </ul>
	<ul style="list-style-type: none"> <li>Low-pressure pipe is not cold.</li> <li>When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm<sup>2</sup>, 28 psi). It then decreases gradually thereafter.</li> </ul>	<p>Poor heat exchange in condenser (After compressor operation stops, high pressure decreases too slowly.)</p> <p>↓</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"> <li>An area of the low-pressure pipe is colder than areas near the evaporator outlet.</li> <li>Plates are sometimes covered with frost.</li> </ul>	<ul style="list-style-type: none"> <li>Excessive liquid refrigerant on low-pressure side</li> <li>Excessive refrigerant discharge flow</li> <li>Expansion valve is open a little compared with the specification.</li> </ul> <p>↓</p> <ol style="list-style-type: none"> <li>Improper thermal valve installation</li> <li>Improper expansion valve adjustment</li> </ol>	<p>Replace expansion valve.</p>

# TROUBLE DIAGNOSES

Insufficient Cooling (Cont'd)

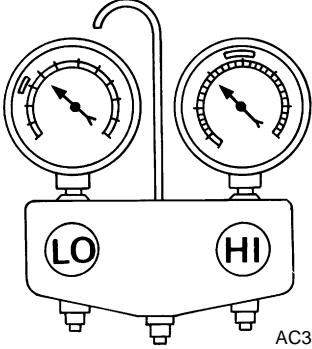
## High-pressure Side is Too High and Low-pressure Side is Too Low.

NEHA0278S02

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>B</b></p>  <p style="text-align: right;">AC360A</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"> <li>● Check and repair or replace malfunctioning parts.</li> <li>● Check lubricant for contamination.</li> </ul>

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

NEHA0278S03

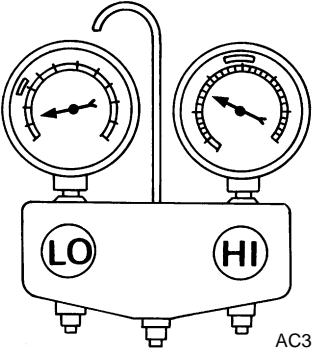
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>High-pressure side is too low and low-pressure side is too high.</p> <p><b>C</b></p>  <p style="text-align: right;">AC356A</p>	<p>High and low-pressure sides become equal soon after compressor operation stops.</p>	<p>Compressor pressure operation is improper.</p> <p style="text-align: center;">↓</p> <p>Damaged inside compressor packings</p>	<p>Replace compressor.</p>
	<p>No temperature difference between high and low-pressure sides</p>	<p>Compressor pressure operation is improper.</p> <p style="text-align: center;">↓</p> <p>Damaged inside compressor packings.</p>	<p>Replace compressor.</p>

# TROUBLE DIAGNOSES

Insufficient Cooling (Cont'd)

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

NEHA0278S04

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Both high- and low-pressure sides are too low.</p> <p><b>D</b></p>  <p>AC353A</p>	<ul style="list-style-type: none"> <li>There is a big temperature difference between receiver drier outlet and inlet. Outlet temperature is extremely low.</li> <li>Liquid tank inlet and expansion valve are frosted.</li> </ul>	<p>Compressor discharge capacity does not change. (Compressor stroke is set at maximum.)</p>	<ul style="list-style-type: none"> <li>Replace liquid tank.</li> <li>Check lubricant for contamination.</li> </ul>
	<ul style="list-style-type: none"> <li>Temperature of expansion valve inlet is extremely low as compared with areas near liquid tank.</li> <li>Expansion valve inlet may be frosted.</li> <li>Temperature difference occurs somewhere in high-pressure side</li> </ul>	<p>High-pressure pipe located between receiver drier and expansion valve is clogged.</p>	<ul style="list-style-type: none"> <li>Check and repair malfunctioning parts.</li> <li>Check lubricant for contamination.</li> </ul>
	<ul style="list-style-type: none"> <li>Expansion valve and liquid tank are warm or only cool when touched.</li> </ul>	<p>Low refrigerant charge ↓ Leaking fittings or components</p>	<p>Check refrigerant for leaks. Refer to "Checking for Refrigerant Leaks", HA-81.</p>
	<p>There is a big temperature difference between expansion valve inlet and outlet while the valve itself is frosted.</p>	<p>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.</p>	<ul style="list-style-type: none"> <li>Remove foreign particles by using compressed air.</li> <li>Check lubricant for contamination.</li> </ul>
	<p>An area of the low-pressure pipe is colder than areas near the evaporator outlet.</p>	<p>Low-pressure pipe is clogged or crushed.</p>	<ul style="list-style-type: none"> <li>Check and repair malfunctioning parts.</li> <li>Check lubricant for contamination.</li> </ul>
	<p>Air flow volume is not enough or is too low.</p>	<p>Evaporator is frozen. ↓ Compressor discharge capacity does not change. (Compressor stroke is set at maximum length.)</p>	<ul style="list-style-type: none"> <li>Check thermo control amp. operation.</li> <li>Replace compressor.</li> </ul>

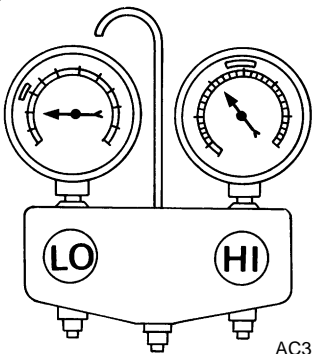
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# TROUBLE DIAGNOSES

Insufficient Cooling (Cont'd)

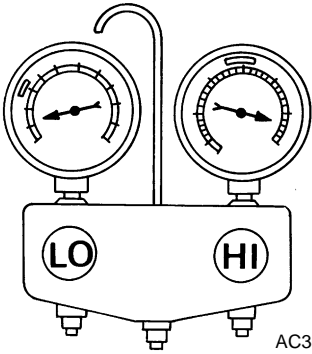
## Low-pressure Side Sometimes Becomes Negative.

NEHA0278S05

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Low-pressure side sometimes becomes negative.</p> <p><b>E</b></p>  <p style="text-align: right;">AC354A</p>	<ul style="list-style-type: none"> <li>• Air conditioning system does not function and does not cyclically cool the compartment air.</li> <li>• The system constantly functions for a certain period of time after compressor is stopped and restarted.</li> </ul>	<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"> <li>• Drain water from refrigerant or replace refrigerant.</li> <li>• Replace liquid tank.</li> </ul>

## Low-pressure Side Becomes Negative.

NEHA0278S06

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Low-pressure side becomes negative.</p> <p><b>F</b></p>  <p style="text-align: right;">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"> <li>• If water is the cause, initially cooling is okay. Then the water freezes causing a blockage. Drain water from refrigerant or replace refrigerant.</li> <li>• If due to foreign particles, remove expansion valve and remove particles with dry and compressed air (not shop air).</li> <li>• If either of the above methods cannot correct the problem, replace expansion valve.</li> <li>• Replace liquid tank.</li> <li>• Check lubricant for contamination.</li> </ul>

## Insufficient Heating

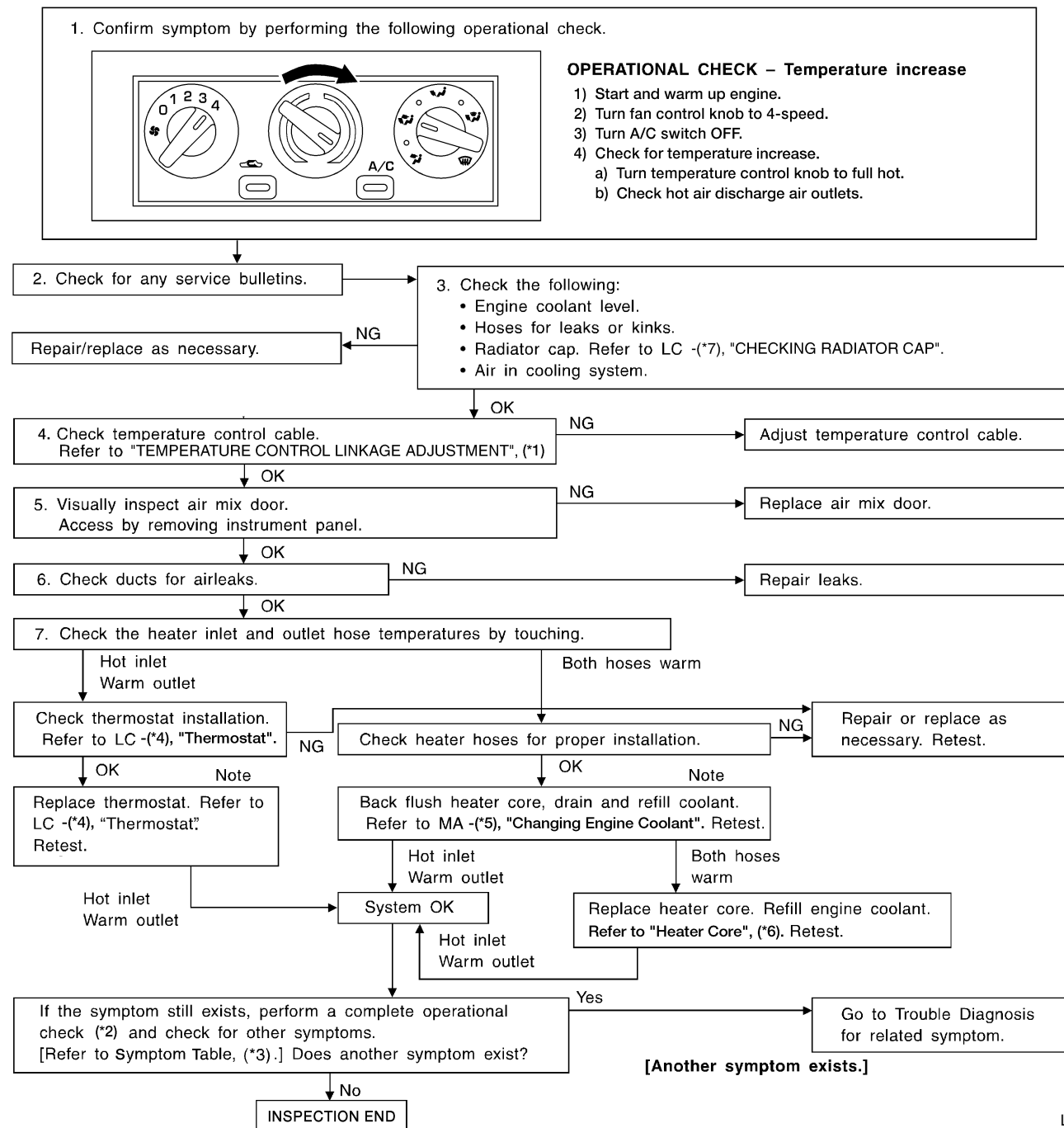
### TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT HEATING

=NEHA0140

**Symptom:**

- **Insufficient heating**

**Inspection Flow**



\*1: HA-64

\*2: HA-29

\*3: HA-28

\*4: **LC-13** (KA24DE models) or **LC-30** (VG33E and VG33ER models)

\*5: **MA-17** (KA24DE models) or **MA-27** (VG33E and VG33ER models)

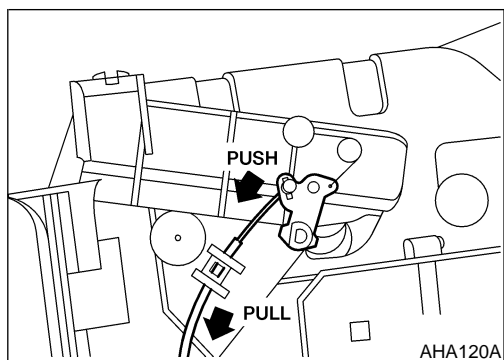
\*6: HA-86

\*7: **LC-12** (KA24DE models) or **LC-28** (VG33E and VG33ER models)

LHA261

## TROUBLE DIAGNOSES

### Insufficient Heating (Cont'd)



### TEMPERATURE CONTROL LINKAGE ADJUSTMENT

NEHA0279

#### 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 knob 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.



# TROUBLE DIAGNOSES

Noise

## Noise

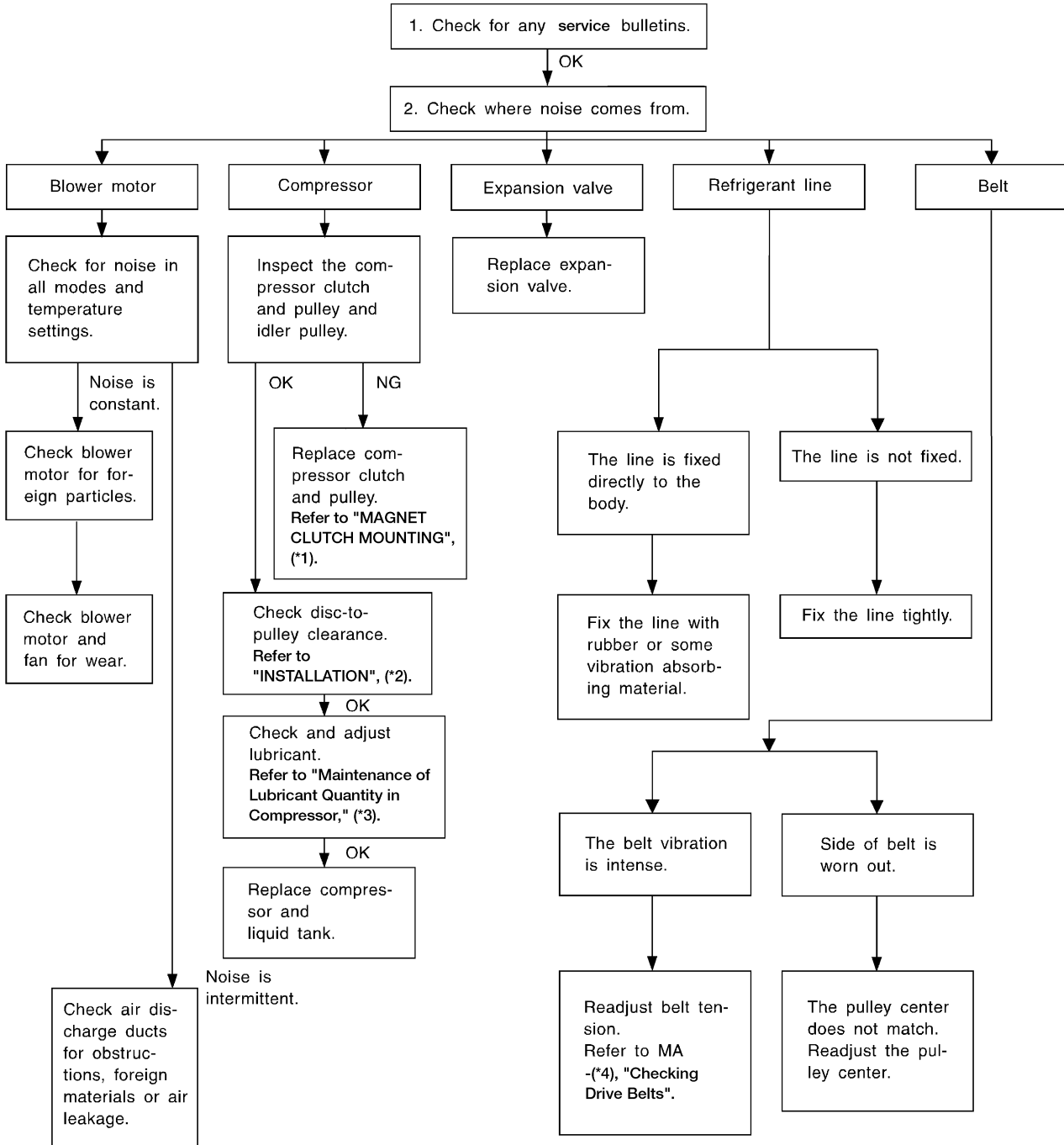
### TROUBLE DIAGNOSIS PROCEDURE FOR NOISE

=NEHA0080

Symptom:

- Noise

Inspection Flow



LHA262

\*1: HA-74  
\*2: HA-77

\*3: HA-68  
\*4: MA-16 (KA24DE models) or

MA-25 (VG33E and VG33ER models)

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# SERVICE PROCEDURE

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

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

NEHA0094

NEHA0094S01

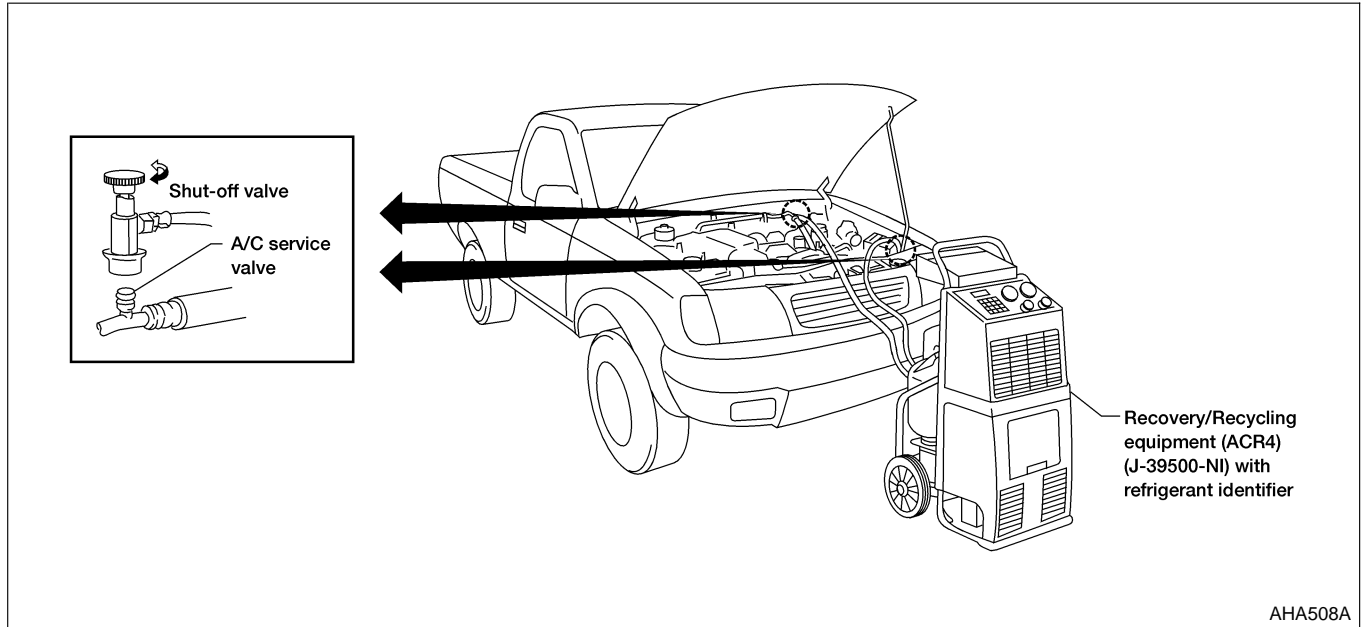
### SETTING OF SERVICE TOOLS AND EQUIPMENT

#### 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.

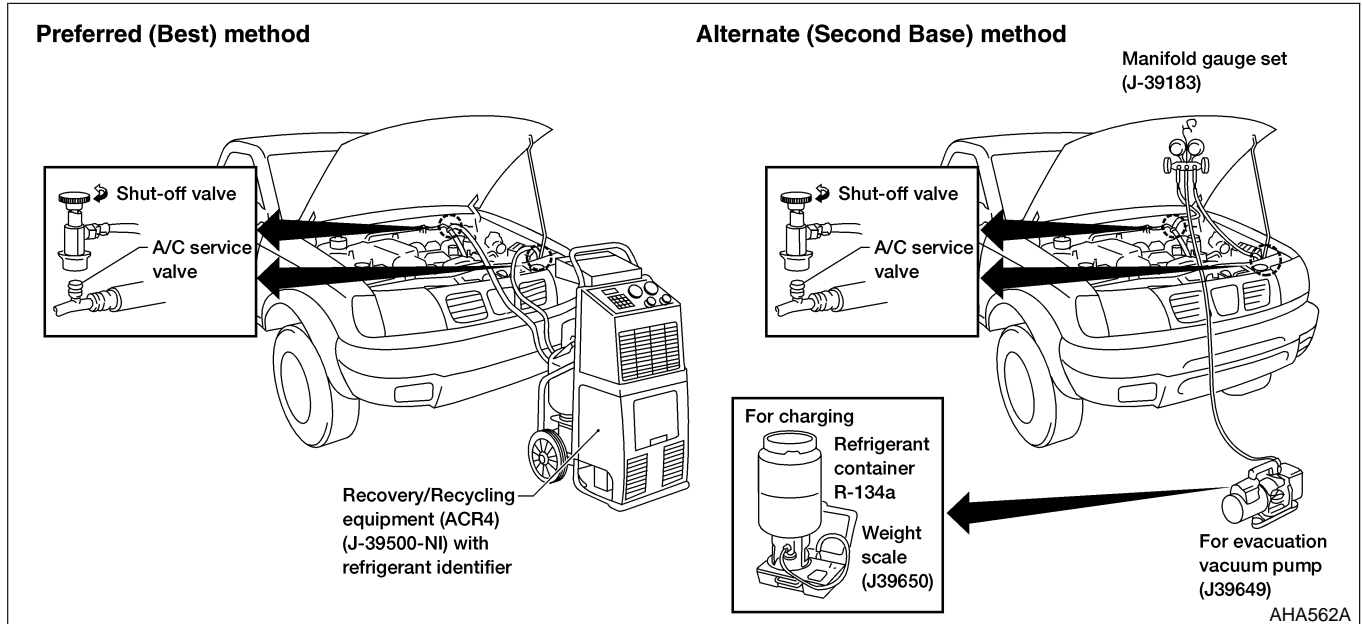
### Discharging Refrigerant

NEHA0094S0101



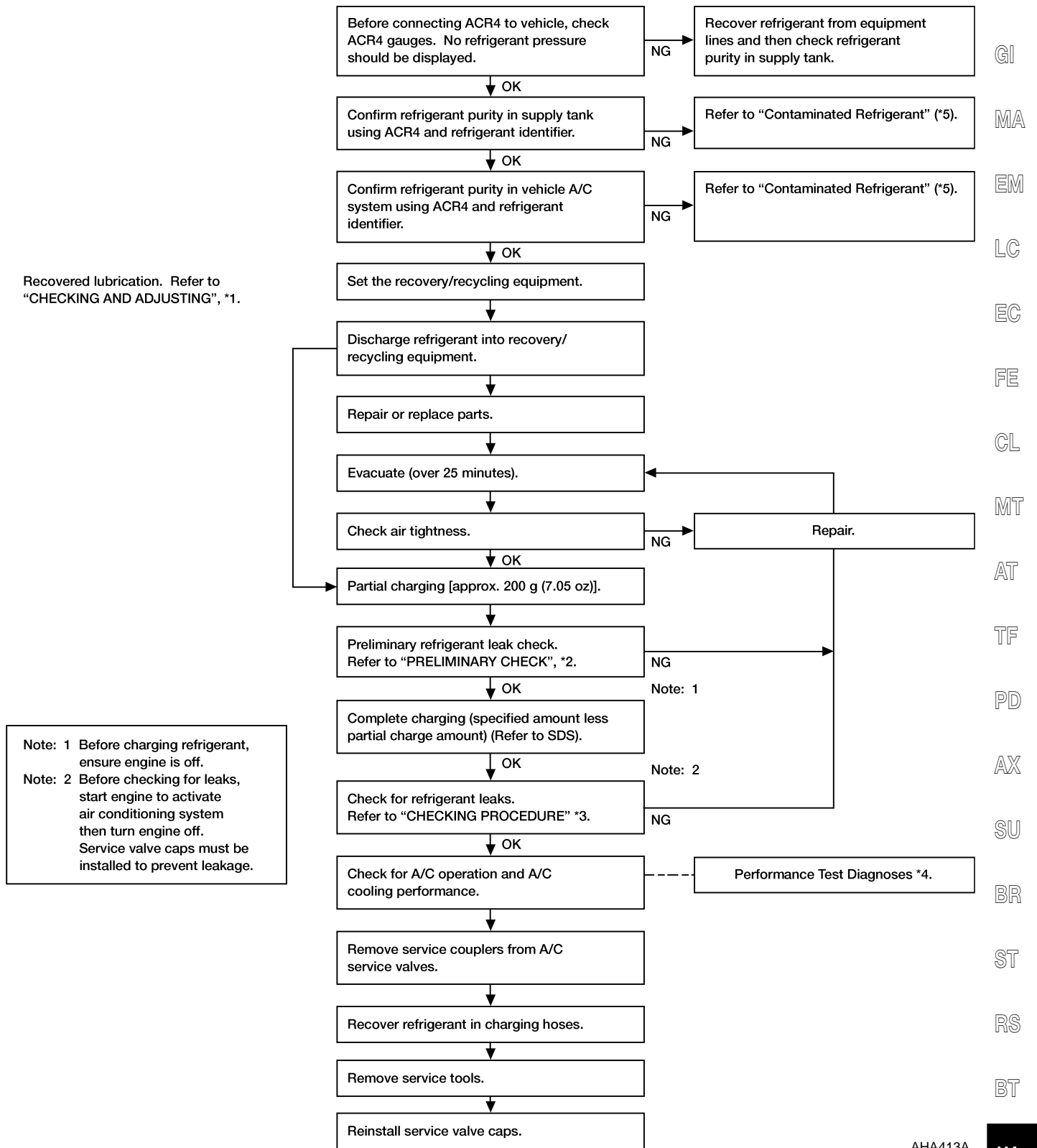
### Evacuating System and Charging Refrigerant

NEHA0094S0103



# SERVICE PROCEDURE

HFC-134a (R-134a) Service Procedure (Cont'd)



Recovered lubrication. Refer to "CHECKING AND ADJUSTING", \*1.

Note: 1 Before charging refrigerant, ensure engine is off.  
 Note: 2 Before checking for leaks, start engine to activate air conditioning system then turn engine off. Service valve caps must be installed to prevent leakage.

\*1 HA-68  
 \*2 HA-81

\*3 HA-82  
 \*4 HA-56

\*5 HA-3

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# SERVICE PROCEDURE

Maintenance of Lubricant Quantity in Compressor

## Maintenance of Lubricant Quantity in Compressor

NEHA0095

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

NEHA0095S01

**Name: NISSAN A/C System Lubricant Type R**

**Part number: KLH00-PAGRO**

### CHECKING AND ADJUSTING

NEHA0095S02

Adjust the lubricant quantity according to the flowchart shown below.

<b>1</b>	<b>LUBRICANT RETURN OPERATION</b>	
Can lubricant return operation be performed?		
<ul style="list-style-type: none"> <li>● A/C system works properly.</li> <li>● There is no evidence of a large amount of lubricant leakage.</li> </ul>		
<b>Yes or No</b>		
Yes	▶	GO TO 2.
No	▶	GO TO 3.

<b>2</b>	<b>PERFORM LUBRICANT RETURN OPERATION, PROCEEDING AS FOLLOWS</b>	
1. Start engine, and set the following conditions:		
● <b>Test condition</b>		
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.		
<b>CAUTION:</b>		
If excessive lubricant leakage is noted, do not perform the lubricant return operation.		
	▶	GO TO 3.

<b>3</b>	<b>CHECK COMPRESSOR</b>	
Should the compressor be replaced?		
<b>Yes or No</b>		
Yes	▶	Refer to "Lubricant Adjusting Procedure for Compressor Replacement", HA-70.
No	▶	GO TO 4.

# SERVICE PROCEDURE

Maintenance of Lubricant Quantity in Compressor (Cont'd)

<b>4</b>	<b>CHECK ANY PART</b>	
Is there any part to be replaced? (Evaporator, condenser, liquid tank or in case there is evidence of a large amount of lubricant leakage.)		
<b>Yes or No</b>		
Yes	▶	Refer to "Lubricant Adjusting Procedure for Components Replacement Except Compressor", HA-70.
No	▶	Perform "PERFORMANCE TEST DIAGNOSES", HA-56.

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## SERVICE PROCEDURE

Maintenance of Lubricant Quantity in Compressor (Cont'd)

### Lubricant Adjusting Procedure for Components Replacement Except Compressor

=NEHA0095S0201

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 mℓ (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

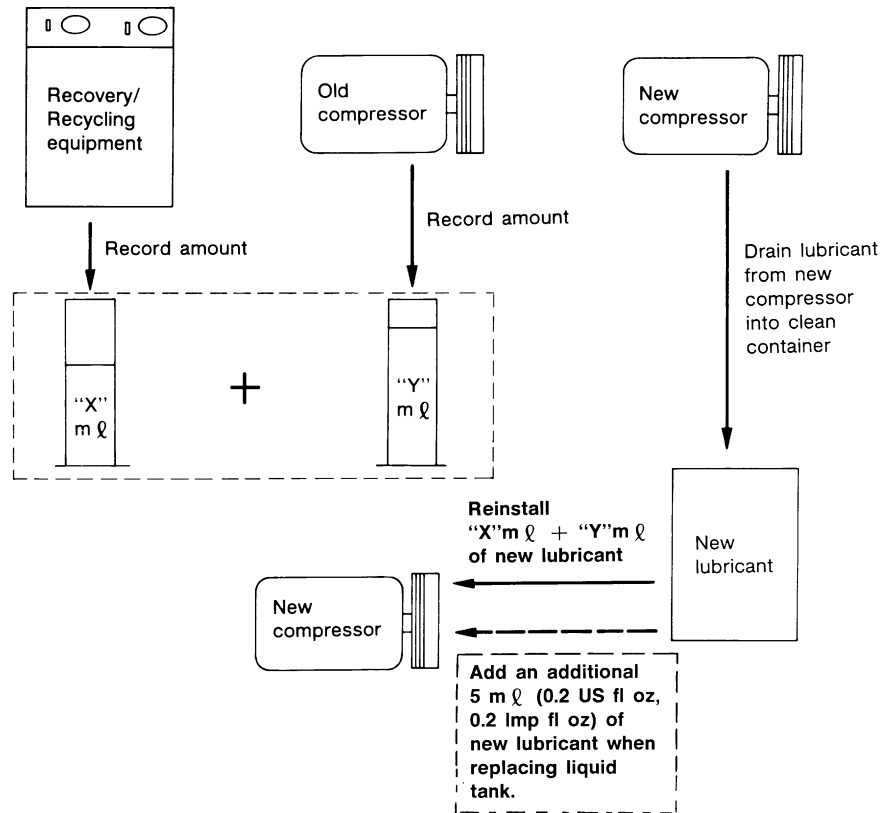
NEHA0095S0202

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

# SERVICE PROCEDURE

Maintenance of Lubricant Quantity in Compressor (Cont'd)

## Lubricant adjusting procedure for compressor replacement



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# SERVICE PROCEDURE

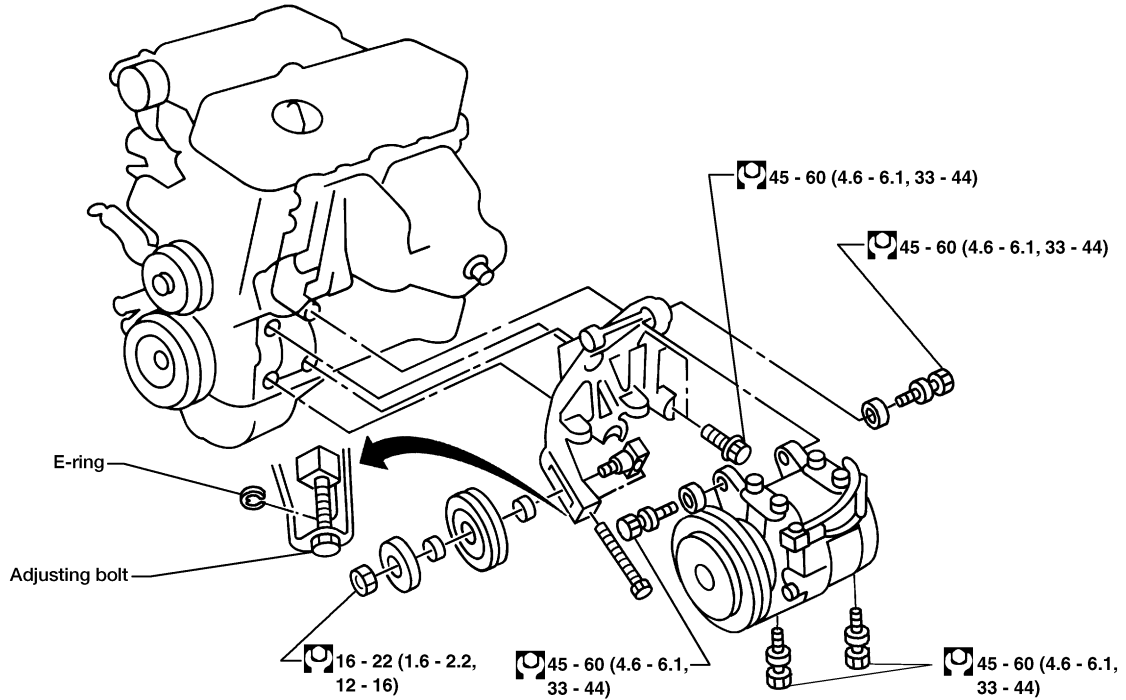
Compressor


## Compressor COMPRESSOR MOUNTING KA24DE Models

NEHA0096

NEHA0096S01

SEC. 274•275



 : N·m (kg-m, ft-lb)

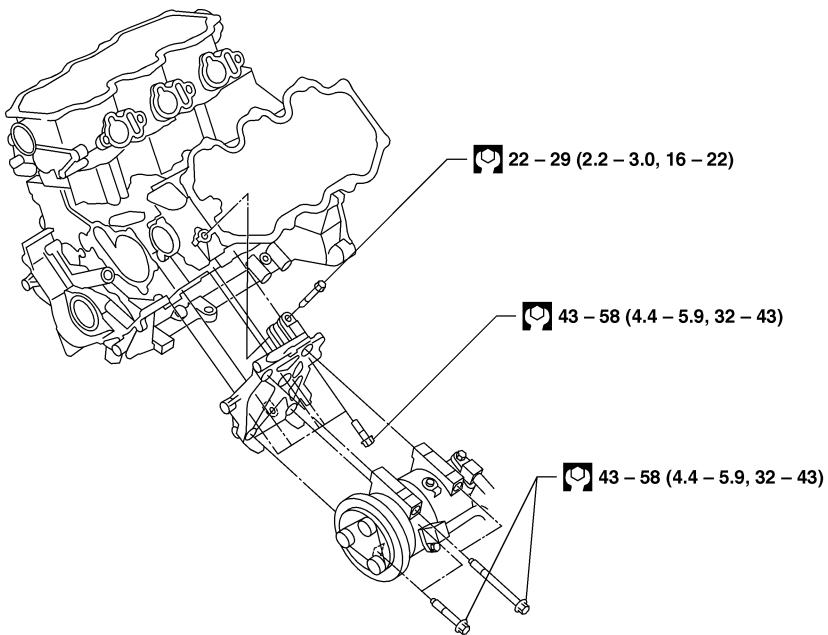
LHA236



## VG33E and VG33ER Models

NEHA0096S02

SEC. 274 · 275



: N·m (kg·m, ft·lb)

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# SERVICE PROCEDURE

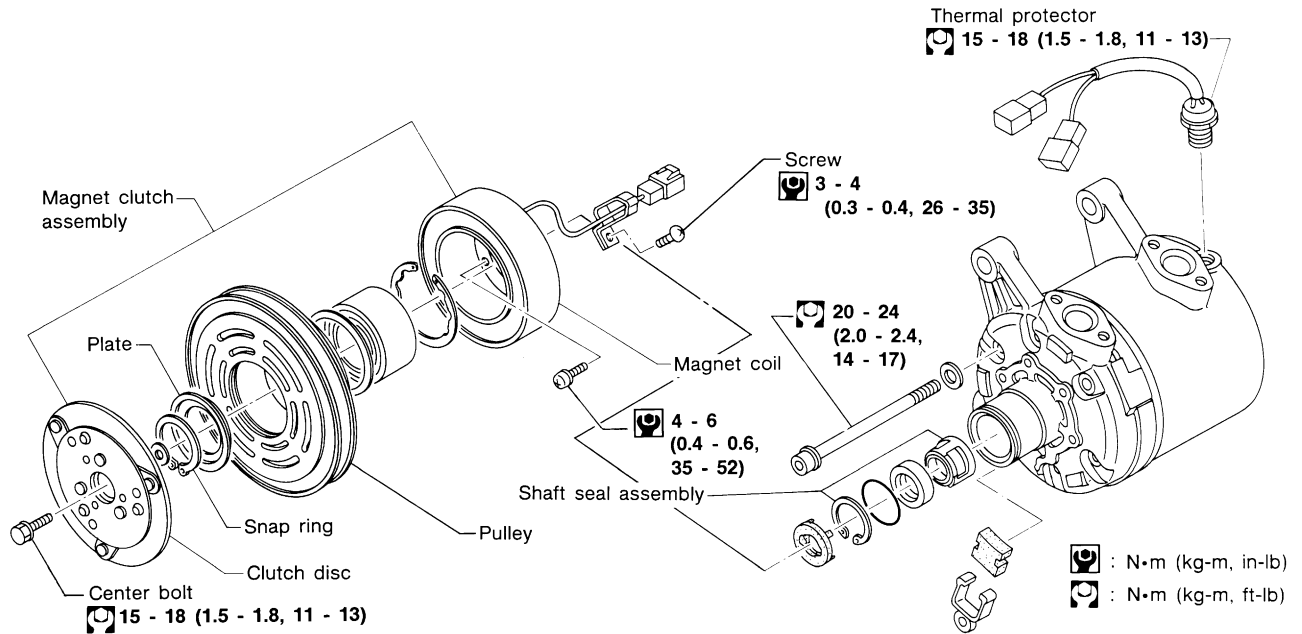
Magnet Clutch

## Magnet Clutch MAGNET CLUTCH MOUNTING KA24DE Models

NEHA0098

NEHA0098S04

### SEC. 274



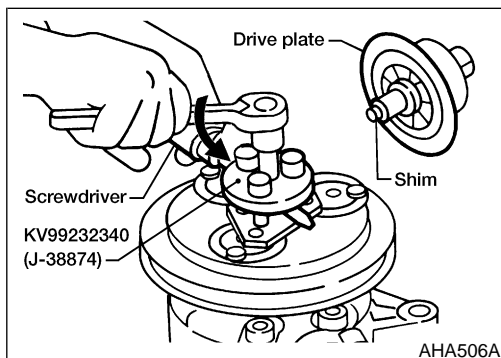
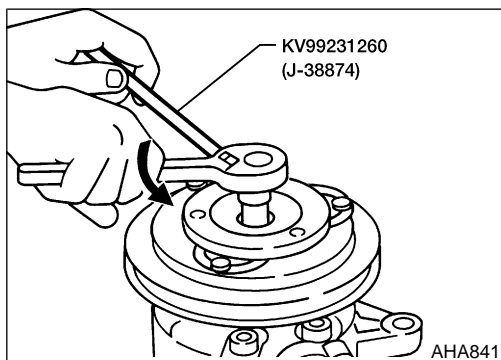
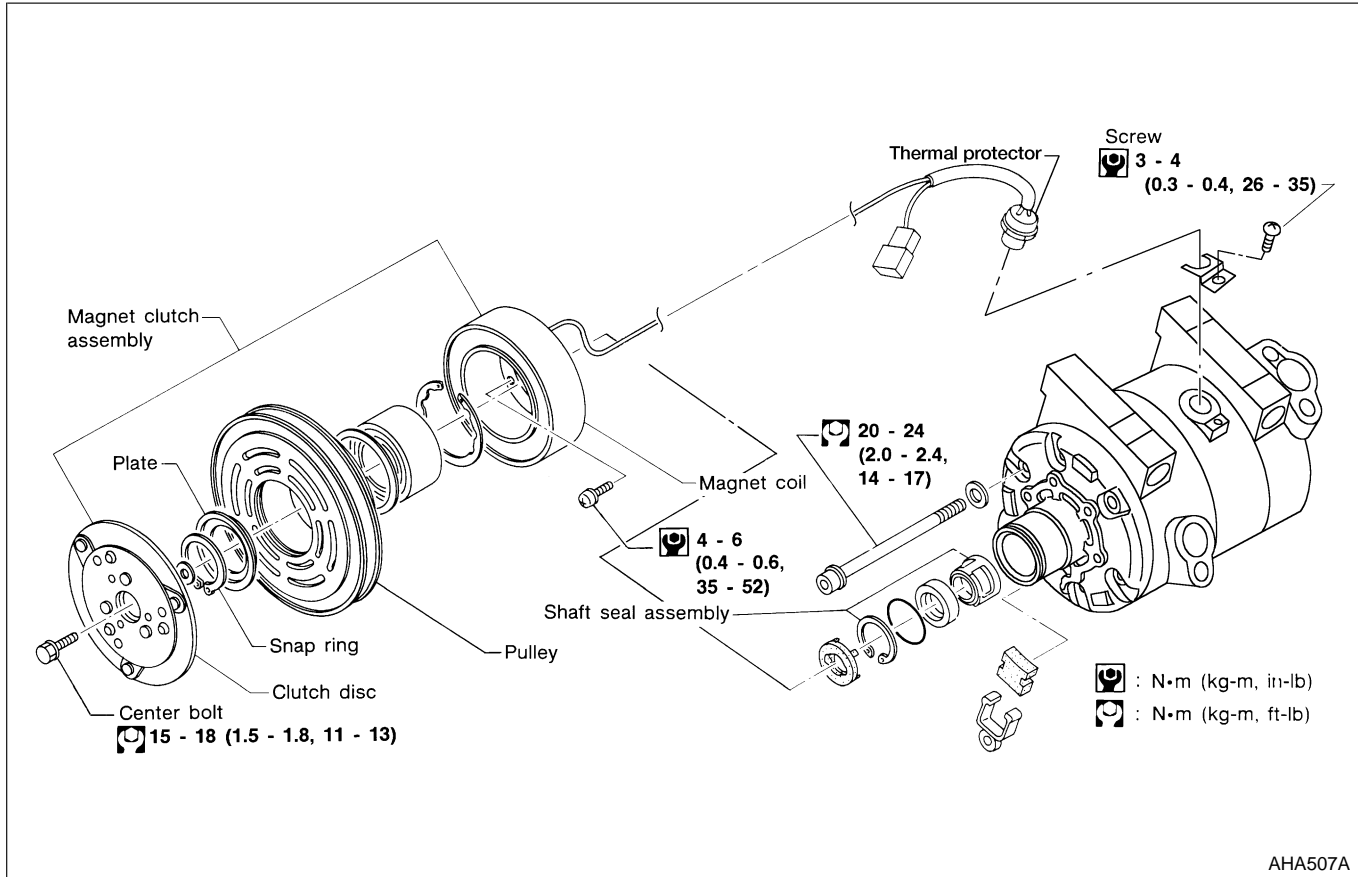
AHA510A

# SERVICE PROCEDURE

Magnet Clutch (Cont'd)

## VG33E and VG33ER Models

NEHA0098S05



### REMOVAL

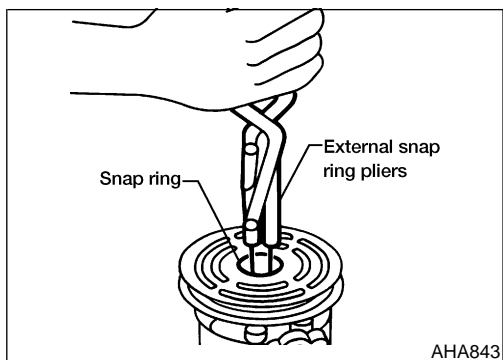
- When removing center bolt, hold clutch disc with clutch disc wrench. NEHA0280

- 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.

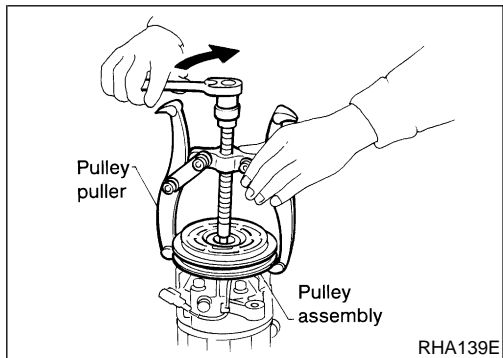
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# SERVICE PROCEDURE

## Magnet Clutch (Cont'd)



- Remove the snap ring using external snap ring pliers.

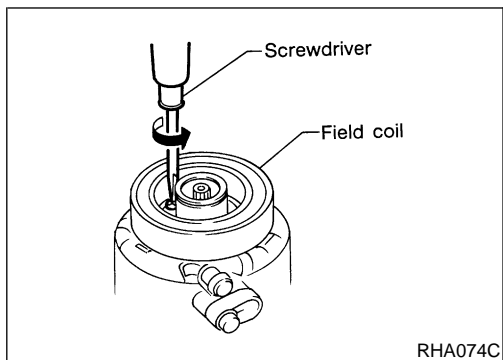


- For pulley removal use pulley puller. Use a commercially available pulley puller. Position the center of the puller on the end of the drive shaft. Remove the pulley assembly with the puller.

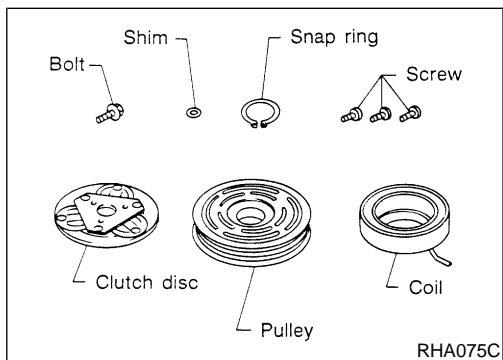
### For Pressed Pulleys:

**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.



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



## INSPECTION

### Clutch Disc

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

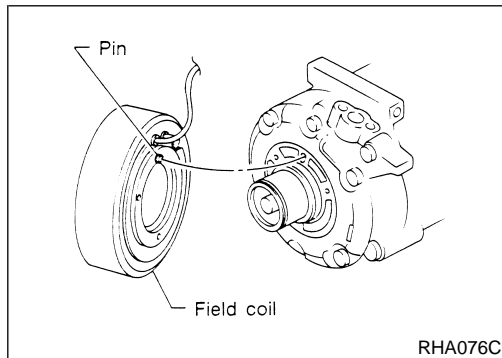
### Pulley

Check the appearance of the pulley assembly. If 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.

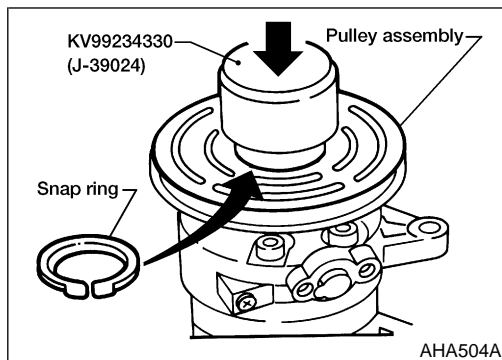
NEHA0281S03



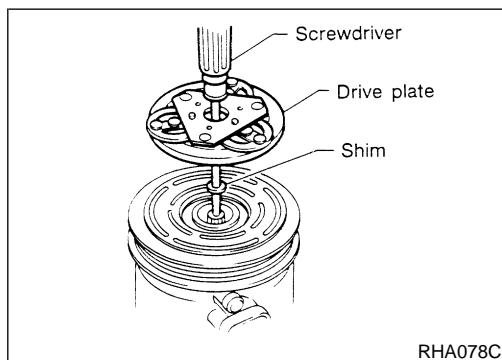
## INSTALLATION

NEHA0282

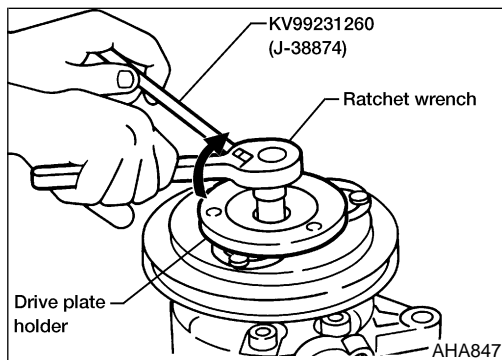
- Install the field coil.
- **Be sure to align the coil's pin with the hole in the compressor's front head.**
- Install the field coil harness clip using a screwdriver.



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



- 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.**

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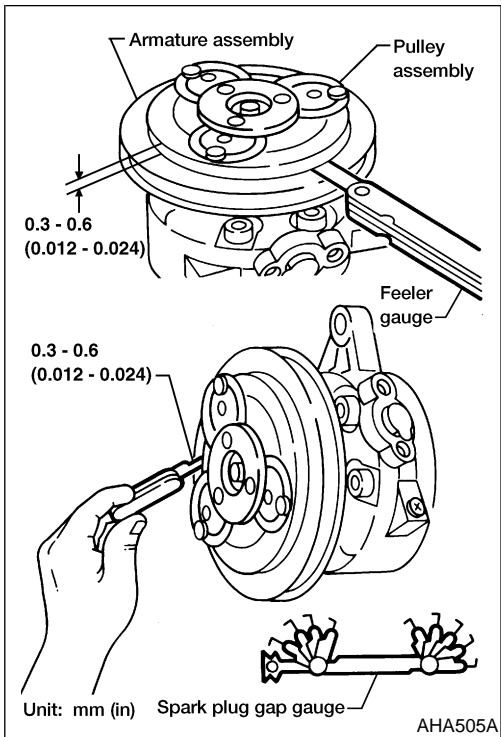
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# SERVICE PROCEDURE

## Magnet Clutch (Cont'd)



- 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

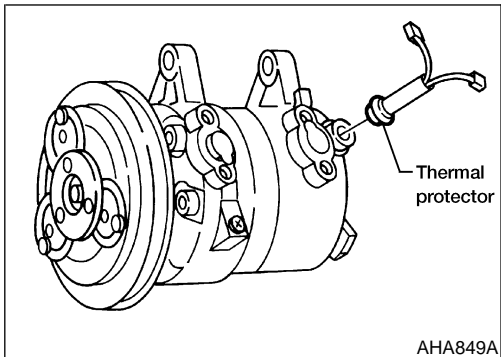
When replacing magnet clutch assembly, always conduct the break-in operation. This is done by engaging and disengaging the clutch about 30 times. Break-in operation raises the level of transmitted torque.

NEHA0282S01

### Thermal Protector INSPECTION

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

NEHA0284





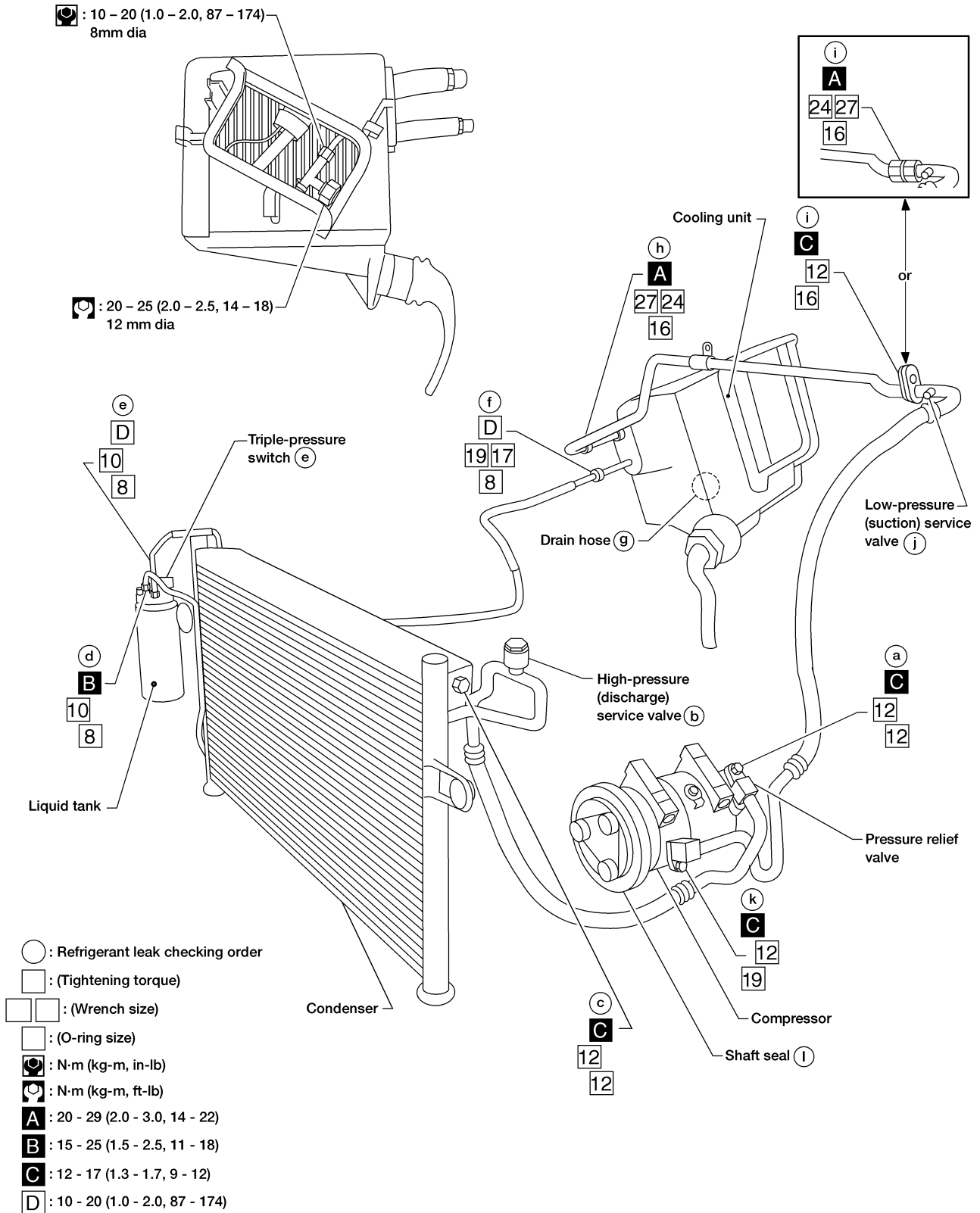
# SERVICE PROCEDURE

Refrigerant Lines (Cont'd)

## VG33E and VG33ER Models

NEHA0101S03

SEC. 271 • 274 • 276



WHA287



## Checking for Refrigerant Leaks

NEHA0296

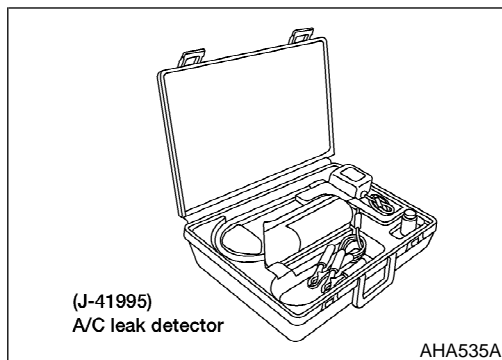
### PRELIMINARY CHECK

NEHA0296S01

- 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

NEHA0297

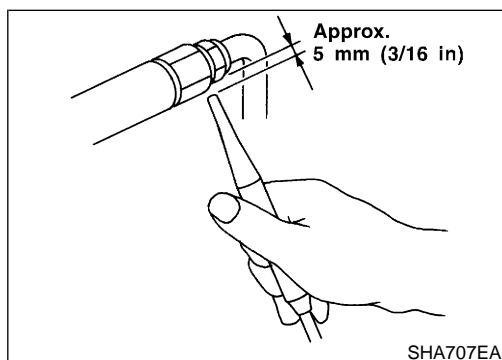
### PRECAUTIONS FOR HANDLING LEAK DETECTOR

NEHA0297S01

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.**

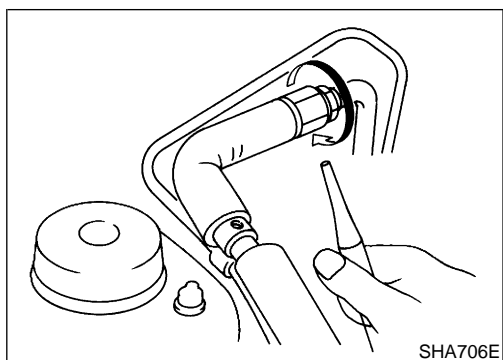


1. Position probe approximately 5 mm (3/16 in) away from point to be checked.

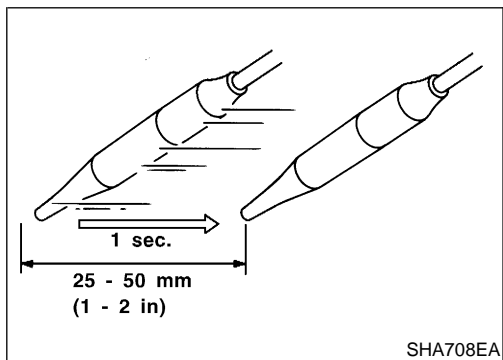
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## SERVICE PROCEDURE

### Electronic Refrigerant Leak Detector (Cont'd)



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



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

## CHECKING PROCEDURE

NEHA0297S02

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.

1. Turn engine off.
2. Connect a suitable A/C manifold gauge set to the A/C service ports.
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.52 kg/cm<sup>2</sup>, 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 "HFC-134a (R-134a) Service Procedure", HA-66.

### NOTE:

At temperatures below 16°C (61°F), leaks may not be detected since the system may not reach 345 kPa (3.52 kg/cm<sup>2</sup>, 50 psi).

4. 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 "Refrigerant Lines", HA-79. 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).

# SERVICE PROCEDURE

Electronic Refrigerant Leak Detector (Cont'd)

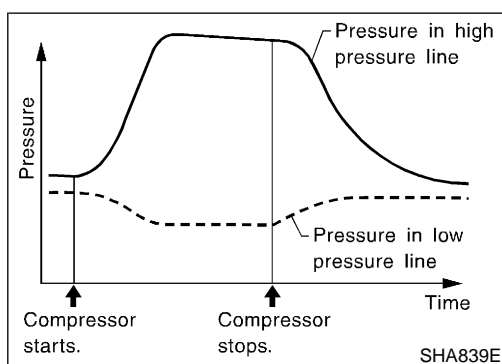
## NOTE:

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.

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 ACR4 to vehicle, check ACR4 gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover refrigerant from equipment lines and then check refrigerant purity.
12. Confirm refrigerant purity in supply tank using ACR4 and refrigerant identifier. Refer to "Contaminated Refrigerant", HA-3.
13. Confirm refrigerant purity in vehicle A/C system using ACR4 and refrigerant identifier. Refer to "Contaminated Refrigerant", HA-3.
14. Discharge A/C system using approved refrigerant recovery equipment. Refer to "Discharging Refrigerant", HA-66. Repair the leaking fitting or component as necessary.
15. Evacuate and recharge A/C system. Refer to "Evacuating System and Charging Refrigerant", HA-66. Perform the leak test to confirm no refrigerant leaks.
16. Conduct A/C performance test to ensure system works properly.

## Fluorescent Dye Leak Detector

### PRECAUTIONS FOR FLUORESCENT DYE LEAK DETECTION

NEHA0298

- 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 "Precautions for Leak Detection Dye", HA-4.

NEHA0298S01

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

NEHA0298S02

### DYE INJECTION

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

Refer to "Precautions for Leak Detection Dye", HA-4.

1. Check A/C system static (at rest) Pressure. Pressure must be at least 345 kPa (3.52 kg/cm<sup>2</sup>, 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.

NEHA0298S03

#### **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.

GI

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## Belt

### TENSION ADJUSTMENT

- Refer to *MA-16* (KA24DE models) or *MA-25* (VG33E models or VG33ER models), “Checking Drive Belts”.

NEHA0103

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### IACV-FICD Solenoid Valve

#### INSPECTION

- Refer to *EC-609* (KA24DE models), *EC-1210* (VG33E models) or *EC-1813* (VG33ER models), “Component Description”.

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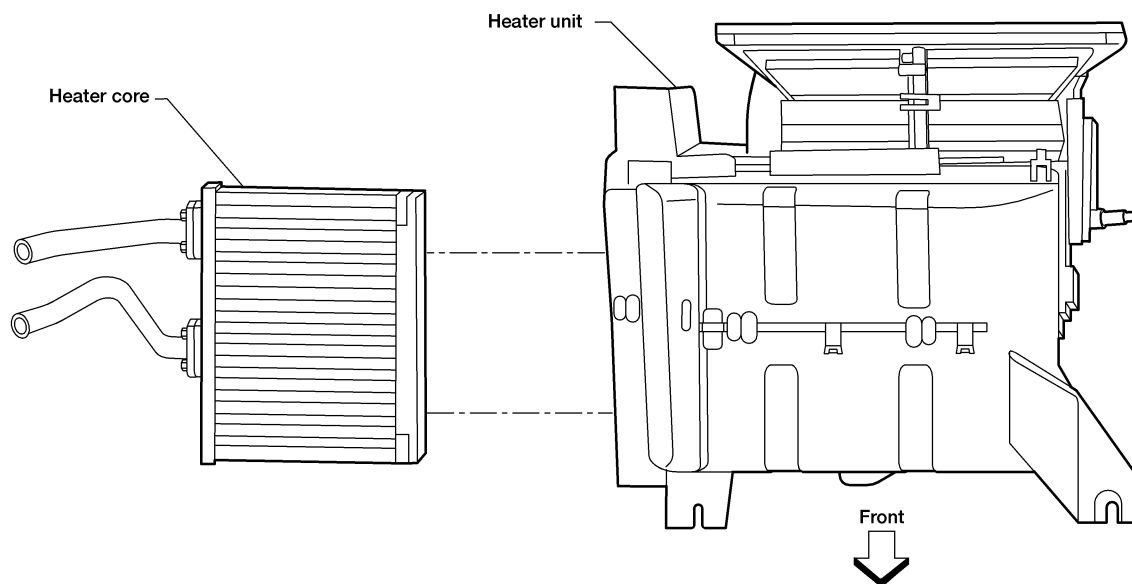
# SERVICE PROCEDURE

Heater Core

## Heater Core

NEHA0171

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### REMOVAL

1. Drain cooling system. Refer to **MA-17** (KA24DE models) or **MA-27** (VG33E and VG33ER models), "Changing Engine Coolant".
2. Disconnect the two heater hoses from the engine compartment side.
3. Remove the cooling unit. Refer to "Evaporator Core", HA-87.
4. Remove the steering member assembly. Refer to **BT-20**, "Removal and Installation".
5. Remove the heater unit.
6. Remove the heater core.

NEHA0171S01

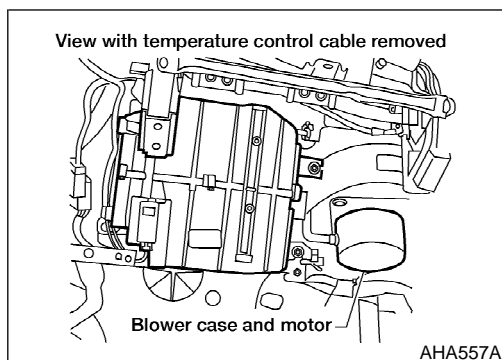
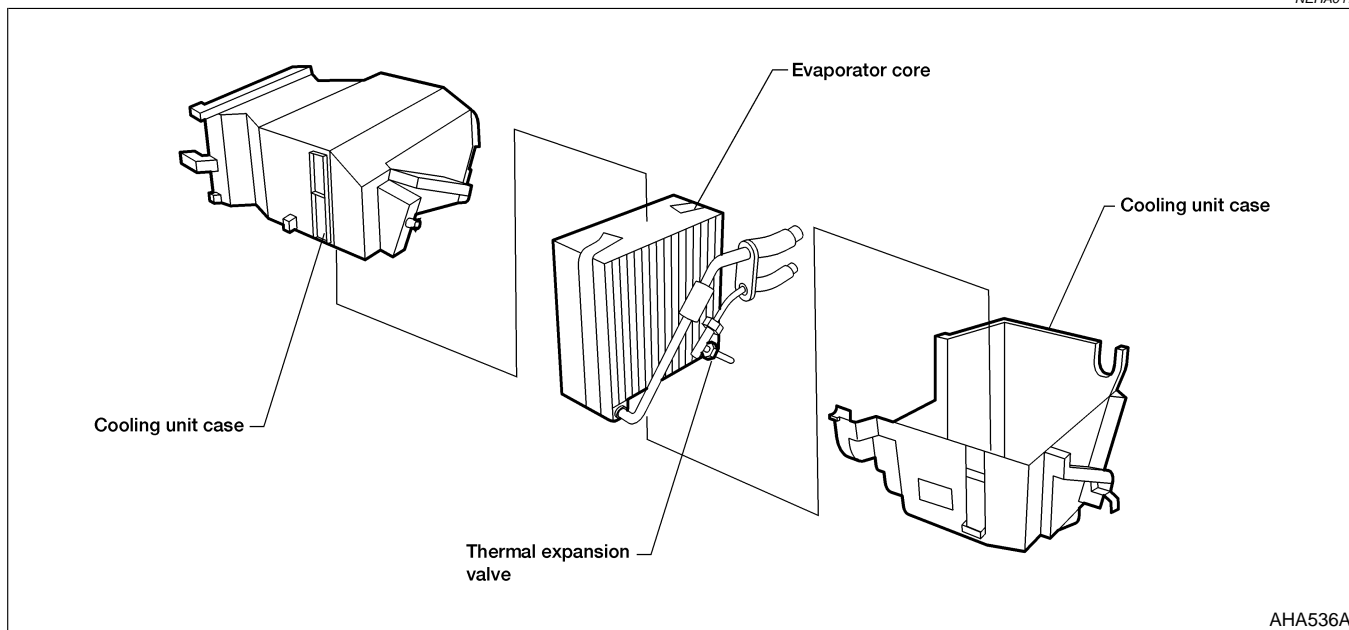
### INSTALLATION

Installation is the reverse order of removal. Inspect system for coolant leaks. Refer to **MA-17** (KA24DE models) or **MA-27** (VG33E and VG33ER models), "Changing Engine Coolant".

NEHA0171S02

## Evaporator Core

NEHA0172



### REMOVAL

NEHA0172S01

1. Discharge the A/C system. Refer to "Discharging Refrigerant", HA-66.
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 **BT-20**, "Removal and Installation".
4. Disconnect the thermal amp. connector.
5. Remove the cooling unit.
6. Separate the cooling unit case, and remove the evaporator.

### INSTALLATION

NEHA0172S02

Installation is the reverse order of removal.

#### Recharge the A/C system.

Inspect system for refrigerant leaks. Refer to "Checking for Refrigerant Leaks", HA-81.

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# SERVICE DATA AND SPECIFICATIONS (SDS)

Manual

## Manual

### GENERAL SPECIFICATIONS

#### Compressor

=NEHA0169

NEHA0169S01

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

#### Lubricant

NEHA0169S02

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

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

#### Refrigerant

NEHA0169S03

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

NEHA0170

#### Engine Idling Speed (When A/C is ON)

NEHA0170S01

- Refer to **EC-59**(KA24DE models), **EC-662**(VG33E models) or **EC-1262**(VG33ER models), "Idle Speed/Ignition Timing/Idle Mixture Ratio Adjustment".

#### Belt Tension

NEHA0170S02

- Refer to **MA-16** (KA24DE models) or **MA-25** (VG33E models or VG33ER models), "Checking Drive Belts".

#### Magnet Clutch

NEHA0170S03

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