HEATER & AIR CONDITIONER

SECTION HA

CONTENTS

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

NEHA0060

The Supplemental Restraint System “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a seat belt, help 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, a crash zone sensor (4WD models), 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, *RS-21*.**
- **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”) are covered with yellow insulation either just before the harness connectors or on the complete harness, for easy identification.**
- **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 for Working with HFC-134a (R-134a)

=NEHA0061

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 "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.

Contaminated Refrigerant

NEHA0267

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.

General Refrigerant Precautions

NEHA0062

WARNING:

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

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

Precautions for Refrigerant Connection

NEHA0063

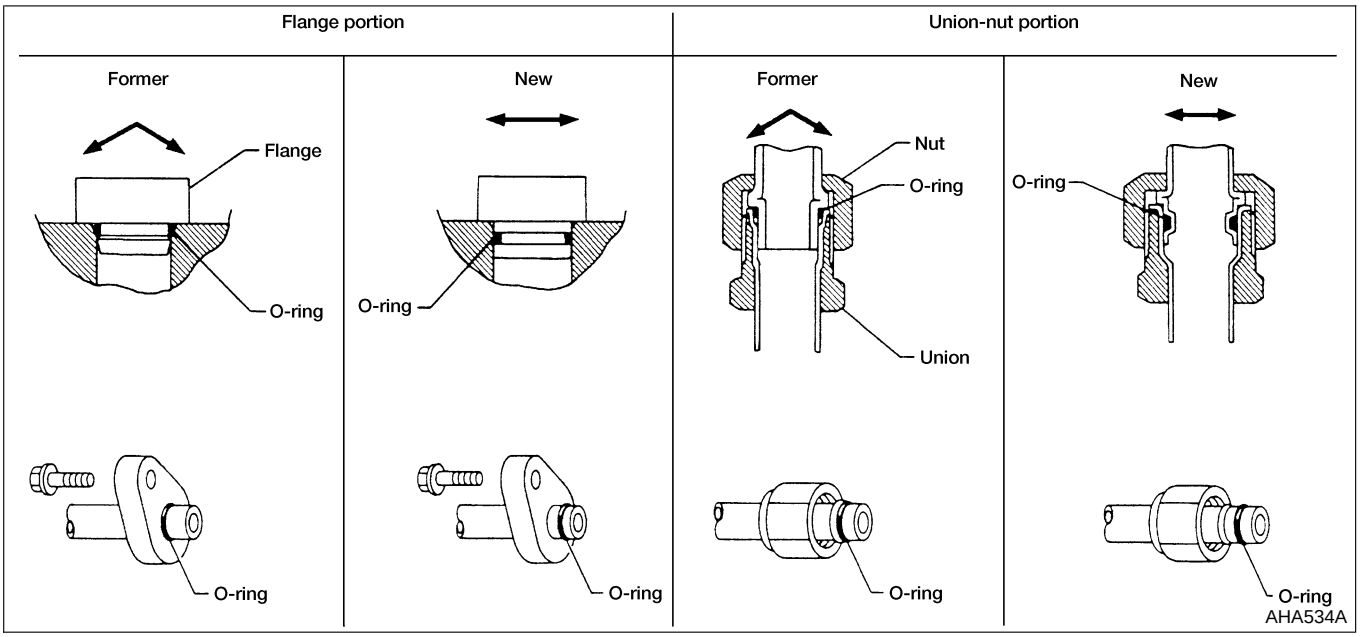
A new type refrigerant connection has been introduced to all refrigerant lines except the following portion.

- Expansion valve to front evaporator core 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.

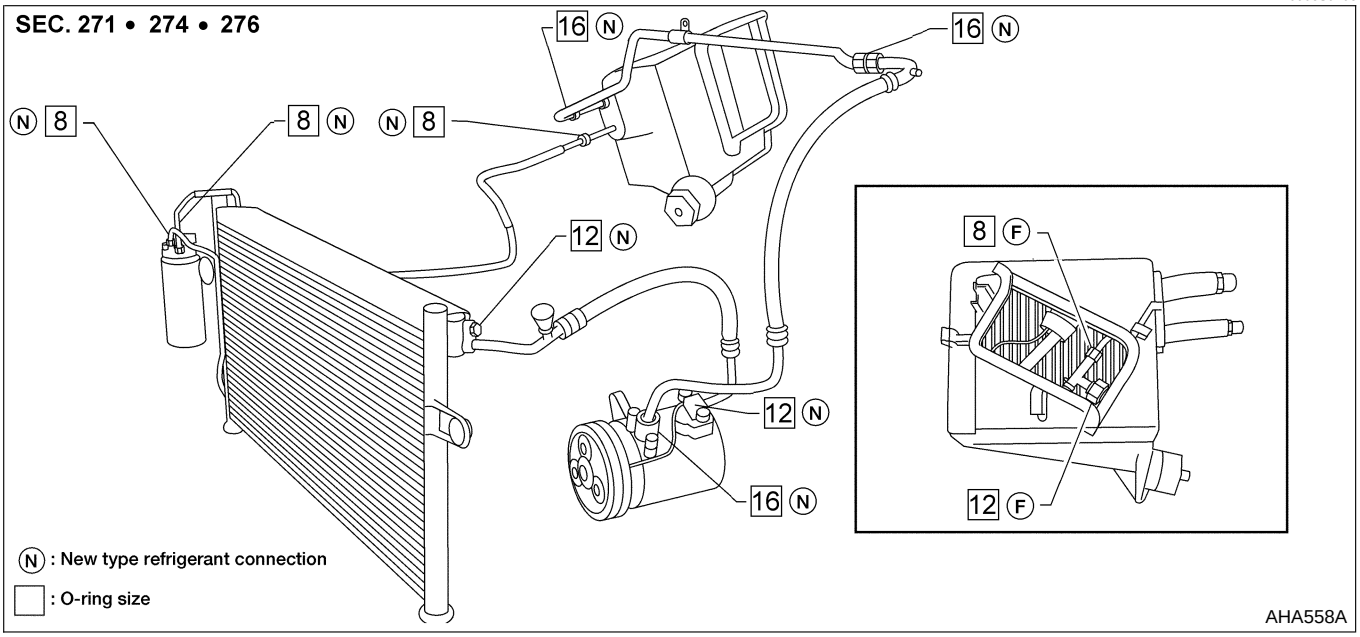


O-RING AND REFRIGERANT CONNECTION

=NEHA0063S02

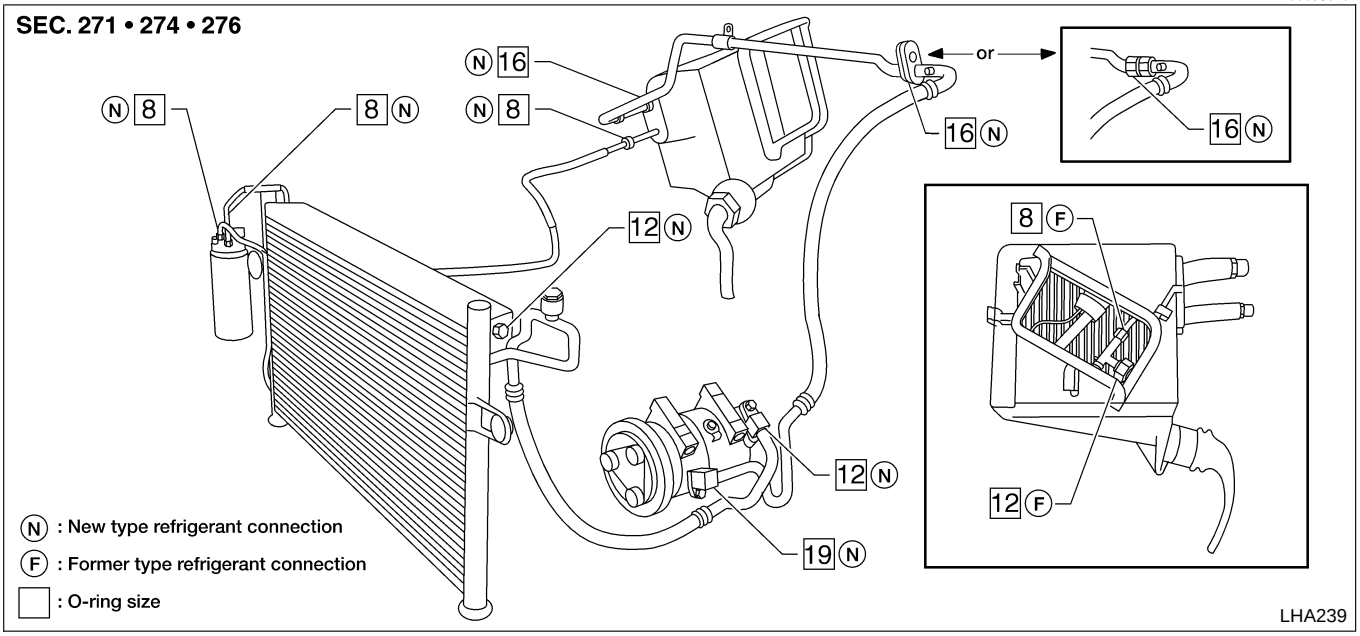
KA24DE Models

NEHA0063S0203



VG33E Models

NEHA0063S0202



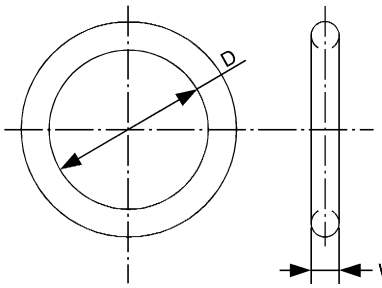
CAUTION:

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 for Refrigerant Connection (Cont'd)

O-Ring Part Numbers and Specifications

NEHA0063S0201



SHA814E

Connection 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.

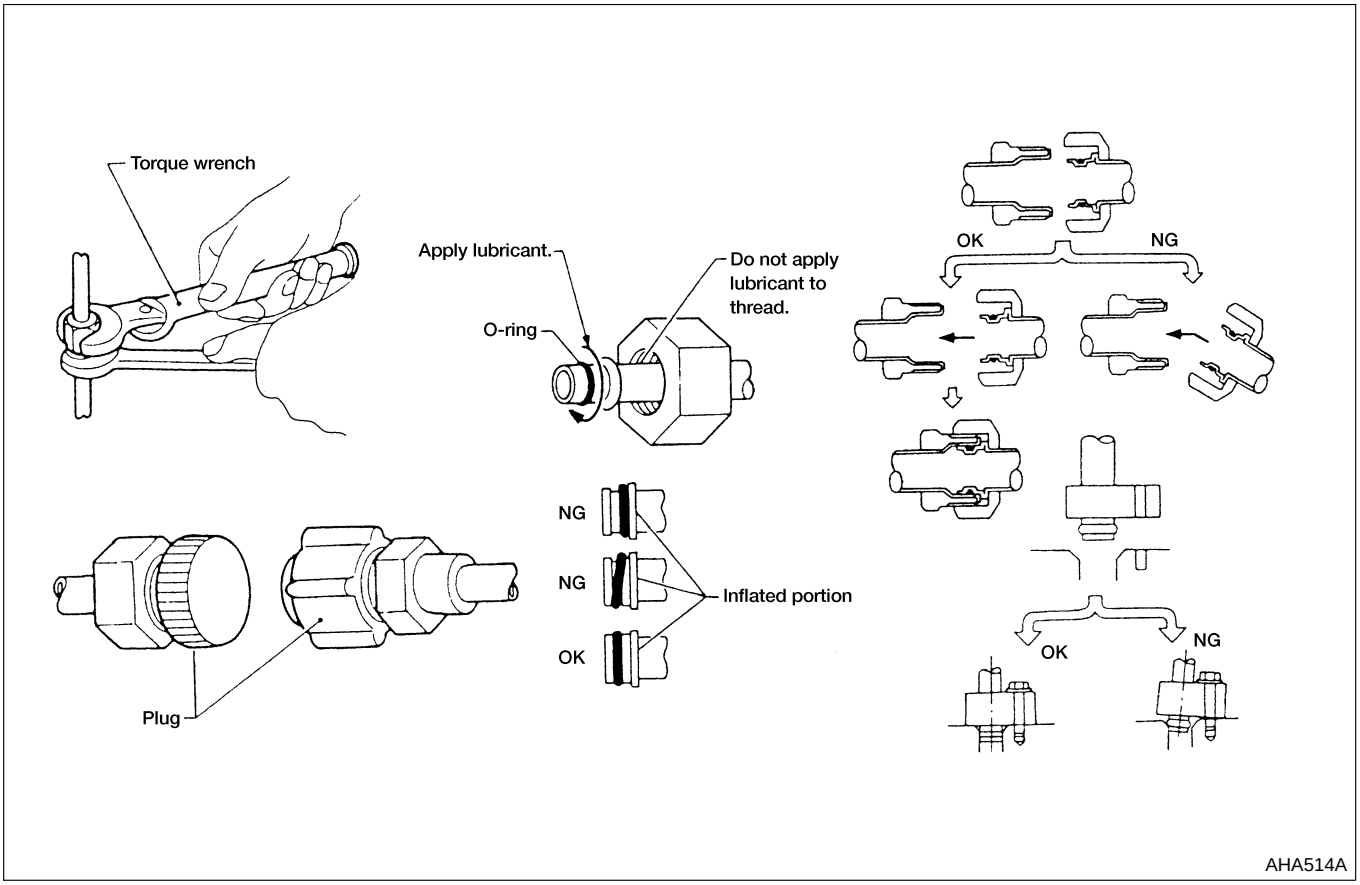
WARNING:

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-PAGR1
- **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.**



Precautions for Servicing Compressor

NEHA0064

- **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 HA-73.**
- **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

NEHA0065

RECOVERY/RECYCLING EQUIPMENT

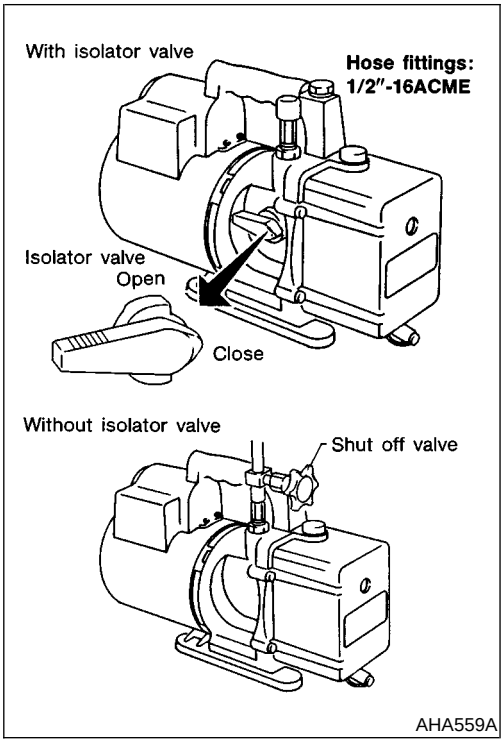
NEHA0065S01

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

NEHA0065S02

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



VACUUM PUMP

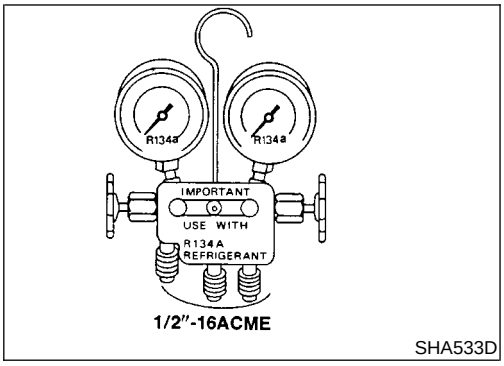
NEHA0065S03

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.

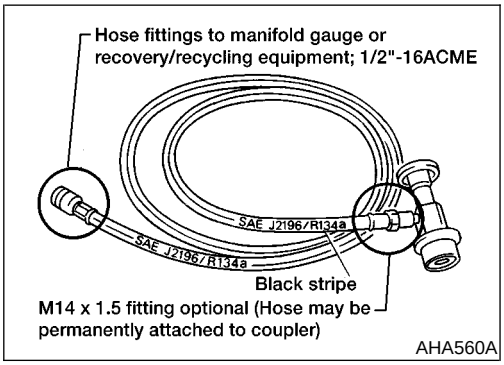
Some one-way valves open when vacuum is applied and close under a no vacuum condition. Such valves may restrict the pump's ability to pull a deep vacuum and are not recommended.



MANIFOLD GAUGE SET

NEHA0065S04

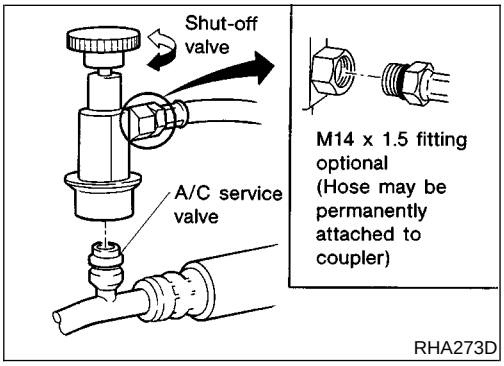
Be certain that the gauge face indicates R-134a or 134a. Make sure the gauge set has 1/2″-16 ACME threaded connections for service hoses. Confirm the set has been used only with refrigerant HFC-134a (R-134a) along with specified lubricant.



SERVICE HOSES

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.

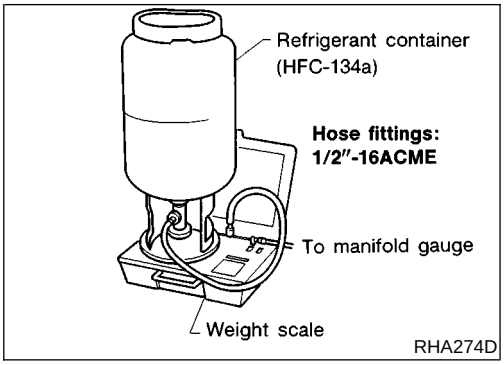


SERVICE COUPLERS

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



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

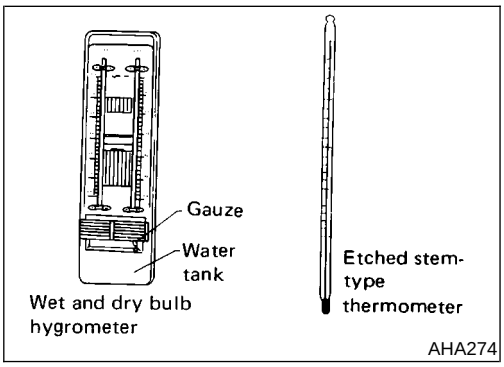
Calibrate the scale every 3 months.
To calibrate the weight scale on the ACR4 (J-39500–NI):

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.

Wiring Diagrams and Trouble Diagnosis

NEHA0066

When you read wiring diagrams, refer to the followings:

- "HOW TO READ WIRING DIAGRAMS" refer to ***GI-11***.
- "POWER SUPPLY ROUTING" refer to ***EL-8*** for power distribution circuit.

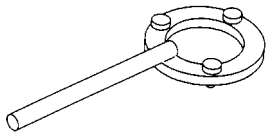
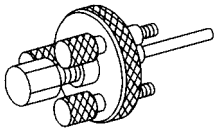
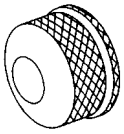
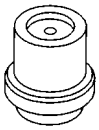
When you perform trouble diagnosis, refer to the followings:

- "HOW TO FOLLOW TEST GROUP IN TROUBLE DIAGNOSIS" refer to ***GI-35***.
- "HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT" refer to ***GI-24***.

Special Service Tools

=NEHA0286

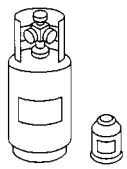
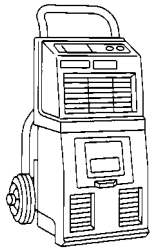
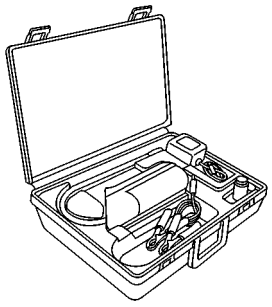
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

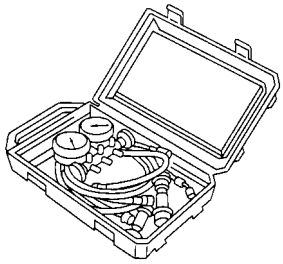
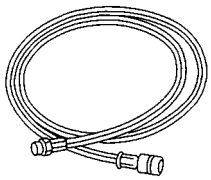
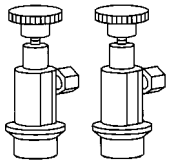
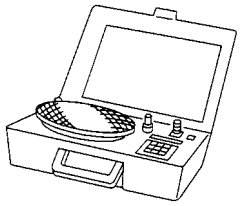
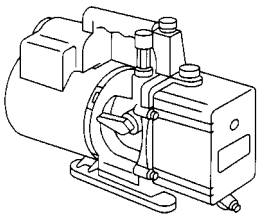
Tool number (Kent-Moore No.) Tool name	Description	
KV99231260 (J-38874) Clutch disc wrench	 NT204	Removing shaft nut and clutch disc
KV99232340 (J-38874) Clutch disc puller	 NT206	Removing clutch disc
KV99234330 (J-39024) Pulley installer	 NT207	Installing pulley
KV99233130 (J-39023) Pulley puller	 NT208	Removing pulley

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

=NEHA0068

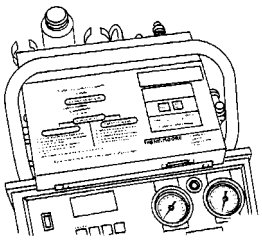
Never mix HFC-134a (R-134a) refrigerant and/or its specified lubricant with CFC-12 (R-12) refrigerant and/or its lubricant.
Separate and non-interchangeable service equipment must be used for handling each type of refrigerant/lubricant.
Refrigerant container fittings, service hose fittings and service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

Tool number (Kent-Moore No.) Tool name	Description	
HFC-134a (R-134a) refrigerant	 NT196	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size ● large container 1/2″-16 ACME
KLH00-PAGR0 (—) Nissan A/C System Lubricant Type R	 NT197	Type: Polyalkylene glycol oil (PAG), type R Application: HFC-134a (R-134a) vane rotary compressors (Nissan only) Lubricity: 40 mℓ (1.4 US fl oz, 1.4 Imp fl oz)
(J-39500-NI) Recovery/Recycling Recharging equipment (ACR4)	 NT195	Function: Refrigerant Recovery and Recycling and Recharging
(J-41995) Electrical leak detector	 AHA281A	Power supply: ● DC 12 V (Cigarette lighter) Function: Checks for refrigerant leaks.

Tool number (Kent-Moore No.) Tool name	Description	
(J-39183) Manifold gauge set (with hoses and couplers)	 NT199	Identification: ● The gauge face indicates R-134a. Fitting size: Thread size ● 1/2″-16 ACME
Service hoses ● High side hose (J-39501-72) ● Low side hose (J-39502-72) ● Utility hose (J-39476-72)	 NT201	Hose color: ● Low hose: Blue with black stripe ● High hose: Red with black stripe ● Utility hose: Yellow with black stripe or green with black stripe Hose fitting to gauge: ● 1/2″-16 ACME
Service couplers ● High side coupler (J-39500-20) ● Low side coupler (J-39500-24)	 NT202	Hose fitting to service hose: ● M14 x 1.5 fitting is optional or permanently attached.
(J-39650) Refrigerant weight scale	 NT200	For measuring of refrigerant Fitting size: Thread size ● 1/2″-16 ACME
(J-39649) Vacuum pump (Including the isolator valve)	 NT203	Capacity: ● Air displacement: 4 CFM ● Micron rating: 20 microns ● Oil capacity: 482 g (17 oz) Fitting size: Thread size ● 1/2″-16 ACME

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

NEHA0069S01

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

Freeze Protection

NEHA0069S02

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

Refrigerant System Protection

NEHA0069S03

Dual pressure switch (KA24DE Models) or Triple pressure switch (VG33E Models)

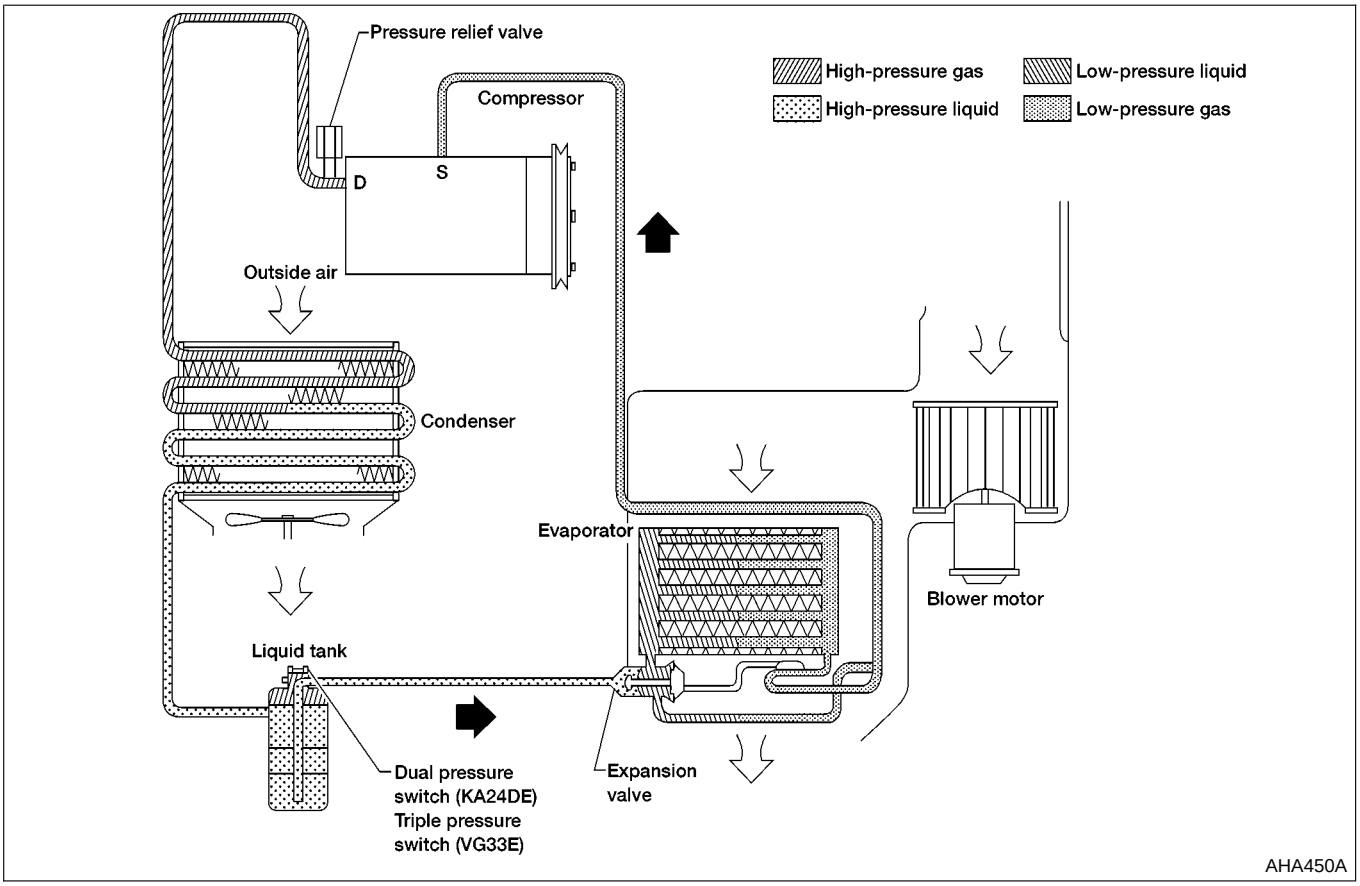
NEHA0069S0301

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.

Pressure Relief Valve

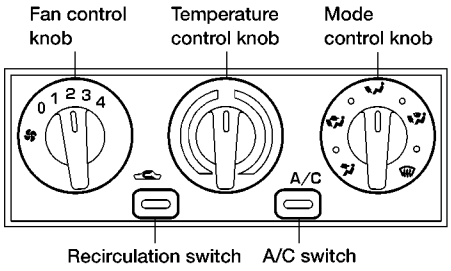
NEHA0069S0302

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^2, 540 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.

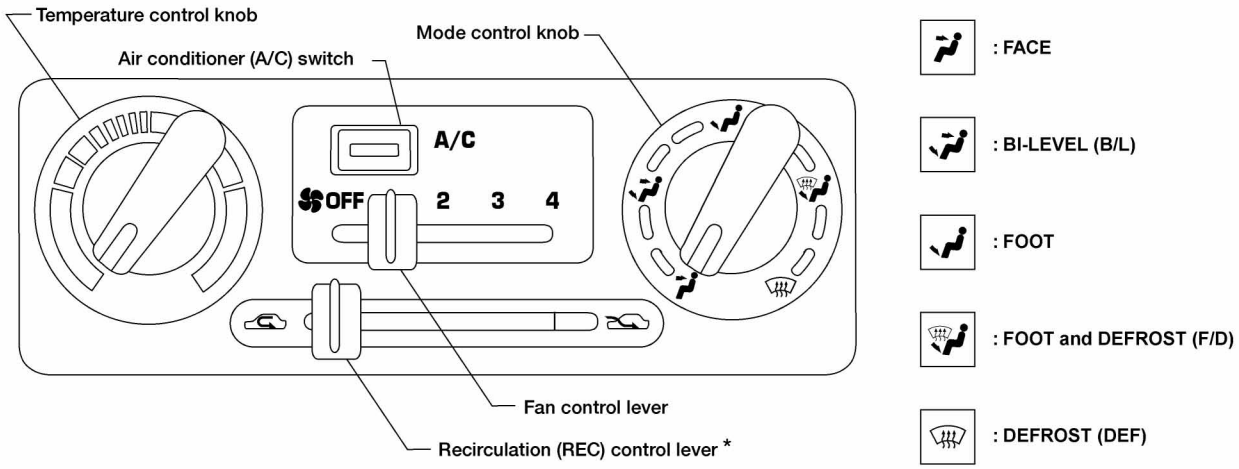


Control Operation

NEHA0072



AHA488A



* : Recirculation (REC) control lever not available on non-A/C vehicles.

AHA548A

FAN CONTROL KNOB (LEVER)

NEHA0072S01

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

MODE CONTROL KNOB

NEHA0072S03

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

TEMPERATURE CONTROL KNOB

NEHA0072S04

This knob allows adjustment of the outlet air temperature.

RECIRCULATION (REC) SWITCH (LEVER)

NEHA0072S05

OFF position: Outside air is drawn into the passenger compartment.
ON position: Interior air is recirculated inside the vehicle. The indicator lamp will also light.

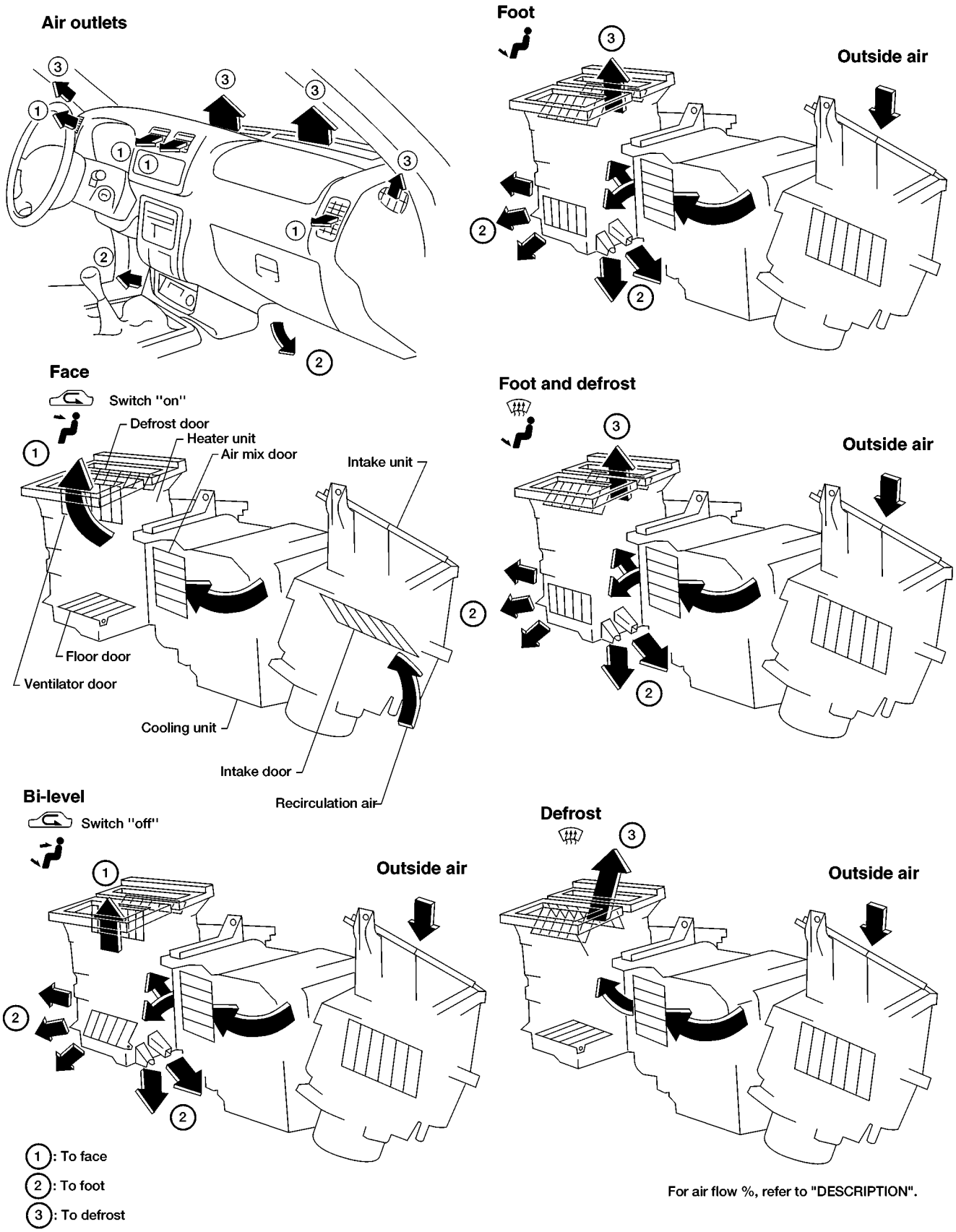
AIR CONDITIONER SWITCH

NEHA0072S06

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

Discharge Air Flow

NEHA0073



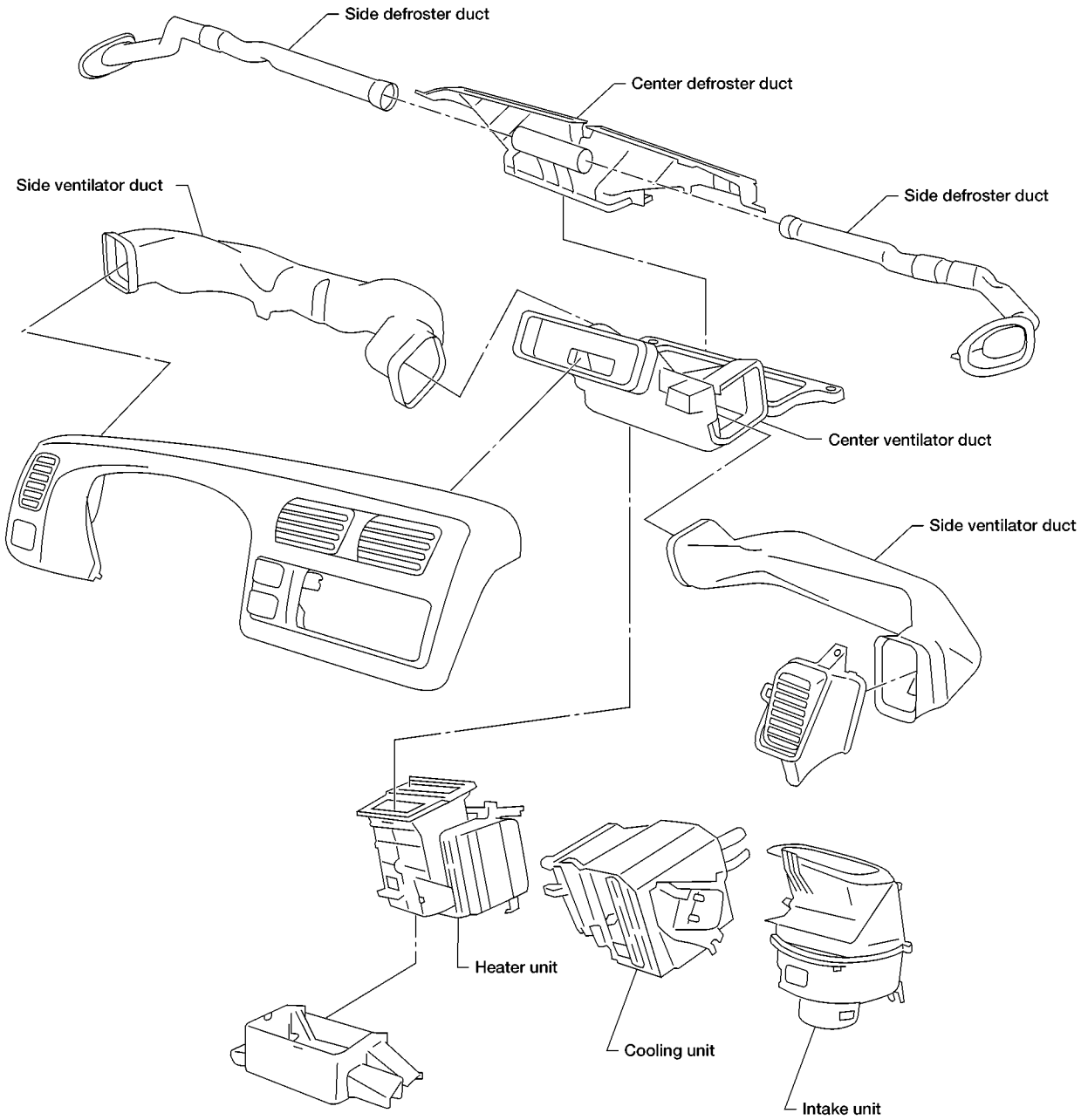
For air flow %, refer to "DESCRIPTION".

AHA290A

Component Layout

NEHA0272

SEC. 270 • 271 • 272 • 273 • 685



AHA123A

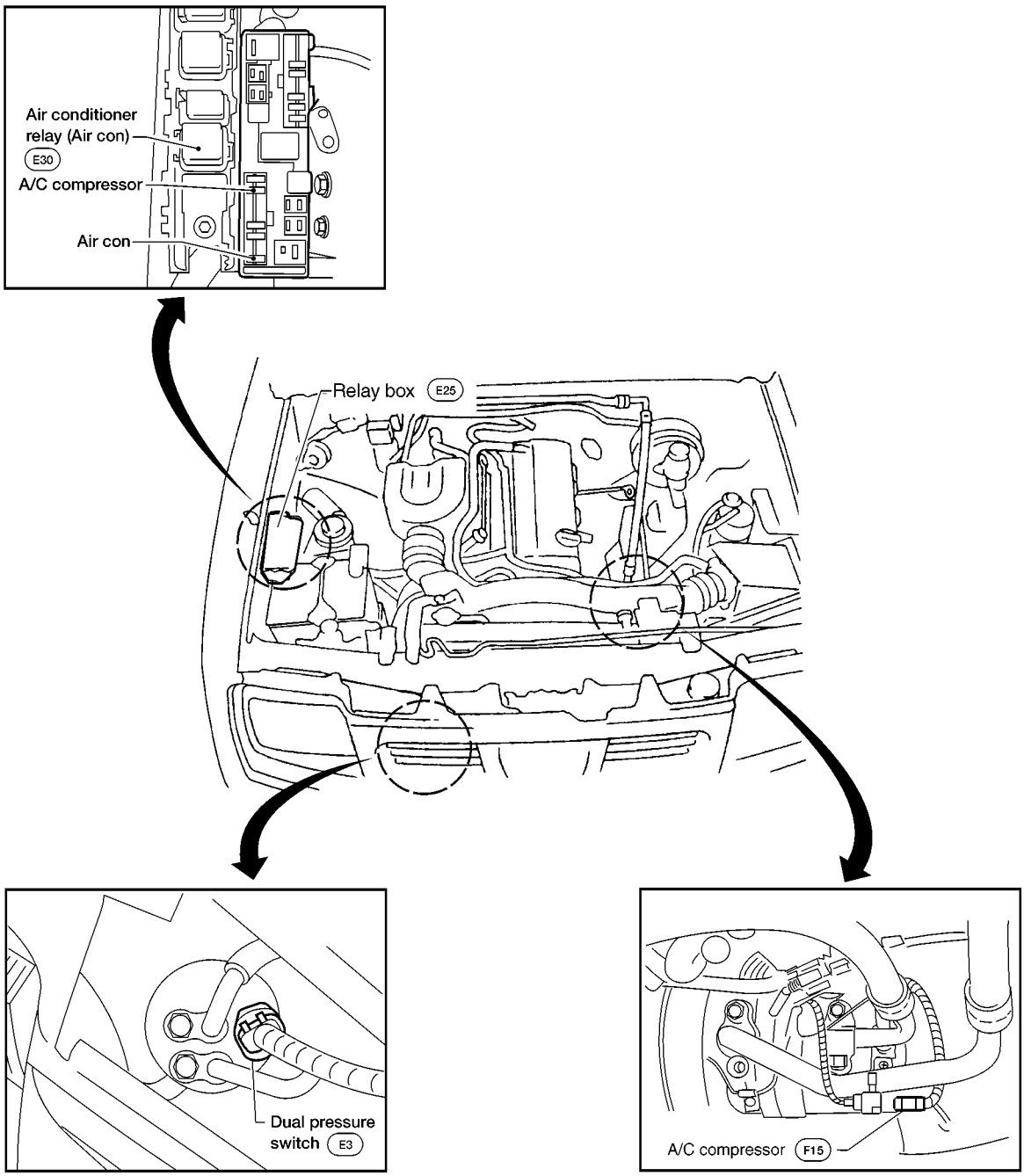
Component Location

NEHA0085

NEHA0085S01

NEHA0085S0101

ENGINE COMPARTMENT
KA24DE Models

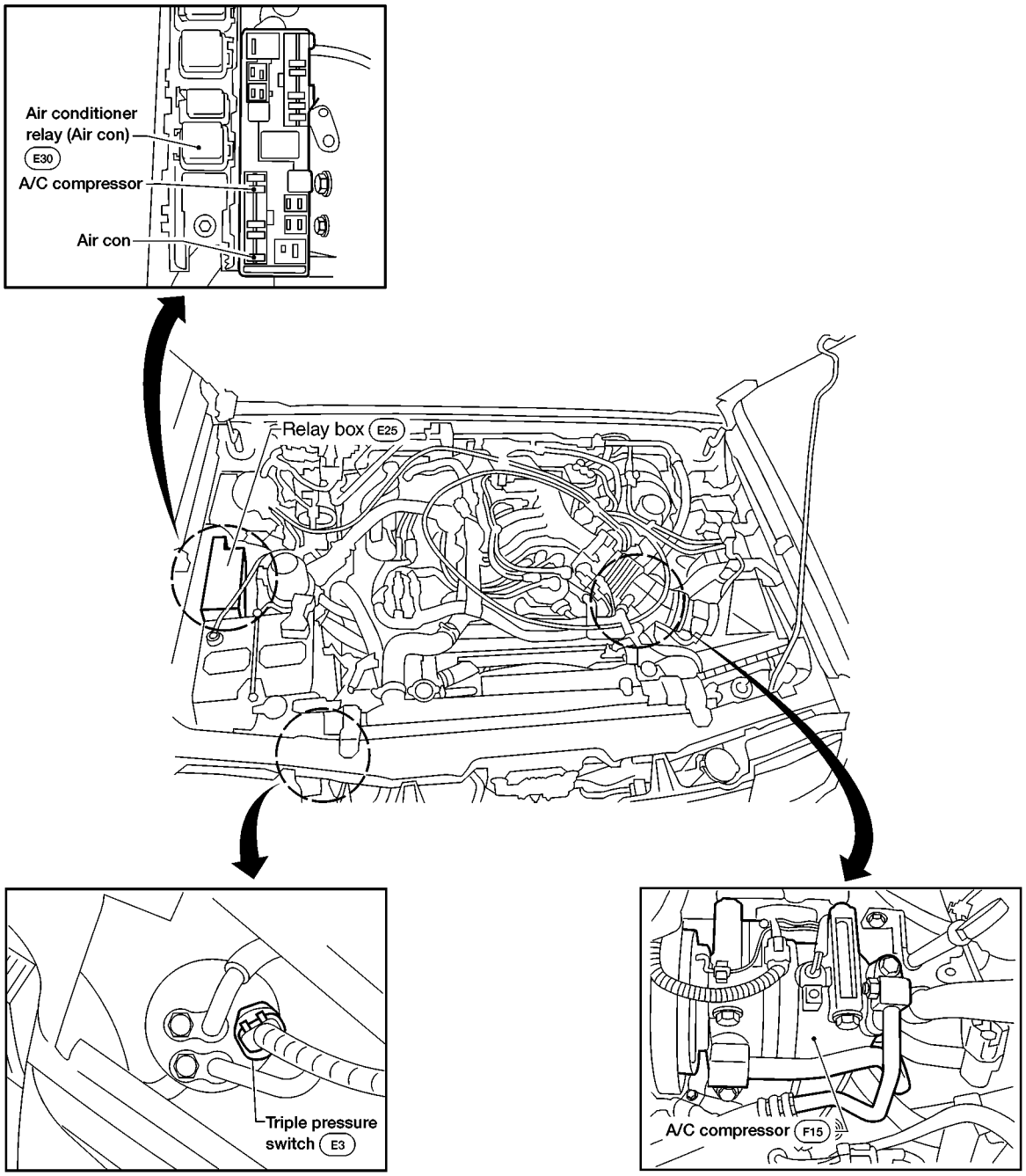


AHA452A

ENGINE COMPARTMENT
VG33E Models

NEHA0085S05

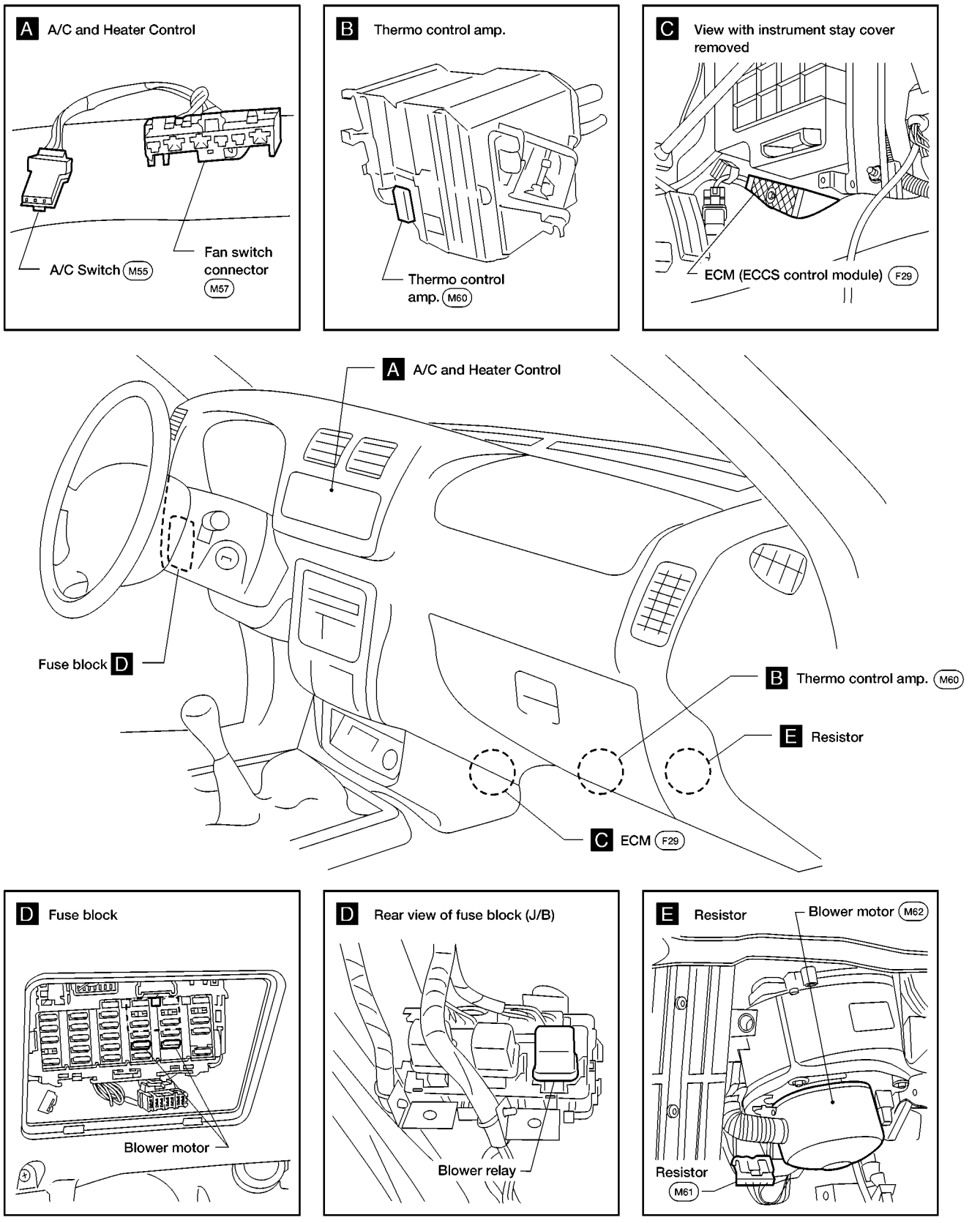
=NEHA0085S0501



AHA453A

PASSENGER COMPARTMENT

NEHA0085S02

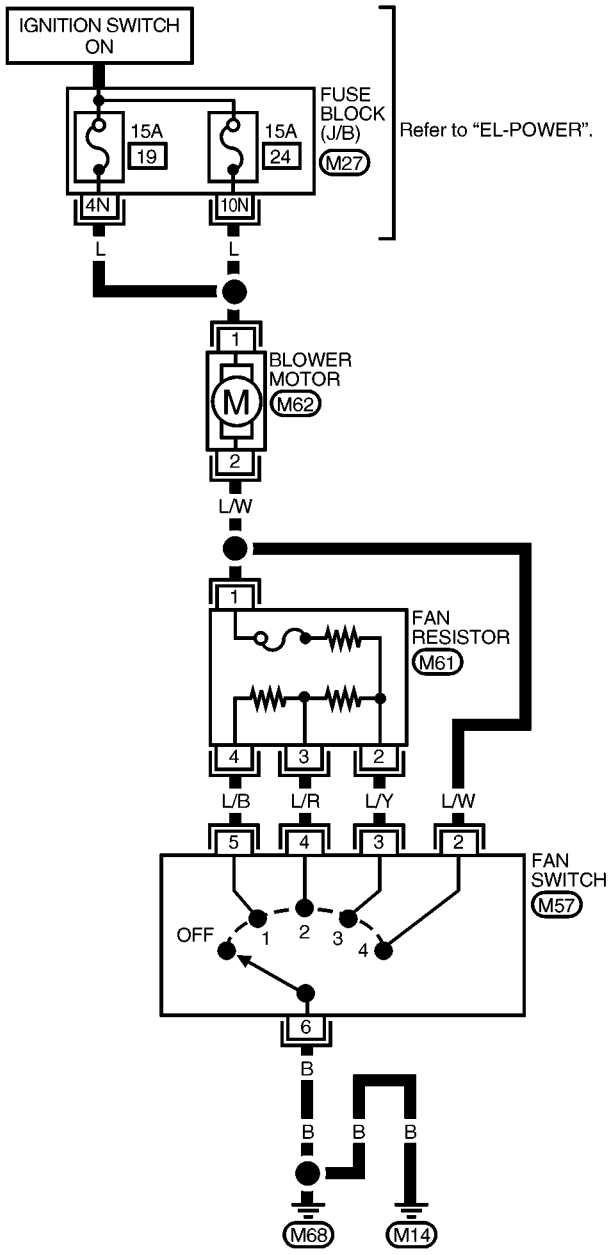


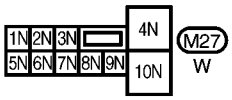
AHA533A

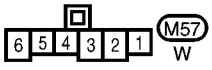
Wiring Diagram — Heater —

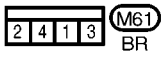
NEHA0288

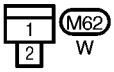
HA-HEATER-01







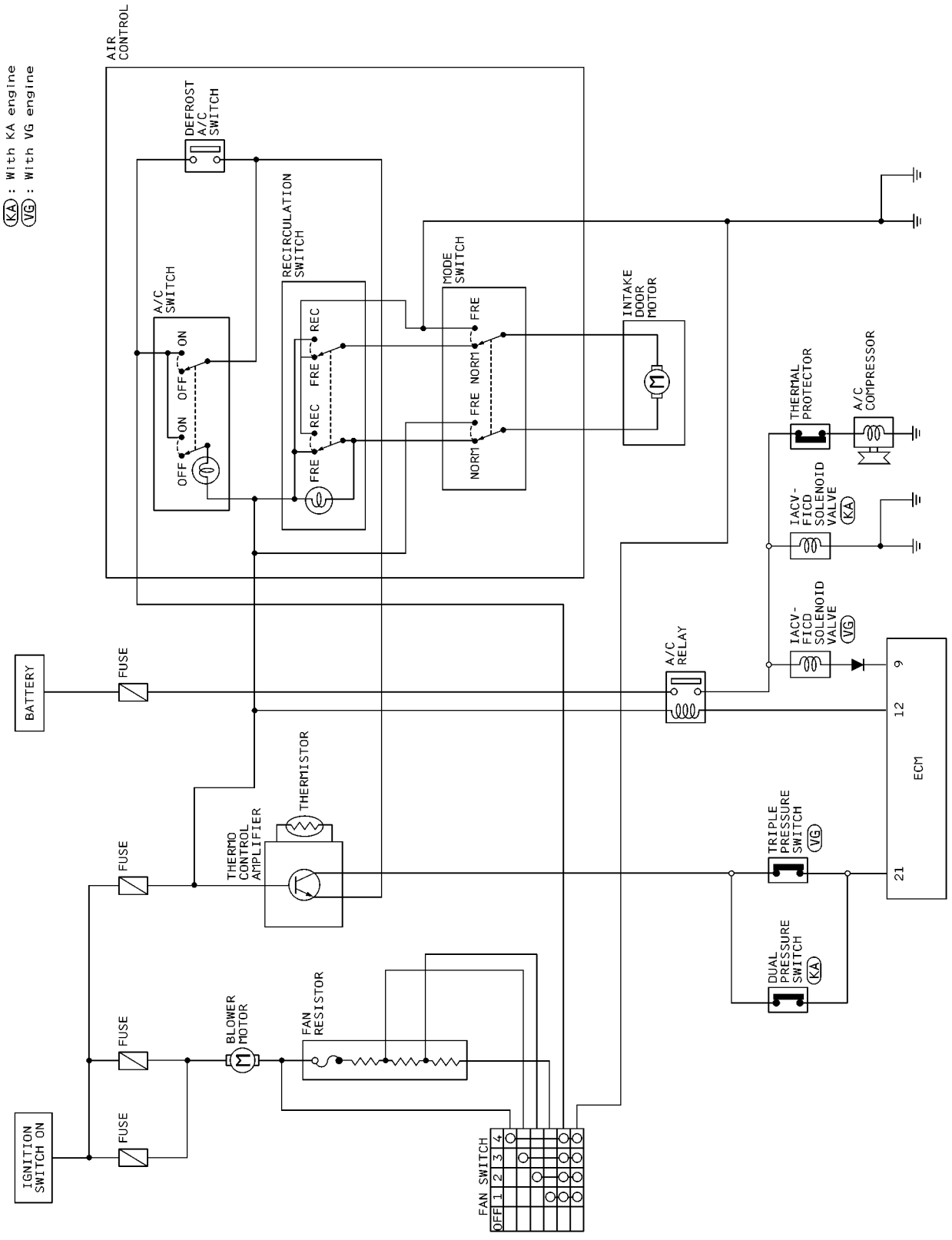




AHA447A

Circuit Diagram — Air Conditioner (Three Dial) —

NEHA0087

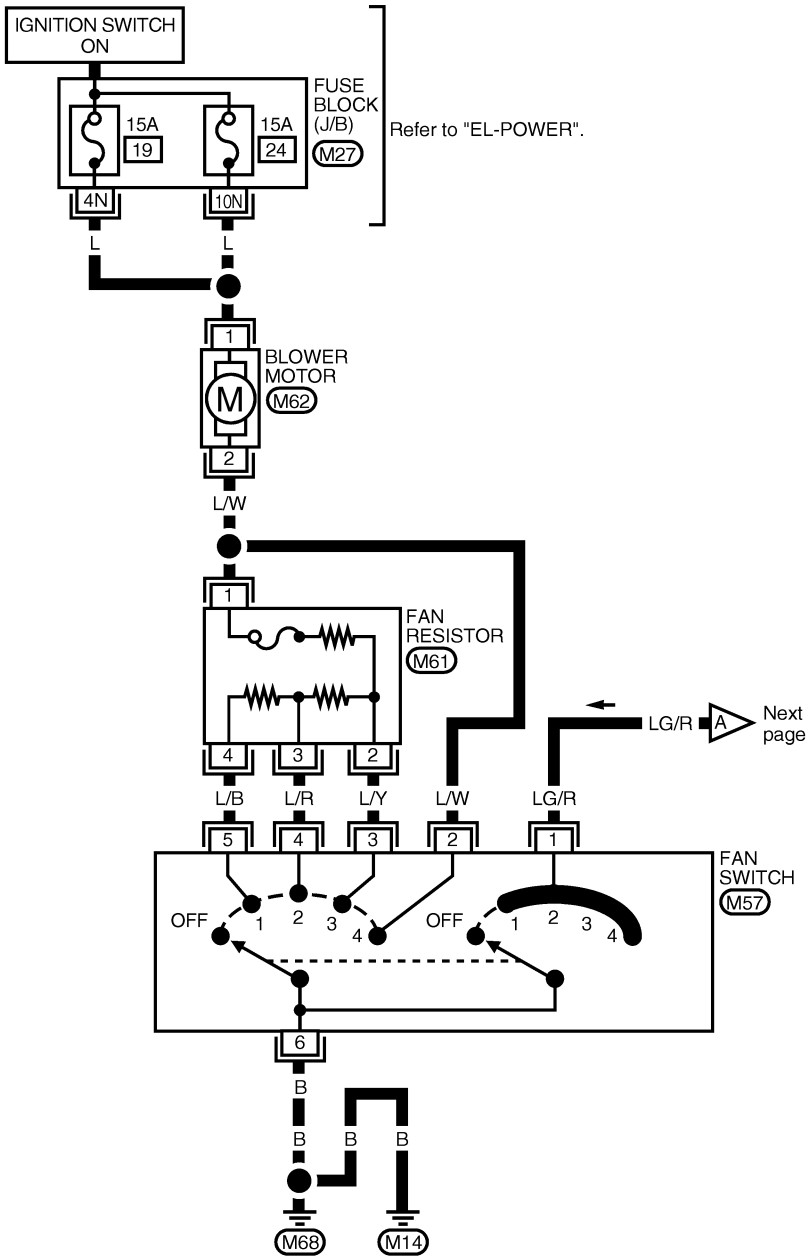


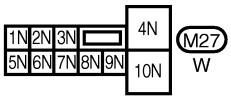
AHA516A

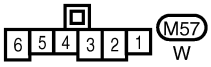
Wiring Diagram — A/C (Three Dial) —

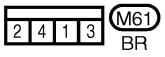
NEHA0274

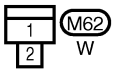
HA-A/C-01





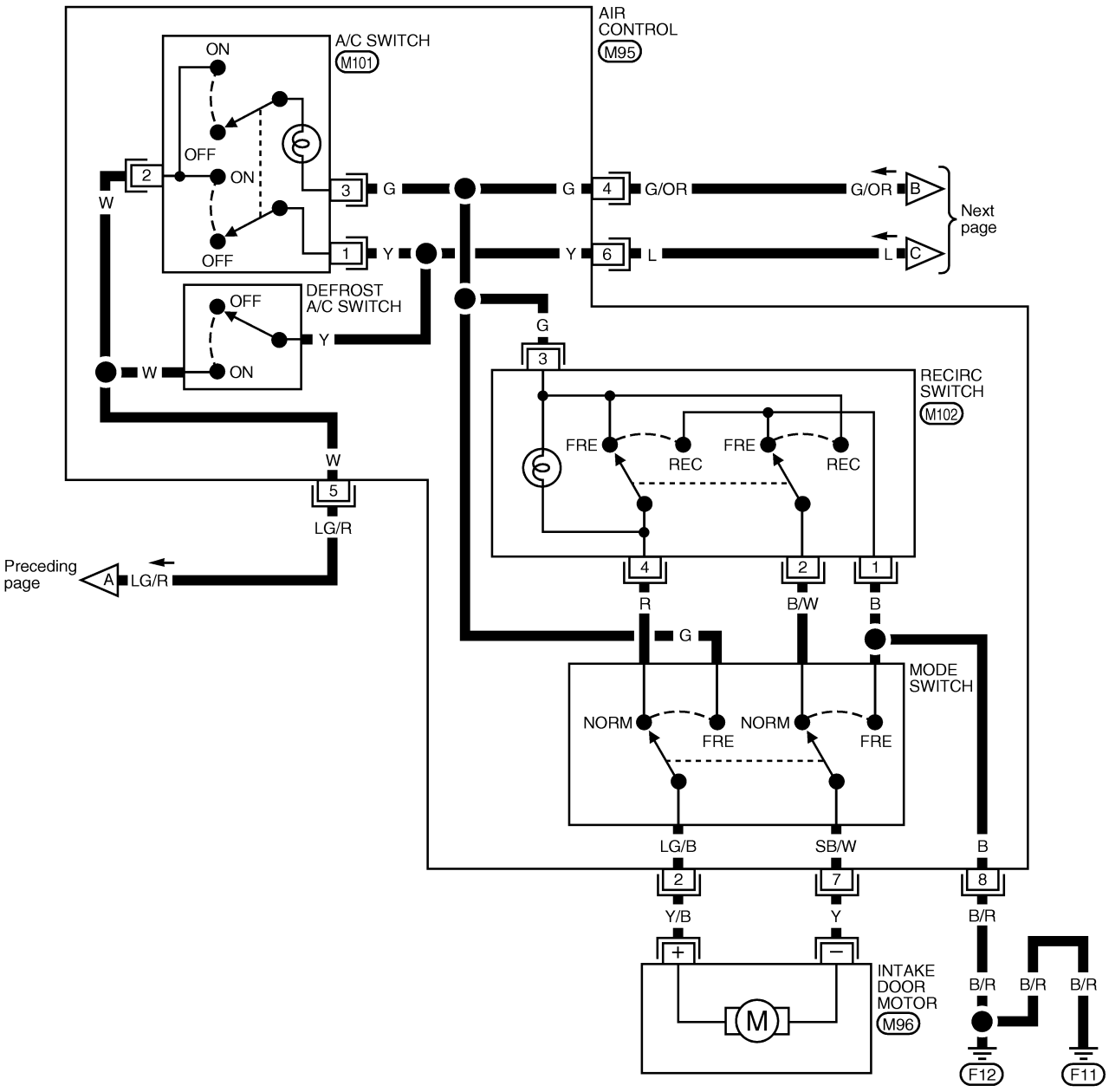






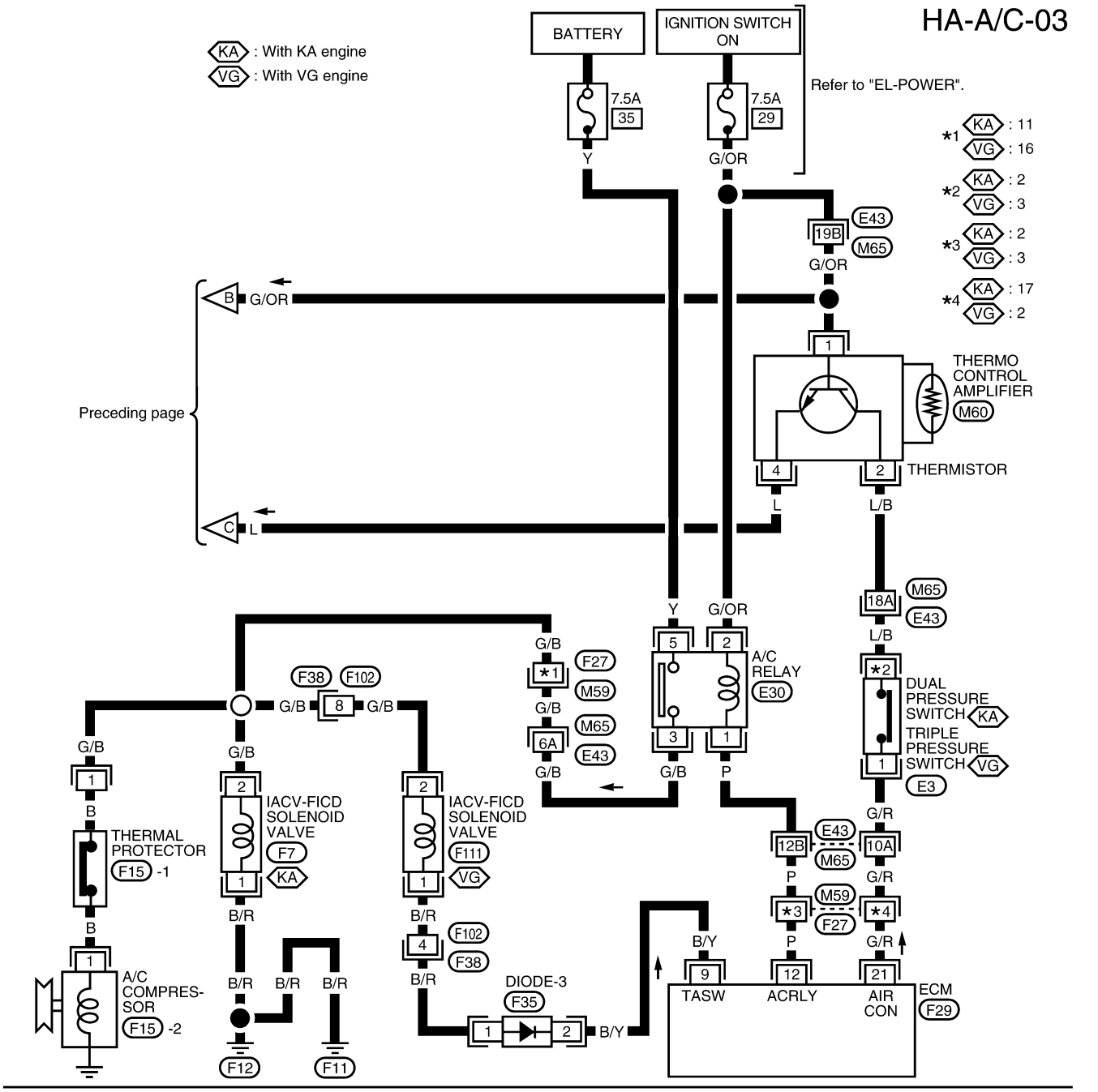
AHA448A

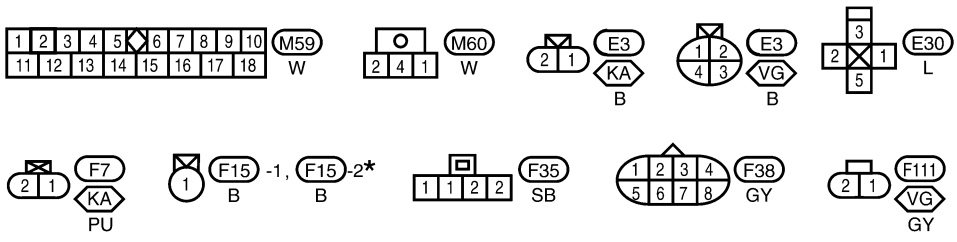
HA-A/C-02



∗: This connector is not shown in "HARNESS LAYOUT" of EL section.

AHA517A



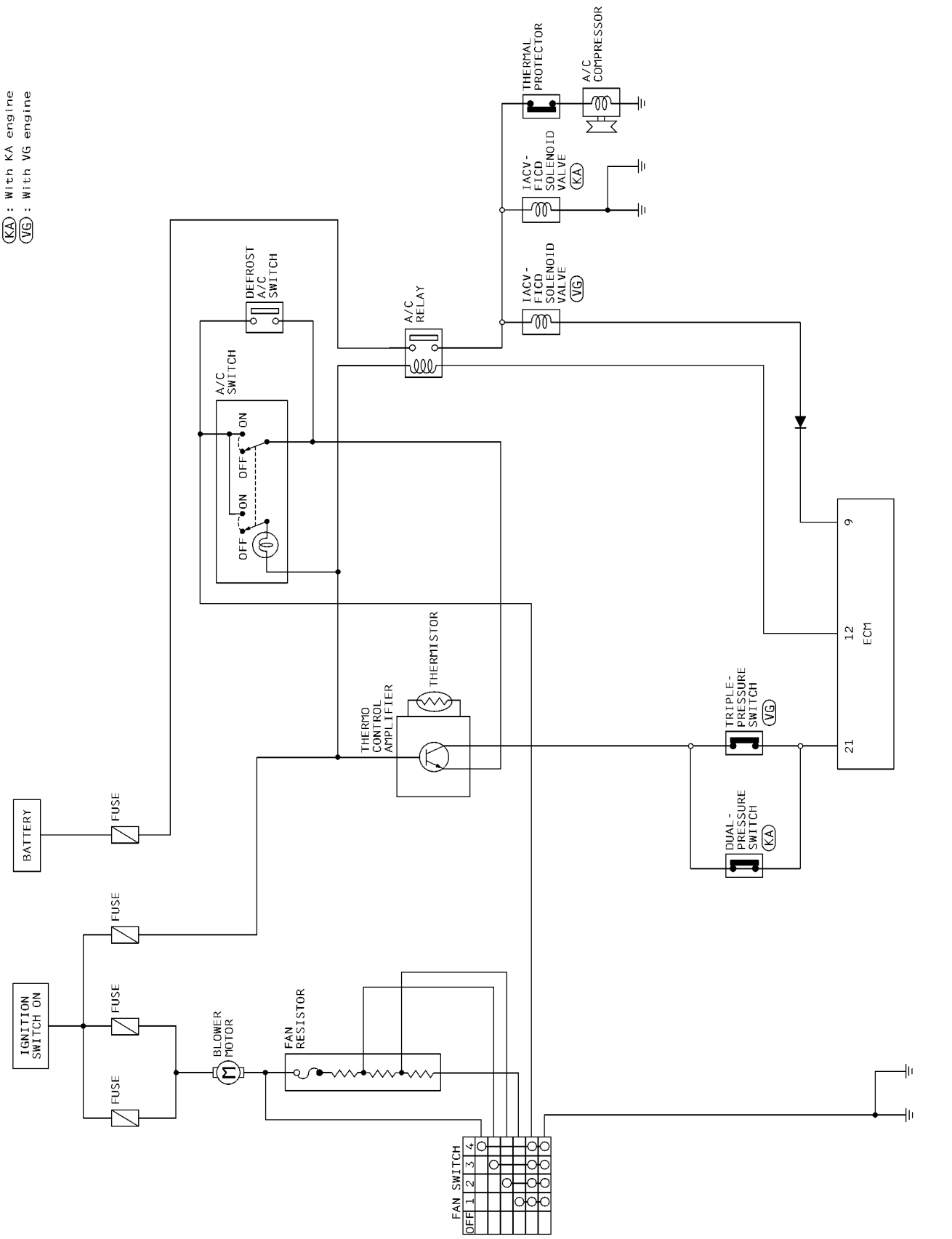


Refer to the following.
M65 , E43 - SUPER MULTIPLE JUNCTION (SMJ)
F29 - ELECTRICAL UNITS

LHA288

Circuit Diagram — Air Conditioner (Two Dial) —

NEHA0289

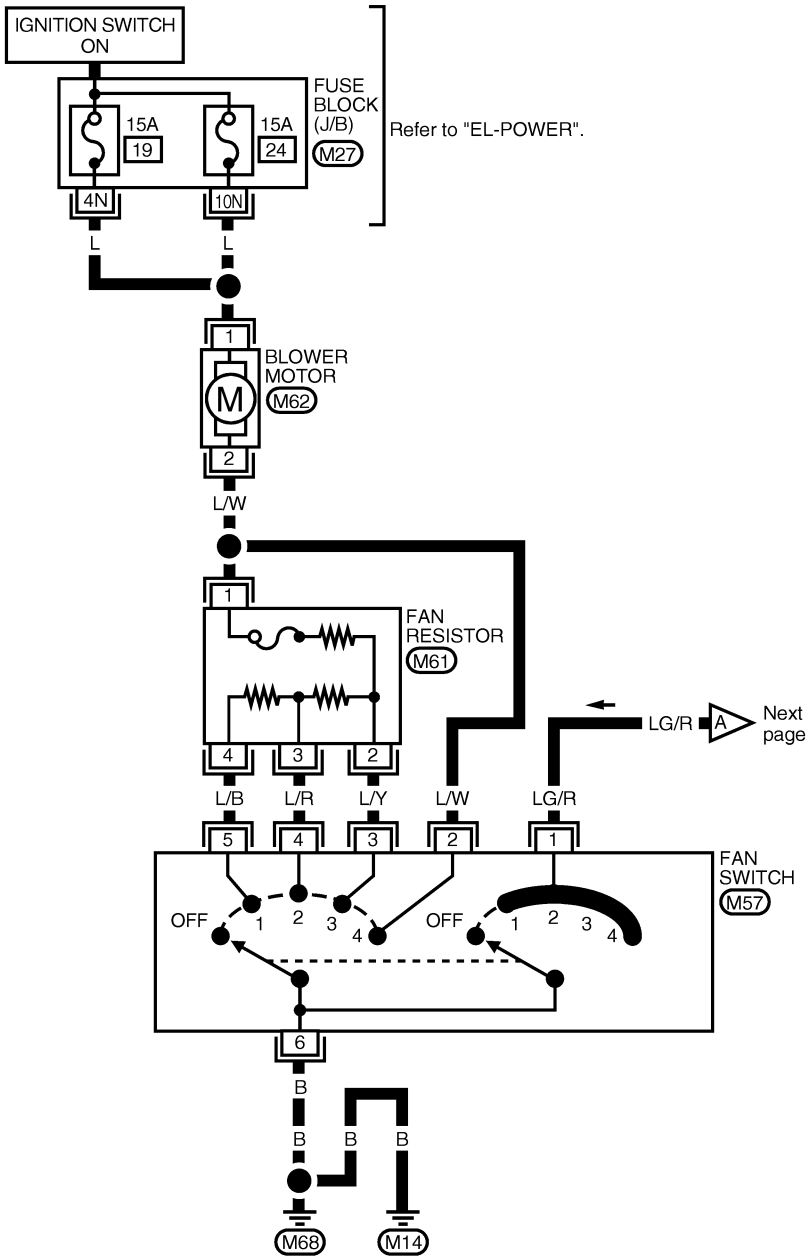


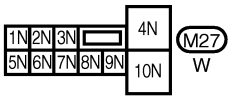
AHA446A

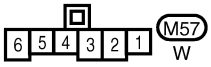
Wiring Diagram — A/C (Two Dial) —

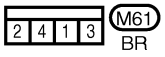
NEHA0290

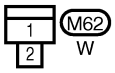
HA-A/C-01



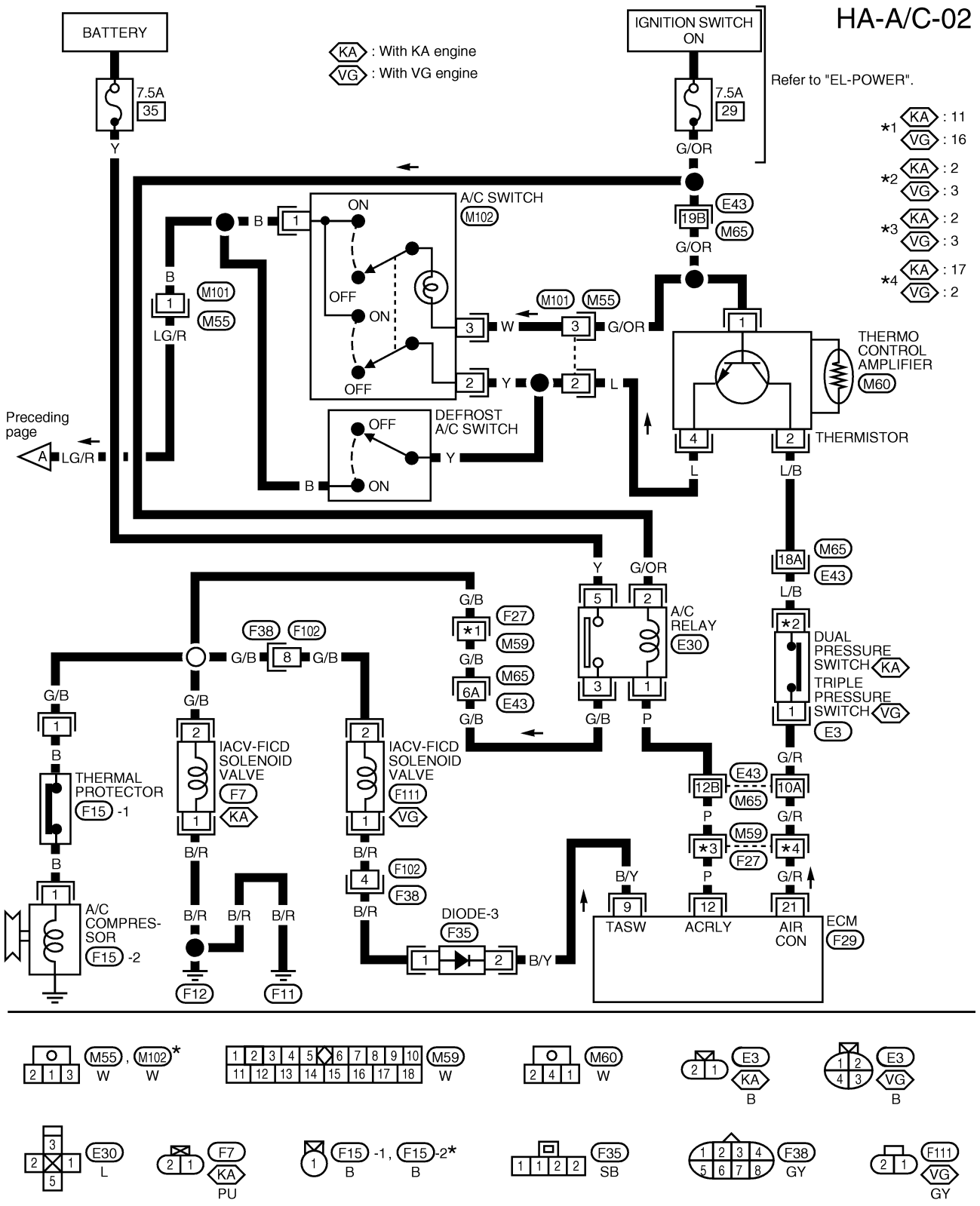








AHA448A



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

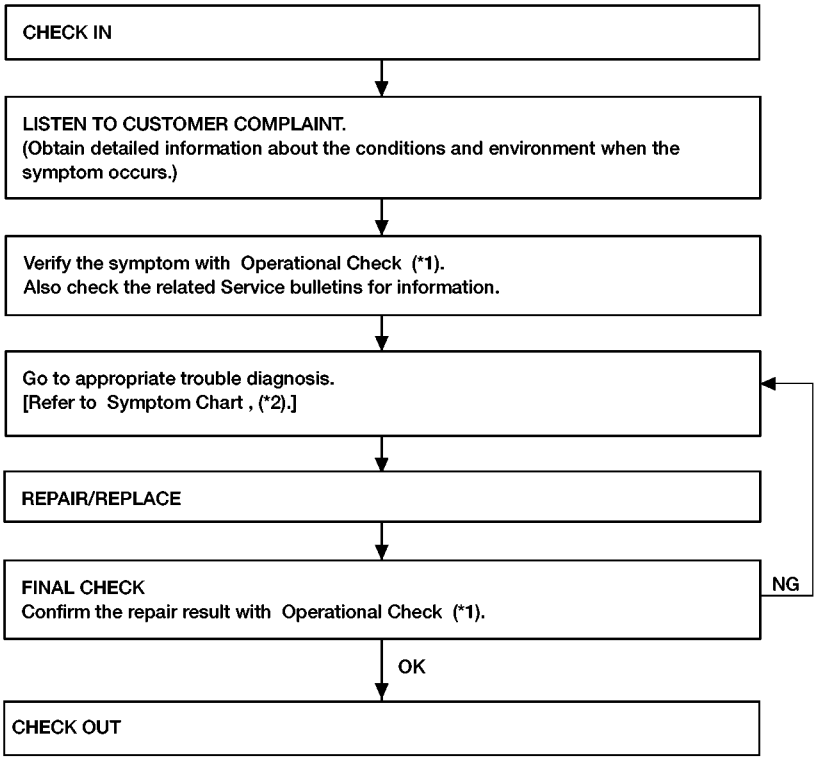
LHA289

How to Perform Trouble Diagnoses for Quick and Accurate Repair

NEHA0075

WORK FLOW

NEHA0075S01



AHA454A

*1: HA-31 *2: HA-30

Symptom Table

NEHA0235

Symptom	Reference page	
• Blower motor does not rotate.	• Go to “TROUBLE DIAGNOSIS PROCEDURE FOR BLOWER MOTOR CIRCUIT”.	HA-35
• Mode door does not change positions.	• Go to “TROUBLE DIAGNOSIS PROCEDURE FOR MODE DOOR”.	HA-42
• Intake door position does not change.	• Go to “TROUBLE DIAGNOSIS PROCEDURE FOR INTAKE DOOR”.	HA-44
• Magnet clutch does not engage when A/C switch and fan switch are ON.	• Go to “TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH ”.	HA-48
• Insufficient cooling	• Go to “TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT COOLING”.	HA-60
• Insufficient heating	• Go to “TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT HEATING”.	HA-68
• Noise	• Go to “TROUBLE DIAGNOSIS PROCEDURE FOR NOISE”.	HA-70

Operational Check

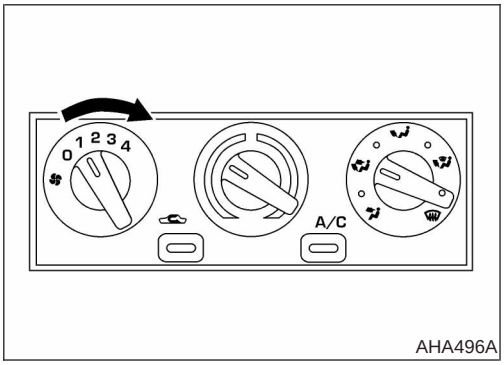
=NEHA0076

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:

NEHA0076S01

Engine running at normal operating temperature.



AHA496A

PROCEDURE:

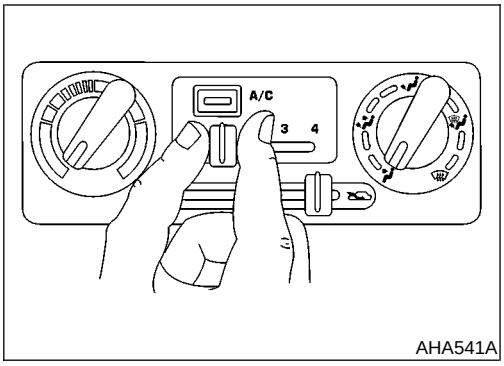
NEHA0076S02

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-35.
If OK, continue with the check.

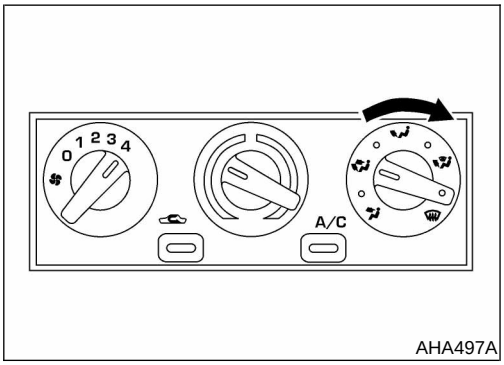


AHA541A

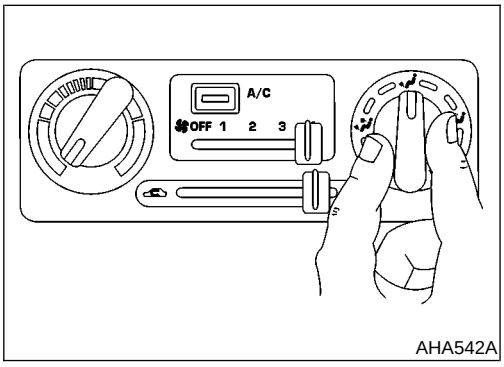
2. Check Discharge Air

NEHA0076S0202

1) Turn mode control knob to each mode position.



AHA497A



AHA542A

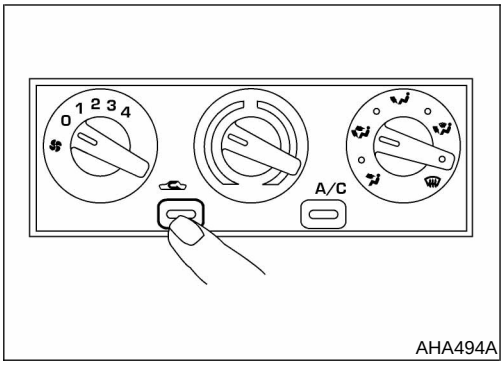
Discharge air flow

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

AHA983

2) Confirm that discharge air comes out according to the air distribution table at left.
   Refer to "Discharge Air Flow" in "DESCRIPTION", HA-17.

If NG, go to "Trouble Diagnosis Procedure for Mode Door", HA-42.
If OK, continue with next check.



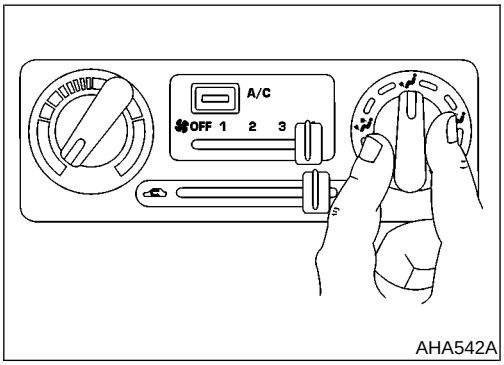
AHA494A

3. Check Recirculation

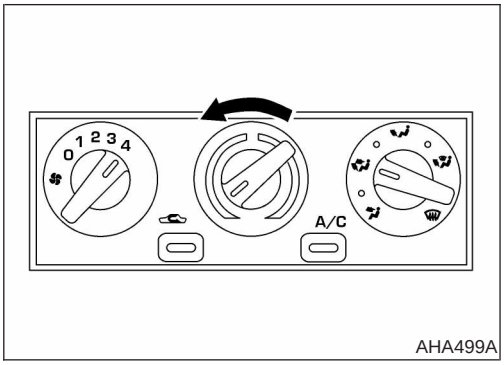
NEHA0076S0203

1) Press RECIRC switch (slide control lever to REC position). Recirculation indicator should light (if equipped).
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 Motor", HA-44.
If OK, continue with next check.



AHA542A



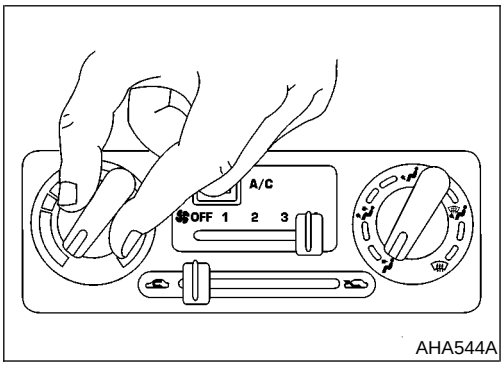
AHA499A

4. Check Temperature Decrease

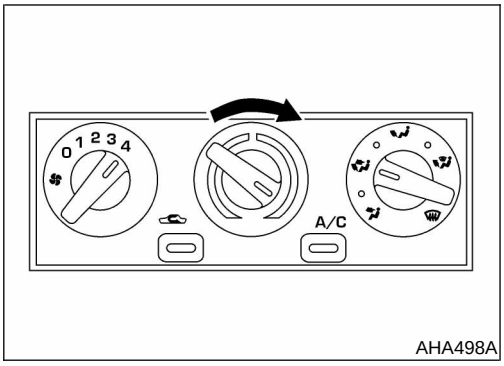
NEHA0076S0204

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-60.
If OK, continue with next check.



AHA544A



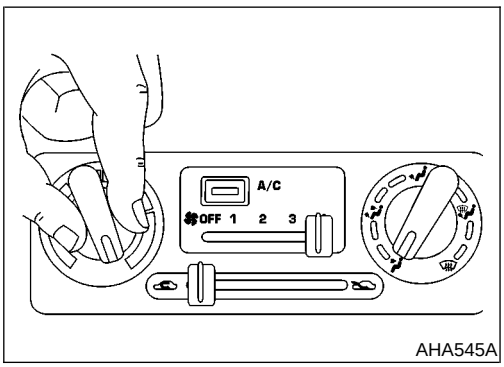
AHA498A

5. Check Temperature Increase

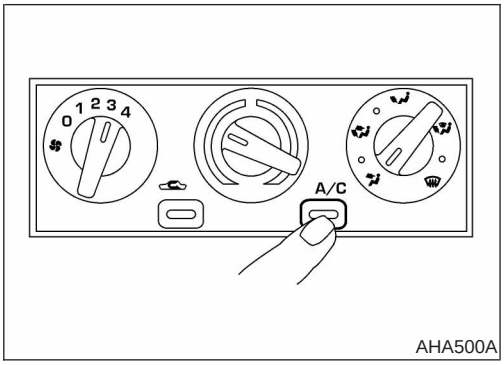
NEHA0076S0205

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

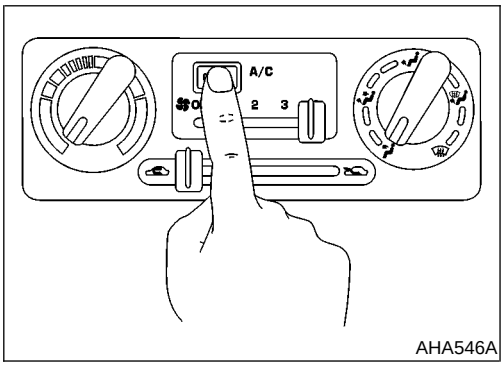
If NG, go to "Trouble Diagnosis Procedure for Insufficient Heating", HA-68.
If OK, continue with next check.



AHA545A



AHA500A



AHA546A

6. Check A/C Switch

NEHA0076S0206

1) Turn fan control knob (lever) 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 for Magnet Clutch", HA-48.
If OK, continue with next check.
If all operational checks are OK (symptom cannot be duplicated), go to "Incident Simulation Tests", ***GI-25*** and perform tests as outlined to simulate driving conditions environment. If symptom appears, refer to "Symptom Table" (HA-30) and perform applicable trouble diagnoses procedures.

Blower Motor

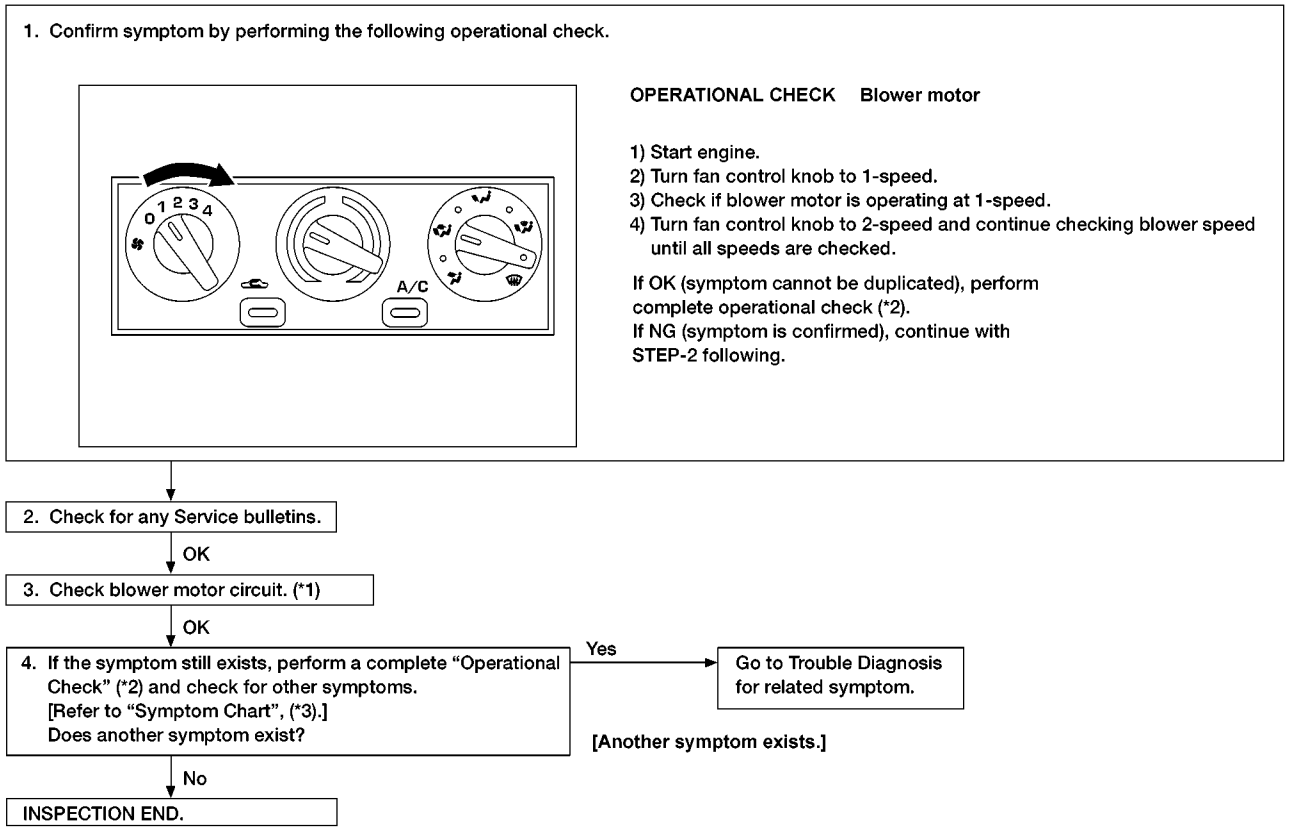
TROUBLE DIAGNOSIS PROCEDURE FOR BLOWER MOTOR

=NEHA0138

Symptom:

- **Blower motor does not rotate.**

Inspection Flow



AHA461A

*1: HA-36 *2: HA-31 *3: HA-30

BLOWER MOTOR CIRCUIT

=NEHA0089

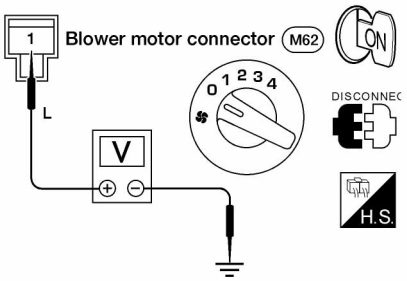
SYMPTOM:

- **Blower motor does not rotate.**

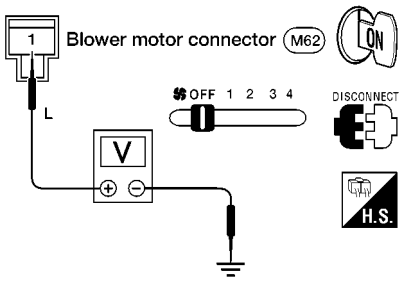
1	DIAGNOSTIC PROCEDURE.	
Check if blower motor rotates properly at each fan speed.		
Does not rotate at any speed	▶	GO TO 2.
Does not rotate at 1-3 speed	▶	GO TO 6.
Does not rotate at 4 speed	▶	GO TO 7.

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 "POWER SUPPLY ROUTING", ***EL-8***.		
Are fuses OK?		
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.		
Does battery voltage exist?		
Yes	▶	GO TO 4.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness for open or short between blower motor and fuse block (J/B). ● Harness connectors M27 and M62



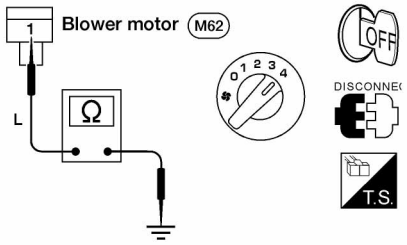
AHA485A



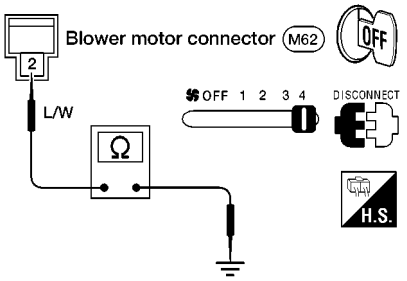
AHA074A

4	CHECK BLOWER MOTOR GROUND CIRCUIT.

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



AHA460A



AHA075A

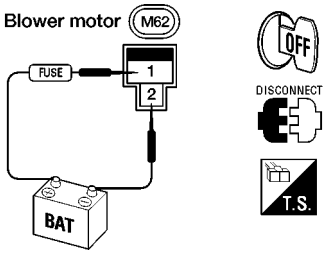
Continuity should exist.

OK or NG

OK	▶	GO TO 5.
NG	▶	**Check the following. If NG, repair harness or connector.** ● Harness for open or short between blower motor and fuse block (J/B). ● Harness connectors M27 and M62

5	CHECK BLOWER MOTOR.

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



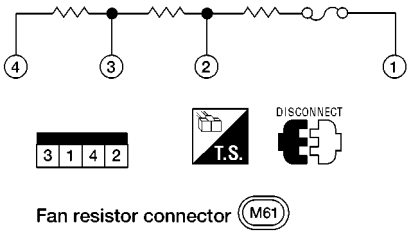
AHA455A

Does blower motor rotate?

Yes	▶	Reconnect blower motor connector and go to Trouble Diagnosis Procedure for Blower Motor, HA-35.
No	▶	Replace blower motor.

6	CHECK FAN RESISTOR.

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



AHA458A

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

AHA459A

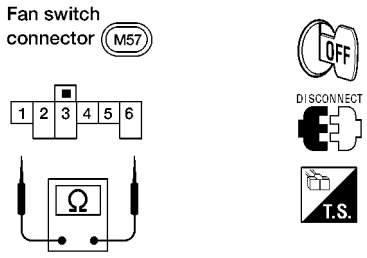
3. Refer to wiring diagram, HA-24.

OK or NG

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

7 **CHECK FAN SWITCH.**

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



AHA456A

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

AHA457A

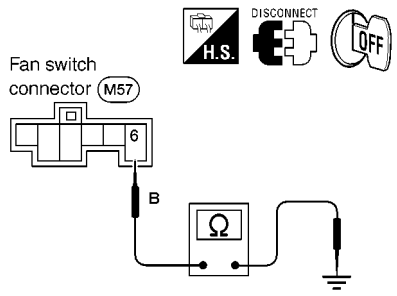
Refer to wiring diagram, HA-24.

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.



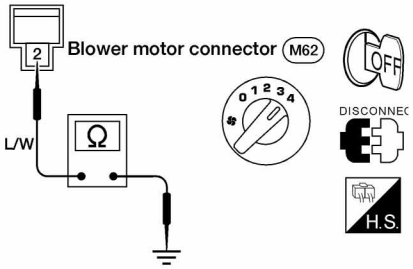
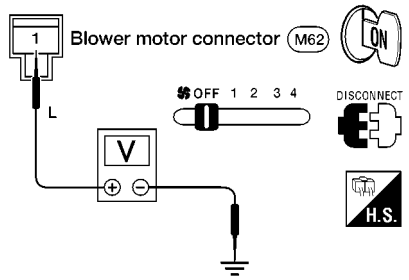
AHA078A

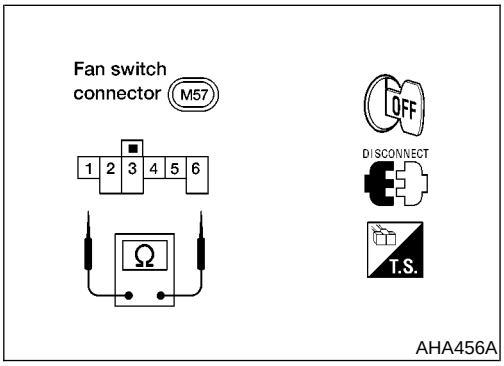
Continuity should exist.

OK or NG

OK	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors M57, M61 and M62 ● Harness for open or short between blower motor and fan switch, fan resistor
NG	▶	Repair harness or connector.

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

10	CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR A SHORT	
1. Disconnect battery cable and blower motor harness connector. 2. Check continuity between front blower motor harness terminal 1 and ground.  AHA549A  AHA074A **Continuity should not exist.** **Does continuity exist?**		
Yes	▶	**Check the following. If NG, repair harness or connector.** 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 HA-41. If necessary, clear intake unit. If OK, replace front blower motor.



AHA456A

ELECTRICAL COMPONENTS INSPECTION

NEHA0246

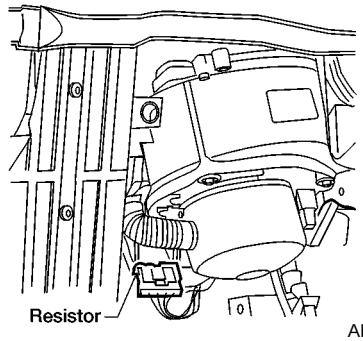
Front Fan Switch

NEHA0246S01

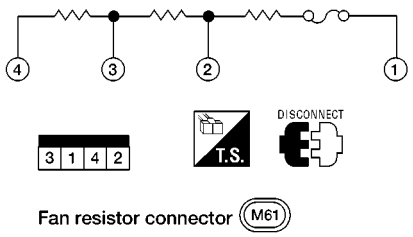
Check continuity between terminals at each switch position.

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

AHA457A



AHA547A



AHA458A

Blower Motor

NEHA0246S02

Confirm smooth rotation of the blower motor.

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

Fan Resistor

NEHA0246S04

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

Check resistance between terminals.

Mode Door

TROUBLE DIAGNOSIS PROCEDURE FOR MODE DOOR

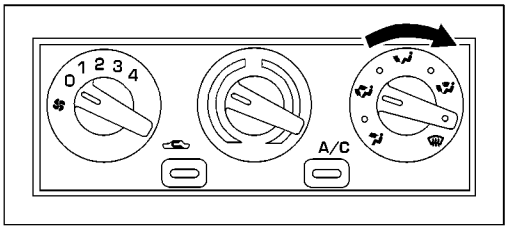
=NEHA0240

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.

Discharge air flow

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

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

NOTE:
Confirm that the compressor clutch is engaged (visual inspection) and intake door position is at FRESH when the DEF ( ) or D/F ( ) button is pressed.
If OK (symptom cannot be duplicated), perform complete operational check (*3).
If NG (symptom is confirmed), continue with STEP-2 following.

2. Check for any service bulletins.

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

OK

If the symptom still exists, perform a complete operational check (*3) and check for other symptoms.
[Refer to symptom table, (*4).]
Does another symptom exist?

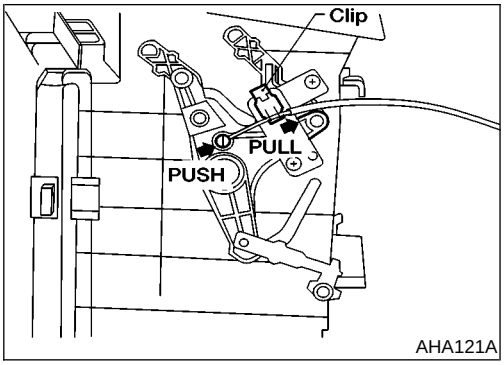
No → INSPECTION END

Yes → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

AHA480A

*1: HA-17
*2: HA-43
*3: HA-31
*4: HA-30



MODE DOOR CONTROL LINKAGE ADJUSTMENT

NEHA0242

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.**

Intake Door Motor

TROUBLE DIAGNOSIS PROCEDURE FOR INTAKE DOOR

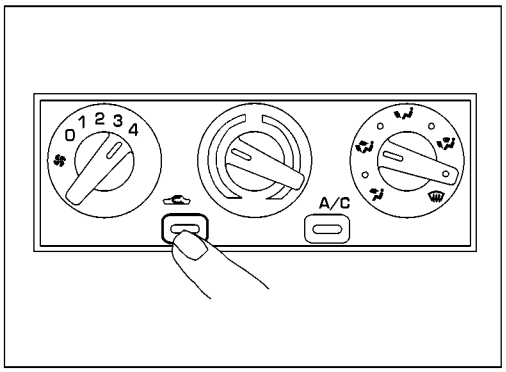
=NEHA0135

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)

OK

INSPECTION END

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-47 *2: HA-31 *3: HA-30

INTAKE DOOR CIRCUIT

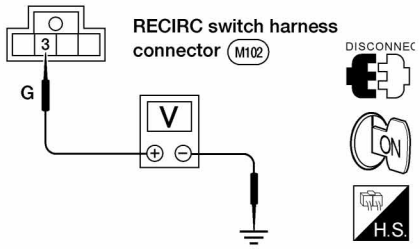
=NEHA0287

SYMPTOM

- **Intake door does not operate.**

1	CHECK POWER SUPPLY FOR RECIRC SWITCH

1. Disconnect RECIRC switch harness connector.
2. Turn ignition switch ON.
3. Does approx. 12 Volts exist between RECIRC switch harness connector M102, terminal 3 and ground?



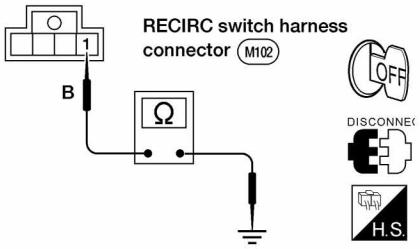
AHA550A

Yes or No

Yes	▶	GO TO 2.
No	▶	Check 7.5A fuse No. 29. If fuse is OK, check harness for open or short.

2	CHECK GROUND CIRCUIT

Disconnect RECIRC switch connector M102 and check continuity between terminal 1 and ground.



AHA551A

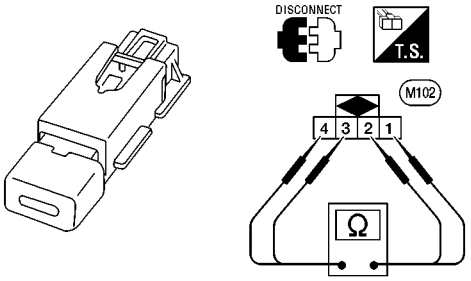
Continuity should exist.

OK or NG

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

3	CHECK RECIRC SWITCH

Check RECIRC switch.



Terminal No.		RECIRC switch condition	Continuity
(+)	(–)		
3	2	ON	Yes
		OFF	No
4	1	ON	Yes
		OFF	No

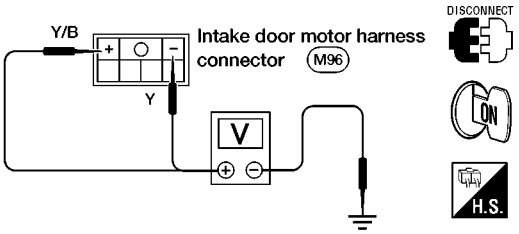
AHA524A

OK or NG

OK	▶	GO TO 4.
NG	▶	Replace RECIRC switch.

4	CHECK POWER FOR INTAKE DOOR MOTOR

Check power to intake door motor.



RECIRC switch	Terminal No.		Voltage V
	(+)	(–)	
FRE	(+)	Body ground	12
	(-)		0
REC	(+)		0
	(-)		12

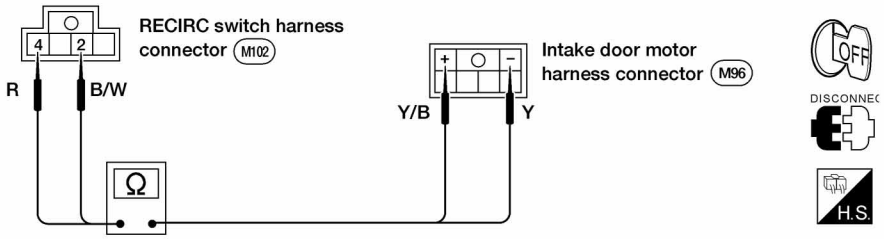
AHA521A

OK or NG

OK	▶	GO TO 6.
NG	▶	GO TO 5.

5	CHECK INTAKE DOOR CIRCUIT

Check continuity between RECIRC switch harness connector M102 terminals 2 (4) and intake door motor harness connector M96 terminals – (+).



AHA552A

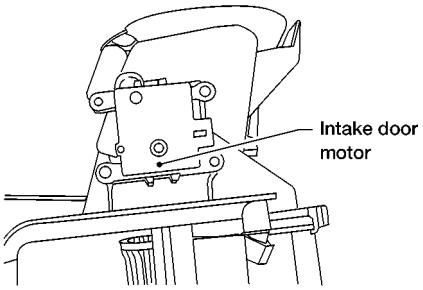
NOTE:
Mode control knob should be in position.

OK or NG

OK	▶	Check harness for open or short.
NG	▶	Replace air control.

6	CHECK INTAKE DOOR MOTOR

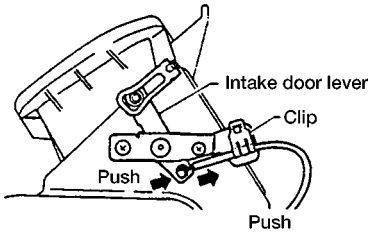
1. Reconnect Intake door motor connector M96.
2. Turn ignition switch ON.
3. Observe intake door operates when the RECIRC switch Is turned ON and OFF.
4. Intake door should change position.



AHA523A

OK or NG

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



AHA156A

RECIRCULATION CONTROL LINKAGE ADJUSTMENT (TWO DIAL)

NEHA0291

1. Move recirculation lever to REC position.
2. Set recirculation lever in REC mode.
3. Pull on outer cable in direction of arrow and then clamp it.
4. After position recirculation control cable, check that it operates properly.

Magnet Clutch

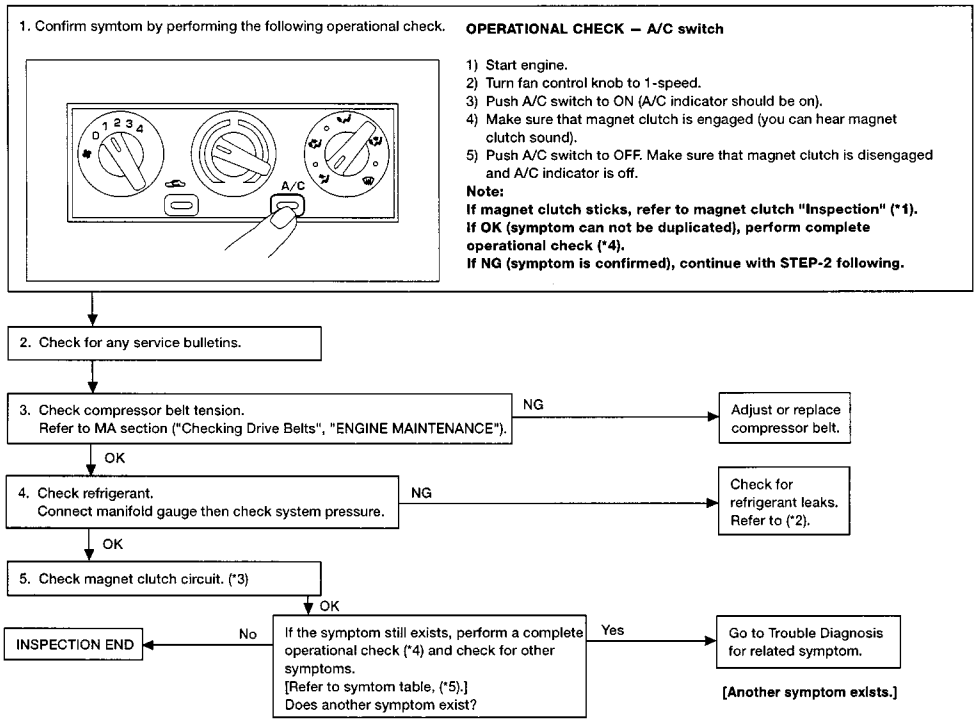
TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH

=NEHA0119

Symptom:

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

Inspection Flow



AHA482A

*1: HA-81
*2: HA-86
*3: HA-49
*4: HA-31
*5: HA-30

MAGNET CLUTCH CIRCUIT

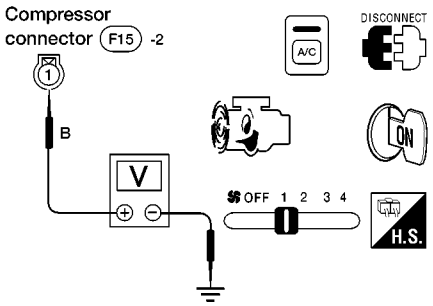
=NEHA0091

SYMPTOM:

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

1	CHECK A/C COMPRESSOR POWER SUPPLY CIRCUIT

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



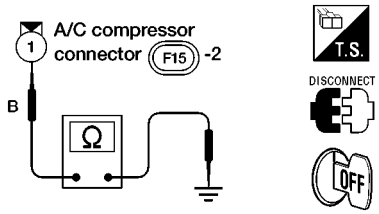
AHA083A

Yes or No

Yes	▶	GO TO 2.
No	▶	GO TO 3.

2	CHECK A/C COMPRESSOR GROUND CIRCUIT

Check circuit continuity between A/C compressor connector F15–2 terminal 1 and ground.



AHA466A

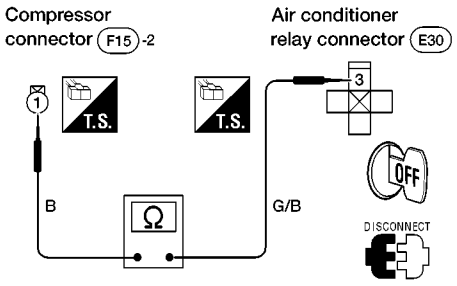
Continuity should exist.

OK or NG

OK	▶	Refer to "TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH," HA-48.
NG	▶	• Check thermal protector. Refer to HA-58. • Check magnet clutch coil. • If NG, replace magnet clutch. Refer to HA-80.

3	CHECK CIRCUIT CONTINUITY

1. Disconnect A/C relay, connector E30.
2. Check circuit continuity between A/C relay connector E30 terminal 3 and A/C compressor connector F15–2 terminal 1.



AHA084A

Continuity should exist.

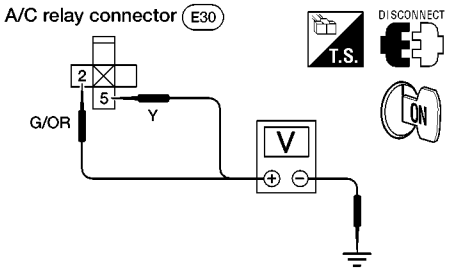
3. Also, check harness for short.

OK or NG

OK	▶	GO TO 4.
NG	▶	Repair harness or connector.

4	CHECK A/C RELAY POWER SUPPLY CIRCUIT

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



AHA467A

Yes or No

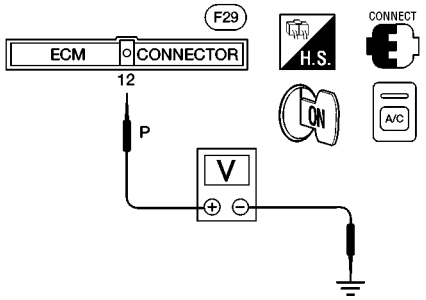
Yes	▶	GO TO 5.
No	▶	GO TO 13.

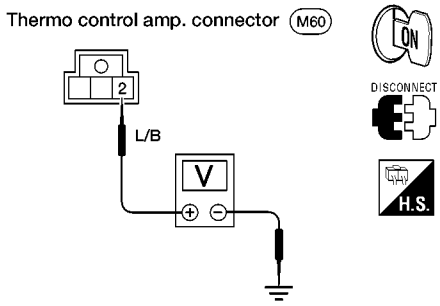
5	CHECK A/C RELAY

Refer to "ELECTRICAL COMPONENTS INSPECTION, A/C Relay" HA-57.

OK or NG

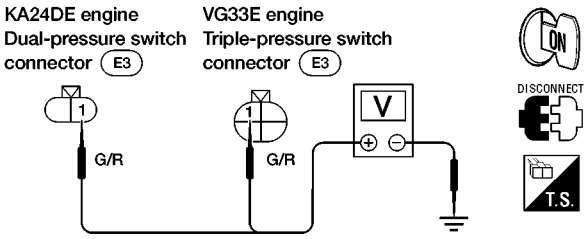
OK	▶	GO TO 6.
NG	▶	Replace A/C relay.

6	CHECK A/C RELAY GROUND CONTROL CIRCUIT	
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 and ground?  AHA087A		
Yes or No		
Yes	▶	GO TO 7.
No	▶	**Check the following. If NG, repair harness or connectors.** Harness connectors E30 and F29 Harness for open or short between A/C relay and ECM

7	CHECK ECM OUTPUT VOLTAGE	
Does approx. 5 volts exist between thermo control amp. harness connector M60 terminal 2 and ground?  AHA089A		
Yes or No		
Yes	▶	GO TO 17.
No	▶	GO TO 8.

8	CHECK CIRCUIT CONTINUITY

1. Disconnect dual pressure switch (KA24DE models) or triple pressure switch (VG33E models) harness connector E3.
2. Check voltage from terminal 1 to ground.



AHA525A

Does approx. 5 volts exist?

3. Also, check harness for short.

Yes or No

Yes with KA24DE models	▶	GO TO 9.
Yes with VG33E models	▶	GO TO 11.
No	▶	Repair harness or connector.

9	CHECK DUAL PRESSURE SWITCH (KA24DE MODELS)

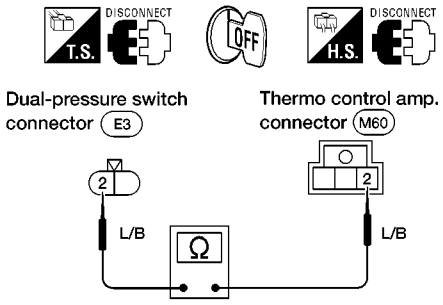
Refer to "ELECTRICAL COMPONENTS INSPECTION, Dual Pressure Switch (KA24DE models)"HA-57.

OK or NG

OK	▶	GO TO 10.
NG	▶	Replace dual pressure switch.

10	CHECK CIRCUIT CONTINUITY

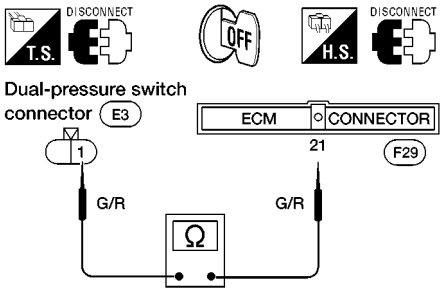
1. Disconnect dual pressure switch harness connector E3.
2. Check circuit continuity between thermo control amp. harness connector M60 terminal 2 and dual pressure switch connector E3 terminal 2.



AHA267A

Continuity should exist.

3. Also check circuit continuity between dual pressure switch connector E3 terminal 1 and ECM connector F29 terminal 21.



AHA268A

Continuity should exist.

OK or NG

OK	▶	GO TO 13.
NG	▶	Repair harness or connector.

11	CHECK TRIPLE PRESSURE SWITCH (KA24DE MODELS)

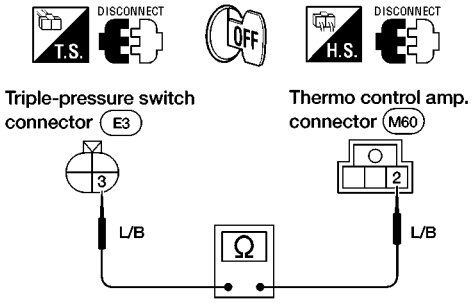
Refer to "ELECTRICAL COMPONENTS INSPECTION, Triple Pressure Switch (VG33E models)", HA-58.

OK or NG

OK	▶	GO TO 12.
NG	▶	Replace triple pressure switch.

12	CHECK CIRCUIT CONTINUITY

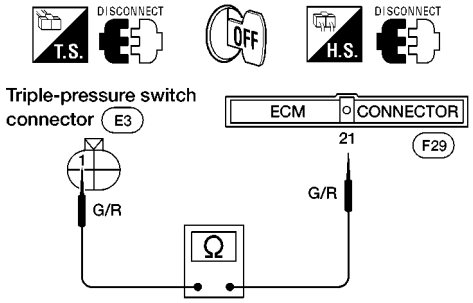
1. Disconnect triple pressure switch harness connector E3.
2. Check circuit continuity between thermo control amp. harness connector M60 terminal 2 and triple pressure switch harness connector E3 terminal 3.



AHA271A

Continuity should exist.

3. Also check circuit continuity between triple pressure switch connector E3 terminal 1 and ECM connector F29 terminal 21.



AHA272A

Continuity should exist.

OK or NG

OK	▶	Check ECM. Refer to "Symptom Matrix Chart", ***EC-699***.
NG	▶	Repair harness or connector.

13	CHECK FUSES

Check 7.5A fuse (No. 29, located in the fuse block) and 7.5A fuse (No. 35, located in the fuse block). For fuse layout, refer to "POWER SUPPLY ROUTING", ***EL-8***.

Are fuses OK?

OK	▶	**Check the following.** If NG, repair harness or connectors. ● Harness for open or short between fuse block and A/C relay ● harness connectors M55, M60 and E30
NG	▶	GO TO 14.

14	REPLACE FUSE

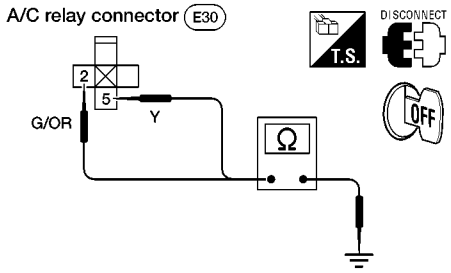
Replace fuse.

Does fuse blow when A/C is activated?

Yes	▶	GO TO 15.
No	▶	**INSPECTION END**

15	CHECK A/C RELAY POWER SUPPLY CIRCUITS FOR SHORT

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



AHA470A

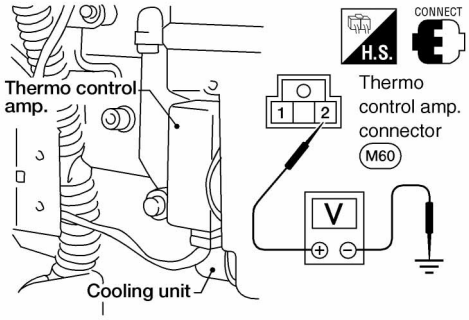
Continuity should not exist.

OK or NG

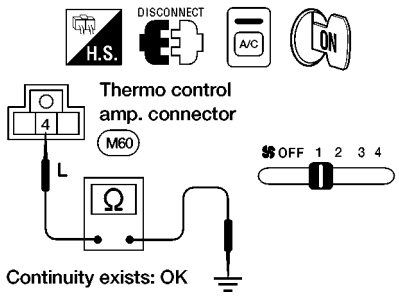
OK	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors M55, M60 and E30. ● Harness for open or short between fuse block and A/C relay, A/C switch, thermo control amplifier.
NG	▶	Repair harness or connector.

16	THERMO CONTROL AMP. GROUND CIRCUIT

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 and ground.



AHA538A



AHA082A

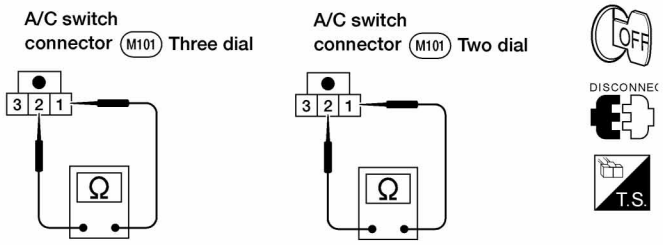
4. **Continuity should exist.**

OK or NG

OK	▶	GO TO 13.
NG	▶	GO TO 17.

17	CHECK A/C SWITCH

1. Disconnect A/C switch connector M101.
2. Push A/C switch ON.
3. Check continuity between A/C switch connector M101 (M55 for two dial) terminals 1 and 2.



AHA553A

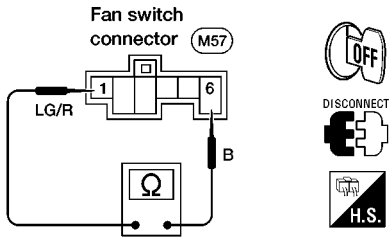
Continuity should exist.

OK or NG

OK	▶	GO TO 18.
NG	▶	Replace A/C switch.

18	CHECK FAN SWITCH

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

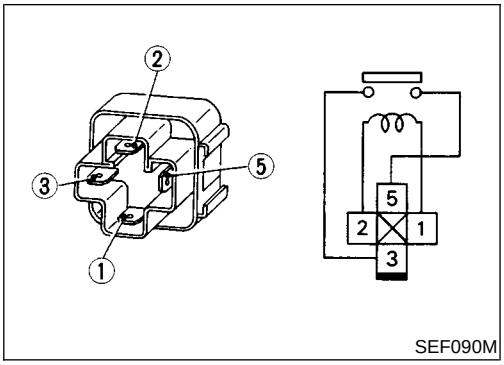


AHA526A

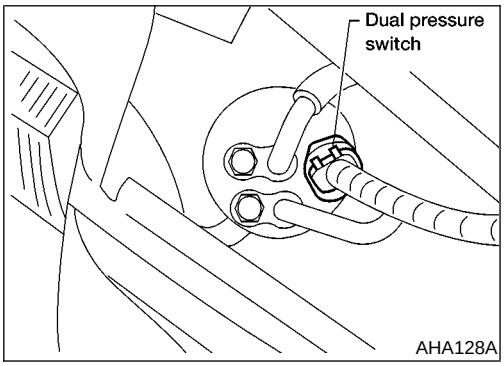
Continuity should exist.

OK or NG

OK	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors M55 and M57. ● Harness for open or short between fan switch and A/C switch.
NG	▶	Replace fan switch.



SEF090M



AHA128A

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

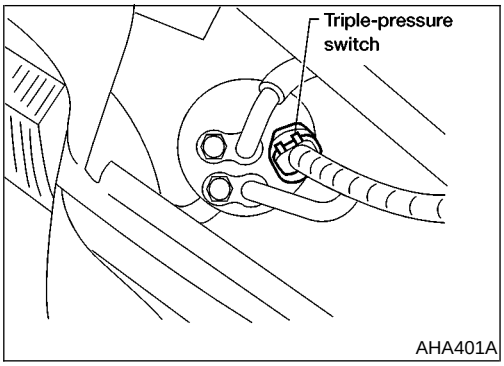
If NG, replace relay.

Dual Pressure Switch (KA24DE Models)

NEHA0092S09

Check continuity between terminals.

	Terminals	High-pressure side line pressure kPa (kg/cm^2, psi)	Operation	Continuity
Low-pressure side	1 - 2	Increasing to 157 - 216 (1.6 - 2.2, 23 - 31)	ON	Yes
		Decreasing to 157 - 196 (1.6 - 2.0, 23 - 28)	OFF	No
High-pressure side		Increasing to 2,452 - 2,844 (25 - 29, 356 - 412)	OFF	No
		Decreasing to 1,863 - 2,256 (19 - 23, 270 - 327)	ON	Yes

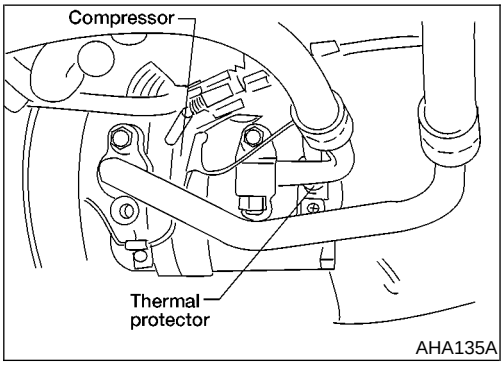


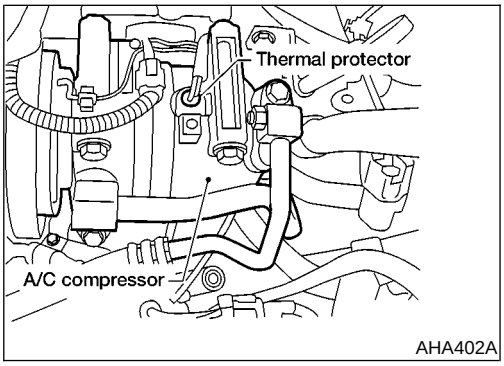
Triple Pressure Switch (VG33E Models)

=NEHA0092S10

Check continuity between terminals 1 and 3.

	Terminals	High-pressure side line pressure kPa (kg/cm^2, psi)	Operation	Continuity
Low-pressure 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-pressure side	1 - 3	Decreasing to 1,667 - 2,059 (17 - 21, 242 - 299)	ON	Yes
		Increasing to 2,452 - 2,844 (25 - 29, 356 - 412)	OFF	No





Thermal Protector

NEHA0092S11

KA24DE Models

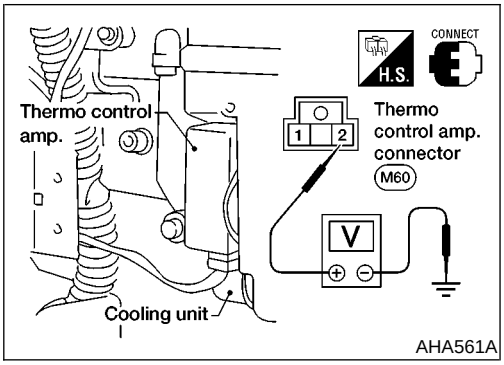
NEHA0092S1101

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 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



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
Decreasing to 2.5 - 3.5 (37 - 38)	Turn OFF	Approx. 12V
Increasing to 4.0 - 5.0 (39 - 41)	Turn ON	Approx. 0V

Insufficient Cooling

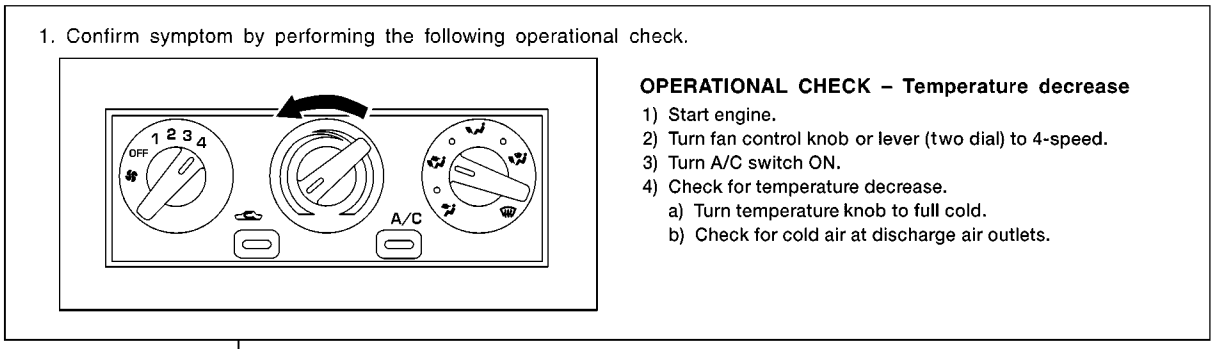
TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT COOLING

=NEHA0150

Symptom:

- **Insufficient cooling**

Inspection Flow



2. Check for any service bulletins.

3. Check compressor belt tension. Refer to MA section ("Checking Drive Belts", "ENGINE MAINTENANCE").
NG → Adjust or replace compressor belt.
OK ↓

4. Check mode door operation. (*1)
NG → Adjust mode door or replace mode door motor.
OK ↓

5. Check cooling fan motor operation.
NG → Refer to EC section.
OK ↓

6. Check refrigeration cycle pressure with manifold gauge connected. Refer to (*2).
NG → Perform Performance Test Diagnoses. Refer to (*3).
OK ↓

7. Check for evaporator coil freeze up.
NG (Freeze up) → Replace compressor. (*6)
(Does not freeze up.)
OK ↓

8. Check ducts for air leaks.
NG → Repair air leaks.
OK ↓

INSPECTION END

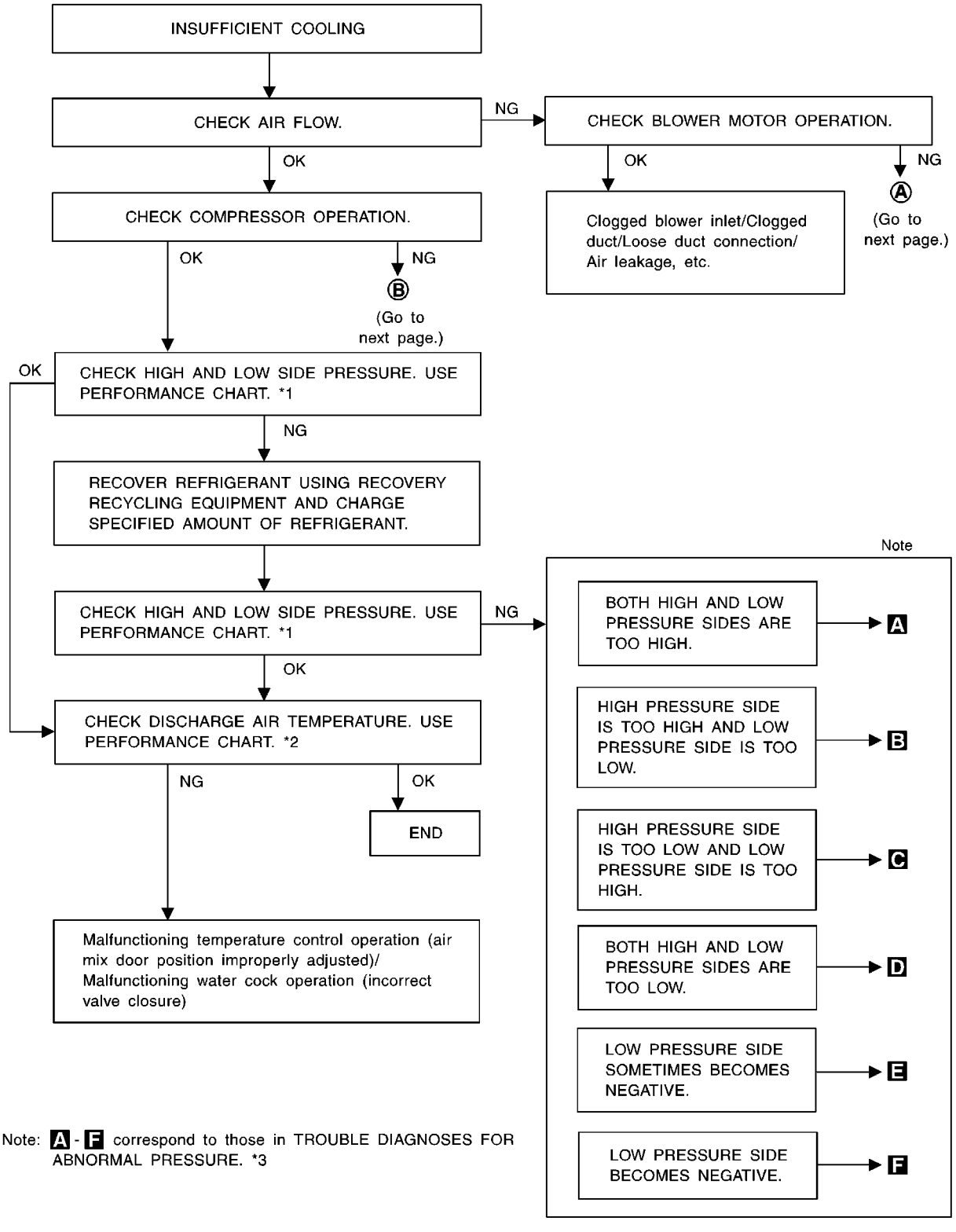
If the symptom still exists, perform a complete operational check (*4) and check for other symptoms.
[Refer to symptom table, (*5).]
Does another symptom exist?
Yes → Go to Trouble Diagnosis for related symptom.
[Another symptom exists.]

AHA554A

*1: HA-42
*2: HA-64
*3: HA-61
*4: HA-31
*5: HA-30
*6: HA-77

Performance Test Diagnoses

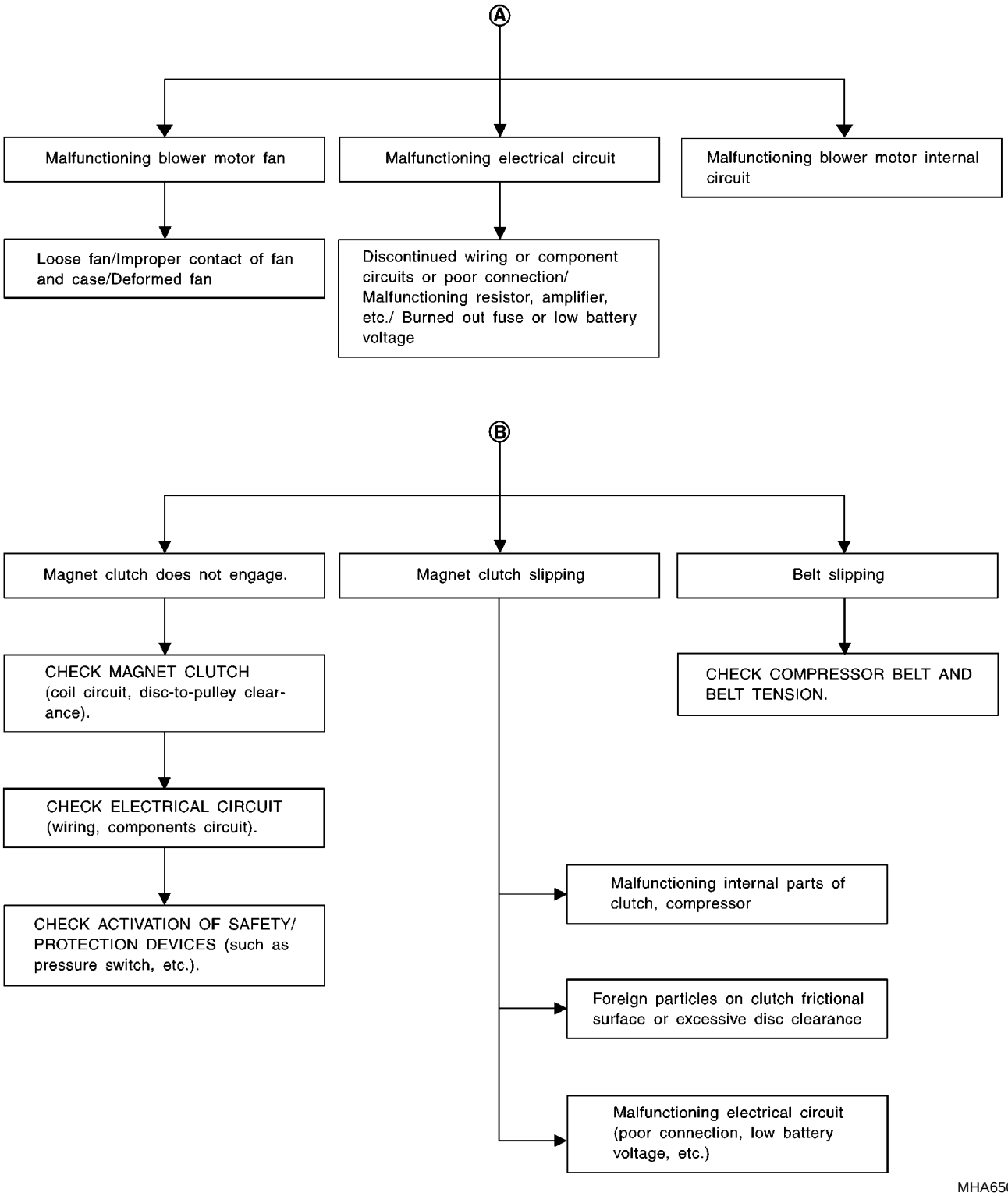
=NEHA0150S01



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

MHA649A

*1: HA-63 *2: HA-63 *3: HA-64


Ⓐ
Malfunctioning blower motor fan
Malfunctioning electrical circuit
Malfunctioning blower motor internal circuit
Loose fan/Improper contact of fan and case/Deformed fan
Discontinued wiring or component circuits or poor connection/ Malfunctioning resistor, amplifier, etc./ Burned out fuse or low battery voltage
Ⓑ
Magnet clutch does not engage.
Magnet clutch slipping
Belt slipping
CHECK MAGNET CLUTCH (coil circuit, disc-to-pulley clearance).
CHECK COMPRESSOR BELT AND BELT TENSION.
CHECK ELECTRICAL CIRCUIT (wiring, components circuit).
CHECK ACTIVATION OF SAFETY/ PROTECTION DEVICES (such as pressure switch, etc.).
Malfunctioning internal parts of clutch, compressor
Foreign particles on clutch frictional surface or excessive disc clearance
Malfunctioning electrical circuit (poor connection, low battery voltage, etc.)
MHA650A

PERFORMANCE TEST DIAGNOSES

=NEHA0082

The Nissan A/C system uses a thermal expansion valve to provide a restriction which causes a pressure change and also controls refrigerant flow through the evaporator.
The best way to diagnose a condition in the refrigerant system is to note the system pressures (shown by the manifold gauges) and the clutch cycle rate and times. Then, compare the findings to the charts.

- The system pressures are low (compressor suction) and high (compressor discharge).
- A clutch cycle is the time the clutch is engaged plus the time it is disengaged (time on plus time off).
- Clutch cycle times are the lengths of time (in seconds) that the clutch is ON and OFF.

Test Condition

NEHA0082S07

Testing must be performed as follows:

Vehicle location	Indoors or in the shade (in a well-ventilated place)
Doors	Closed
Door window	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)

Insufficient Cooling (Cont'd)

Ambient Air Temperature-to-Operating Pressure Table

=NEHA0082S0602

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

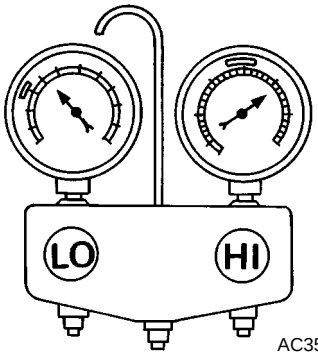
TROUBLE DIAGNOSES FOR ABNORMAL PRESSURE

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 HA-64 ("Ambient air temperature-to-operating pressure table").

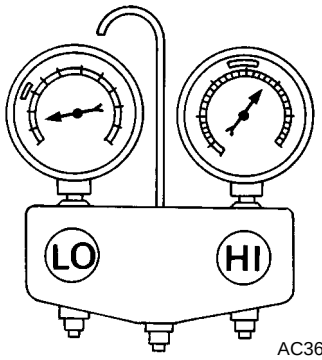
Both High and Low-pressure Sides are Too High.

NEHA0278S01

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Both high and low-pressure sides are too high. A  AC359A	• Pressure is reduced soon after water is splashed on condenser.	Excessive refrigerant charge in refrigeration cycle	Reduce refrigerant until specified pressure is obtained.
	Air suction by cooling fan is insufficient.	Insufficient condenser cooling performance ↓ 1. Condenser fins are clogged. 2. Improper fan rotation of cooling fan	• Clean condenser. • Check and repair cooling fan as necessary.
	• Low-pressure pipe is not cold. • When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm^2, 28 psi). It then decreases gradually thereafter.	Poor heat exchange in condenser (After compressor operation stops, high pressure decreases too slowly.) ↓ Air in refrigeration cycle	Evacuate repeatedly and recharge system.
	Engine tends to overheat.	Engine cooling systems malfunction.	Check and repair each engine cooling system.
	• An area of the low-pressure pipe is colder than areas near the evaporator outlet. • Plates are sometimes covered with frost.	• Excessive liquid refrigerant on low-pressure side • Excessive refrigerant discharge flow • Expansion valve is open a little compared with the specification. ↓ 1. Improper thermal valve installation 2. Improper expansion valve adjustment	Replace expansion valve.

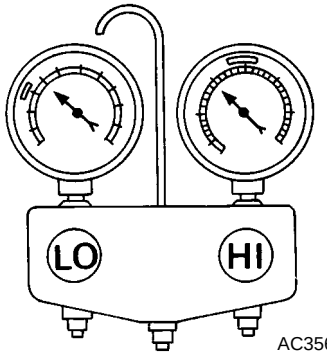
High-pressure Side is Too High and Low-pressure Side is Too Low.

NEHA0278S02

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
High-pressure side is too high and low-pressure side is too low. B  AC360A	Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot.	High-pressure tube or parts located between compressor and condenser are clogged or crushed.	● Check and repair or replace malfunctioning parts. ● Check lubricant for contamination.

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

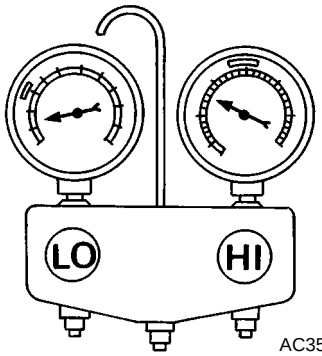
NEHA0278S03

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
High-pressure side is too low and low-pressure side is too high. C  AC356A	High and low-pressure sides become equal soon after compressor operation stops.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings	Replace compressor.
	No temperature difference between high and low-pressure sides	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.

Insufficient Cooling (Cont'd)

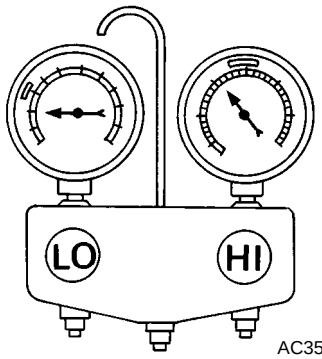
Both High- and Low-pressure Sides are Too Low.

NEHA0278S04

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Both high- and low-pressure sides are too low. D  AC353A	• There is a big temperature difference between receiver drier outlet and inlet. Outlet temperature is extremely low. • Liquid tank inlet and expansion valve are frosted.	Compressor discharge capacity does not change. (Compressor stroke is set at maximum.)	• Replace liquid tank. • Check lubricant for contamination.
	• Temperature of expansion valve inlet is extremely low as compared with areas near liquid tank. • Expansion valve inlet may be frosted. • Temperature difference occurs somewhere in high-pressure side	High-pressure pipe located between receiver drier and expansion valve is clogged.	• Check and repair malfunctioning parts. • Check lubricant for contamination.
	• Expansion valve and liquid tank are warm or only cool when touched.	Low refrigerant charge ↓ Leaking fittings or components	Check refrigerant for leaks. Refer to "Checking Refrigerant Leaks", HA-86.
	There is a big temperature difference between expansion valve inlet and outlet while the valve itself is frosted.	Expansion valve closes a little compared with the specification. ↓ 1. Improper expansion valve adjustment 2. Malfunctioning thermal valve 3. Outlet and inlet may be clogged.	• Remove foreign particles by using compressed air. • Check lubricant for contamination.
	An area of the low-pressure pipe is colder than areas near the evaporator outlet.	Low-pressure pipe is clogged or crushed.	• Check and repair malfunctioning parts. • Check lubricant for contamination.
	Air flow volume is not enough or is too low.	Evaporator is frozen. ↓ Compressor discharge capacity does not change. (Compressor stroke is set at maximum length.)	Replace compressor.

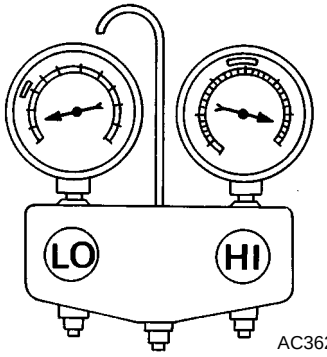
Low-pressure Side Sometimes Becomes Negative.

NEHA0278S05

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Low-pressure side sometimes becomes negative. E  AC354A	• Air conditioning system does not function and does not cyclically cool the compartment air. • The system constantly functions for a certain period of time after compressor is stopped and restarted.	Refrigerant does not discharge cyclically. ↓ Moisture is frozen at expansion valve outlet and inlet. ↓ Water is mixed with refrigerant.	• Drain water from refrigerant or replace refrigerant. • Replace liquid tank.

Low-pressure Side Becomes Negative.

NEHA0278S06

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Low-pressure side becomes negative. F  AC362A	Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.	High-pressure side is closed and refrigerant does not flow. ↓ Expansion valve or liquid tank is frosted.	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. • If water is the cause, initially cooling is okay. Then the water freezes causing a blockage. Drain water from refrigerant or replace refrigerant. • If due to foreign particles, remove expansion valve and remove particles with dry and compressed air (not shop air). • If either of the above methods cannot correct the problem, replace expansion valve. • Replace liquid tank. • Check lubricant for contamination.

Insufficient Heating

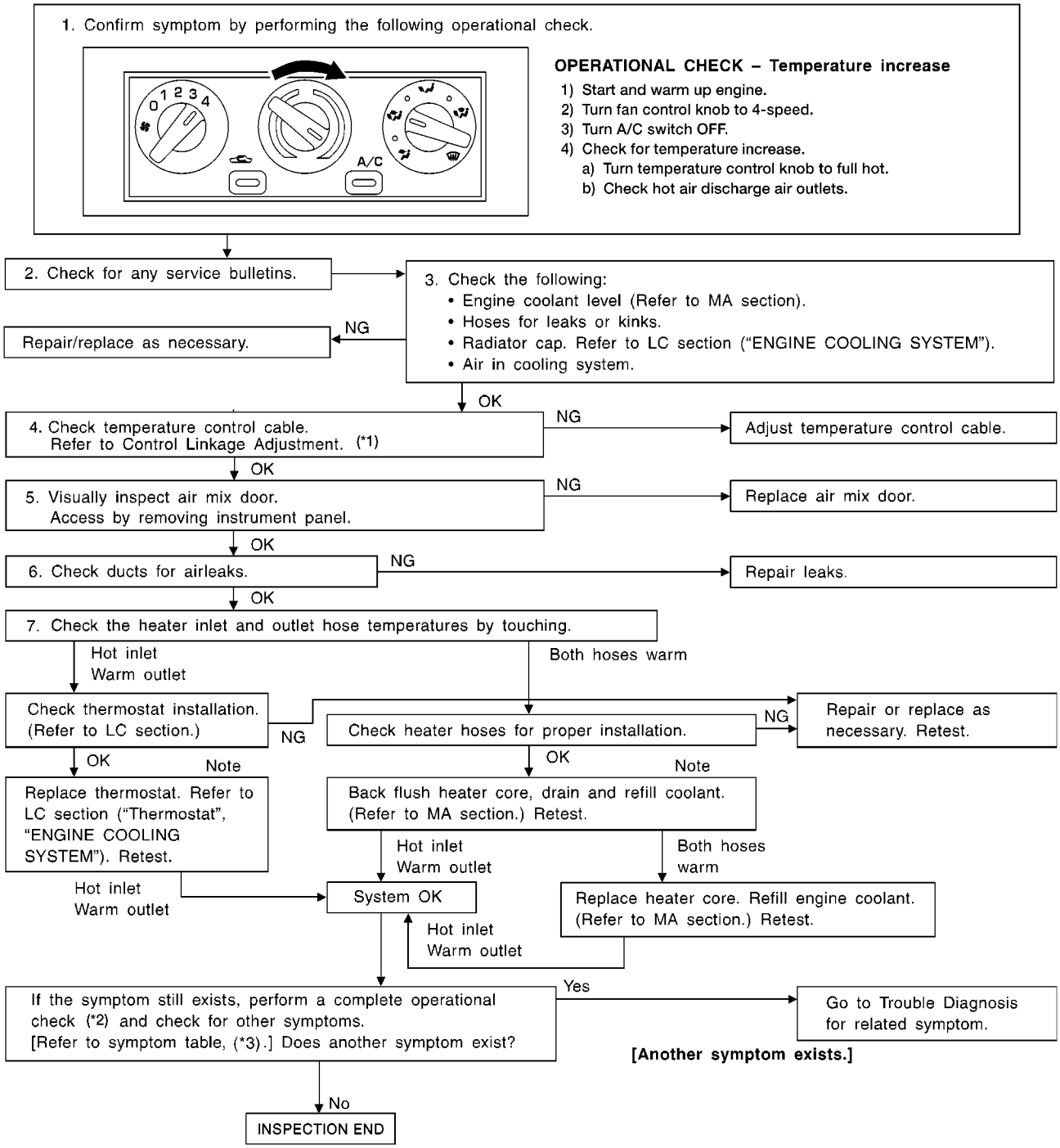
TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT HEATING

=NEHA0140

Symptom:

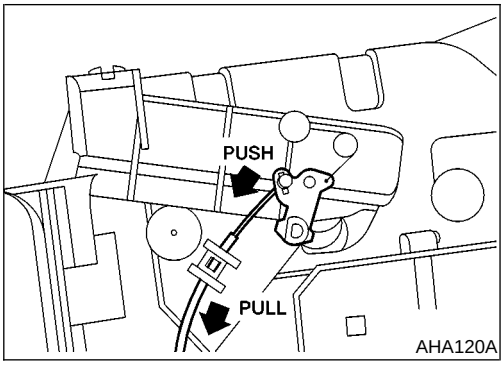
- **Insufficient heating**

Inspection Flow



AHA484A

*1: HA-69 *2: HA-31 *3: HA-30



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.**

Noise

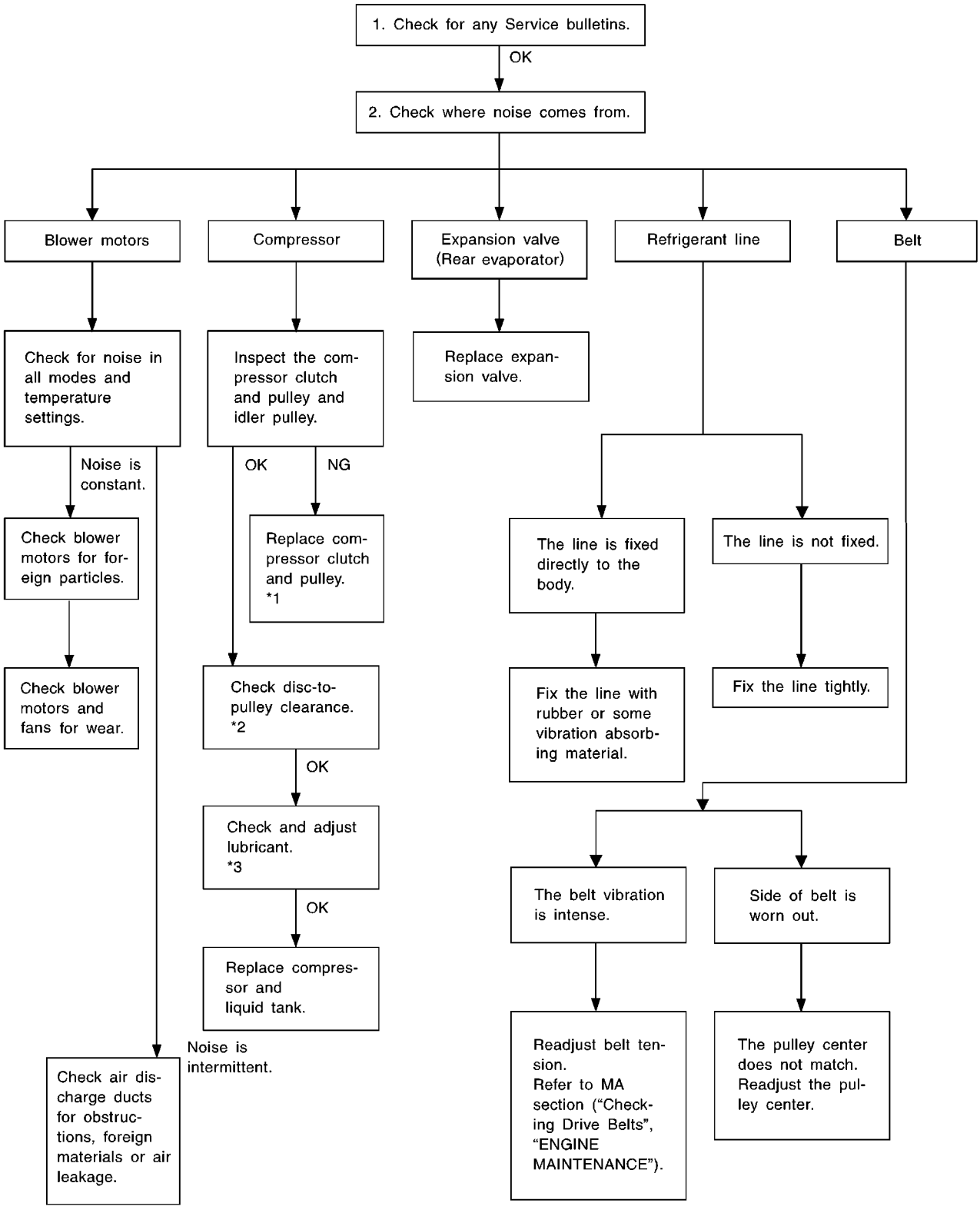
TROUBLE DIAGNOSIS PROCEDURE FOR NOISE

=NEHA0080

Symptom:

- **Noise**

Inspection Flow



AHA337A

*1: HA-79 *2: HA-82 *3: HA-73

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

NEHA0094

SETTING OF SERVICE TOOLS AND EQUIPMENT

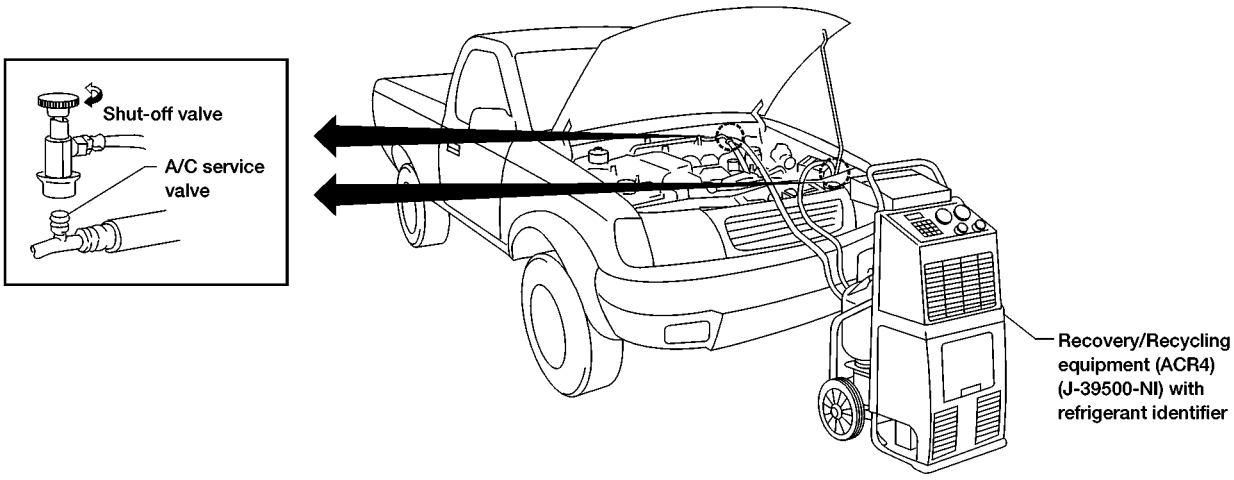
NEHA0094S01

WARNING:

Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Remove R-134a form 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

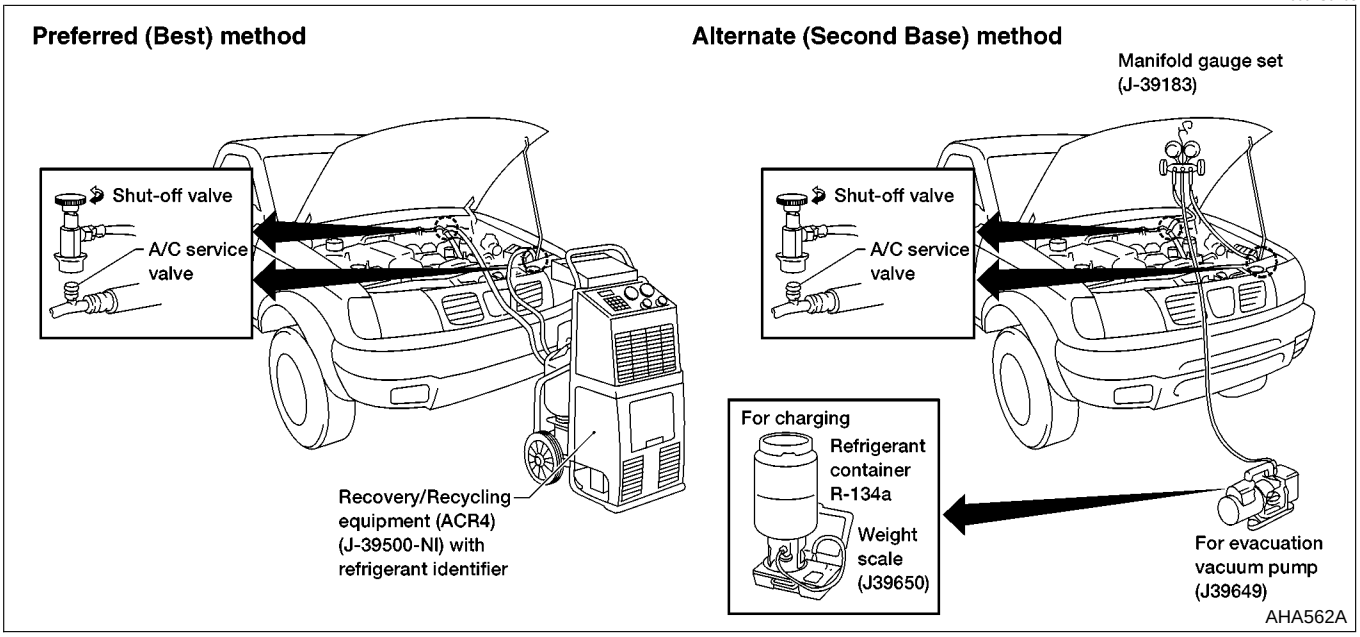
NEHA0094S0101



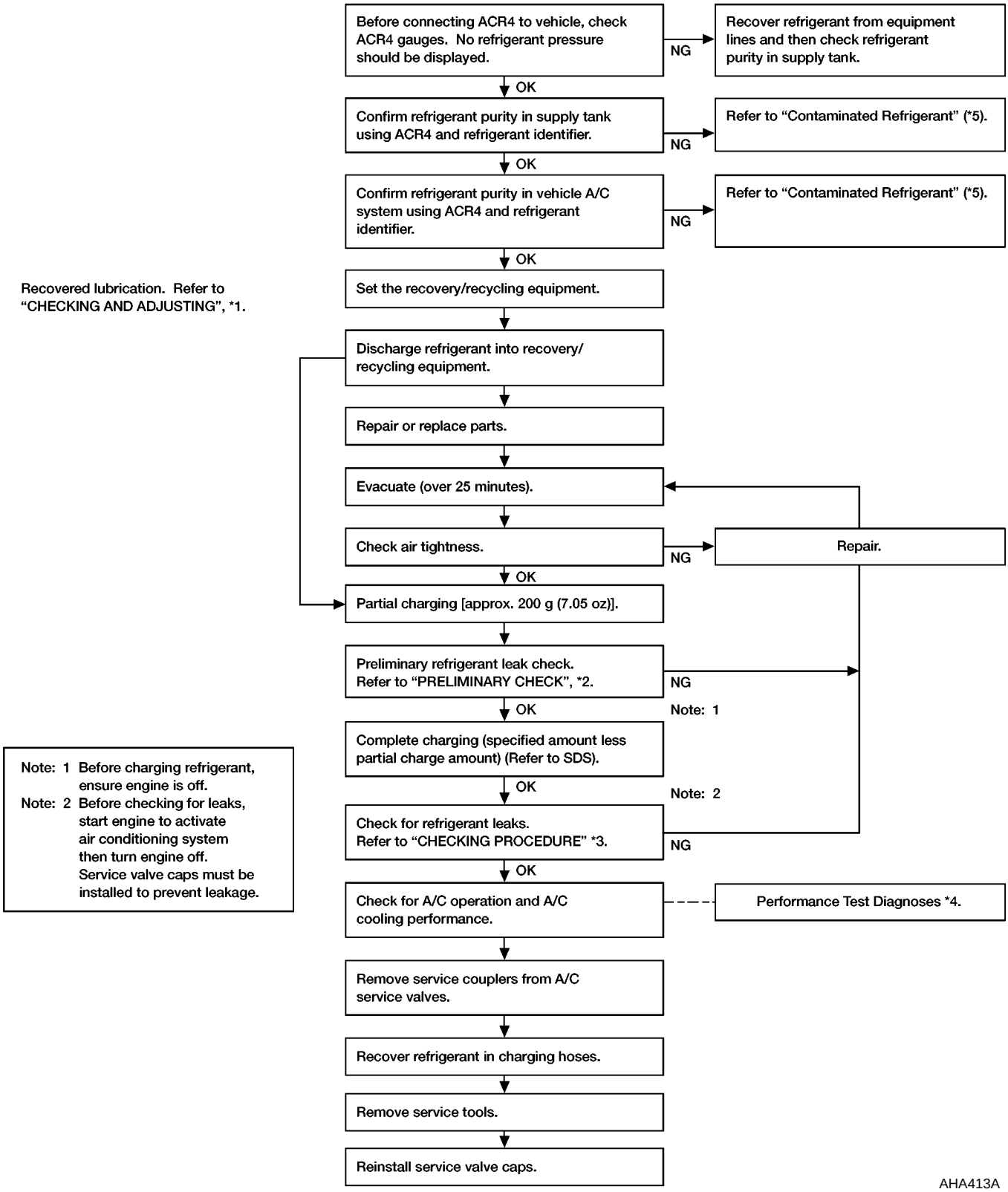
AHA508A

Evacuating System and Charging Refrigerant

NEHA0094S0103



AHA562A



*1 HA-73
*2 HA-86
*3 HA-91
*4 HA-87
*5 HA-3

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-PAGR1

CHECKING AND ADJUSTING

NEHA0095S02

Adjust the lubricant quantity according to the flowchart shown below.

1	LUBRICANT RETURN OPERATION	
Can lubricant return operation be performed? ● A/C system works properly. ● There is no evidence of a large amount of lubricant leakage.		
Yes or No		
Yes	▶	GO TO 2.
No	▶	GO TO 3.

2	PERFORM LUBRICANT RETURN OPERATION, PROCEEDING AS FOLLOWS	
1. Start engine, and set the following conditions: ● **Test condition** **Engine speed: Idling to 1,200 rpm** **A/C switch: ON** **RECIRCULATION switch: OFF** **Fan speed: Max. position** **Temp. control: Optional [Set so that intake air temperature is 25 to 30°C (77 to 86°F).]** 2. Perform lubricant return operation for about 10 minutes. 3. Stop engine. **CAUTION:** **If excessive lubricant leakage is noted, do not perform the lubricant return operation.**		
	▶	GO TO 3.

3	CHECK COMPRESSOR	
Should the compressor be replaced?		
Yes or No		
Yes	▶	Refer to “Lubricant Adjusting Procedure for Compressor Replacement”, HA-75.
No	▶	GO TO 4.

4	CHECK ANY PART	
Is there any part to be replaced? (Evaporator, condenser, liquid tank or in case there is evidence of a large amount of lubricant leakage.)		
Yes or No		
Yes	▶	Refer to "Lubricant Adjusting Procedure for Components Replacement Except Compressor", HA-75.
No	▶	Perform A/C performance test, HA-63.

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.

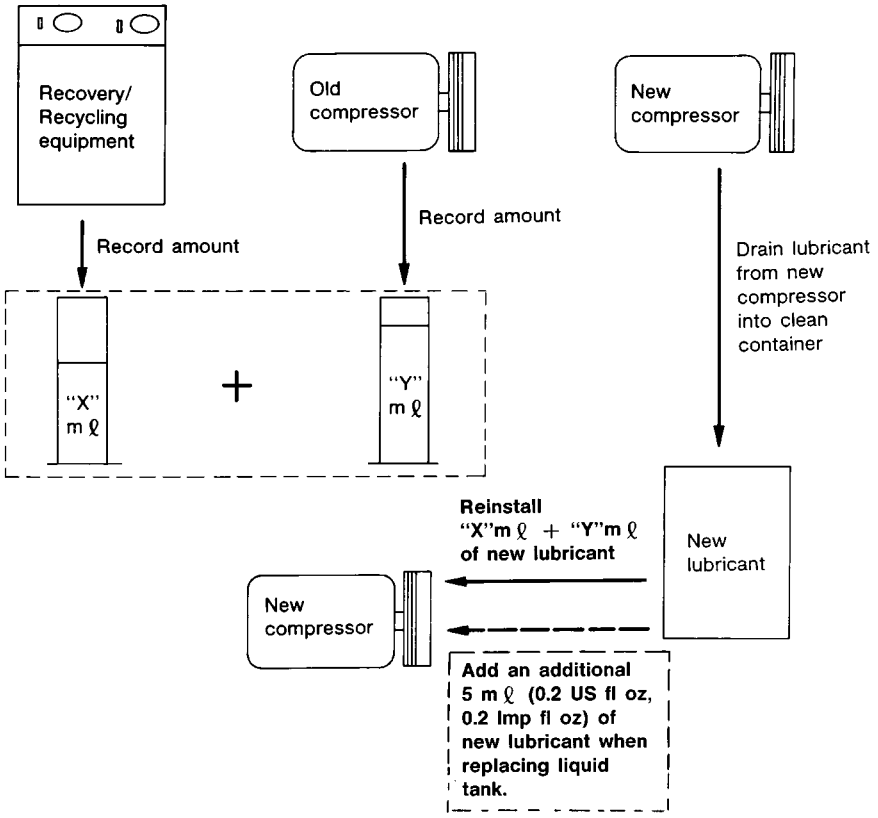
*2: If refrigerant leak is small, no addition of lubricant is needed.

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.

Lubricant adjusting procedure for compressor replacement



RHA065DD

Compressor

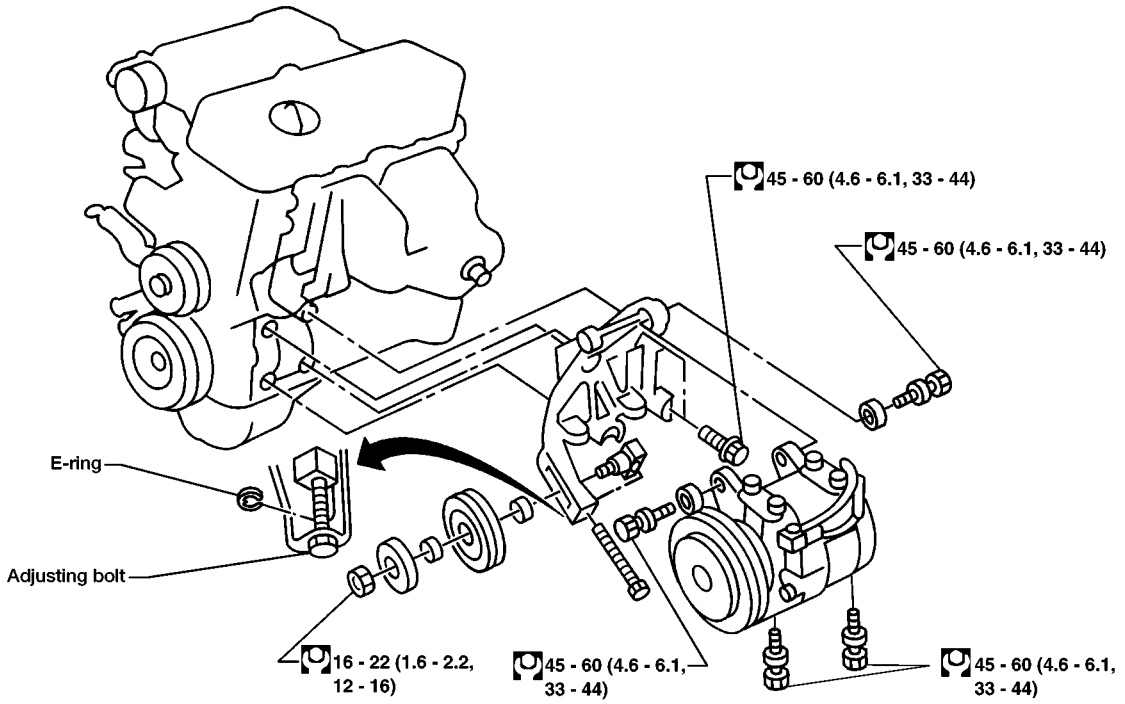
COMPRESSOR MOUNTING

KA24DE Models

NEHA0096

NEHA0096S01

SEC. 274•275

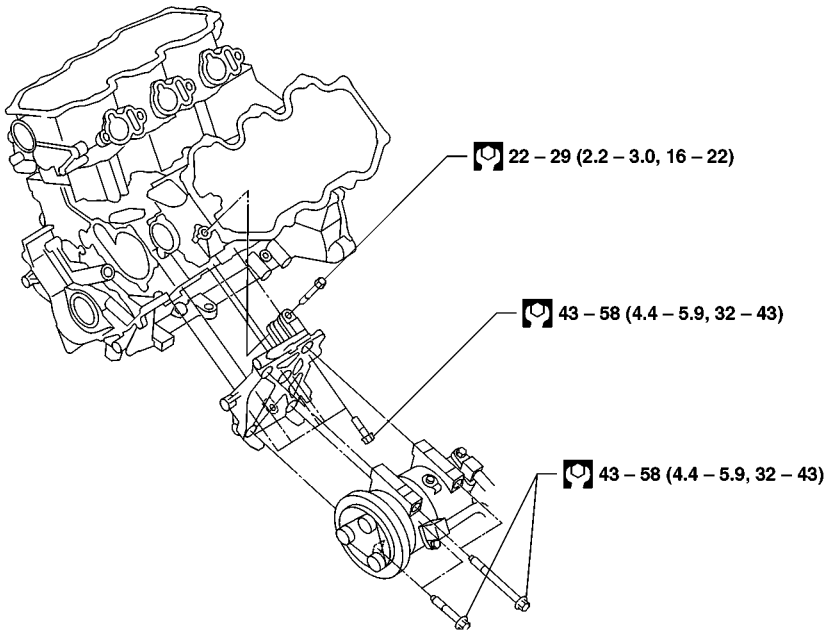


AHA509A

VG33E Models

NEHA0096S02

SEC. 274 · 275



: N·m (kg-m,

AHA511A

Magnet Clutch

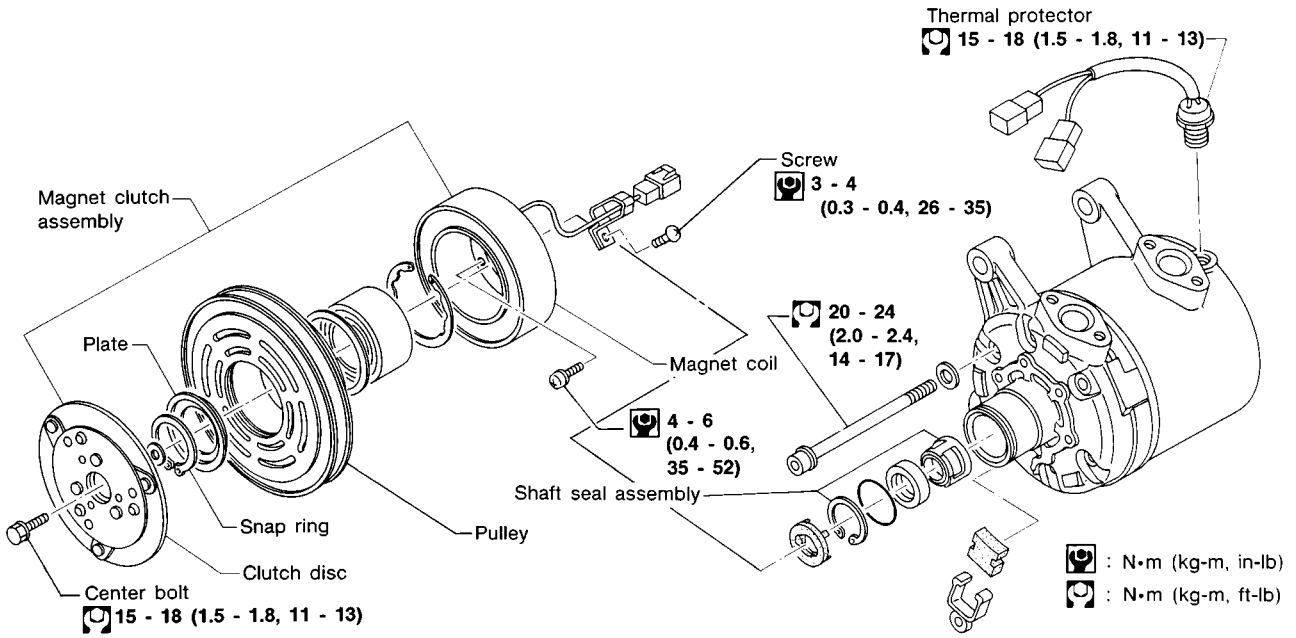
MAGNET CLUTCH MOUNTING

KA24DE Models

NEHA0098

NEHA0098S04

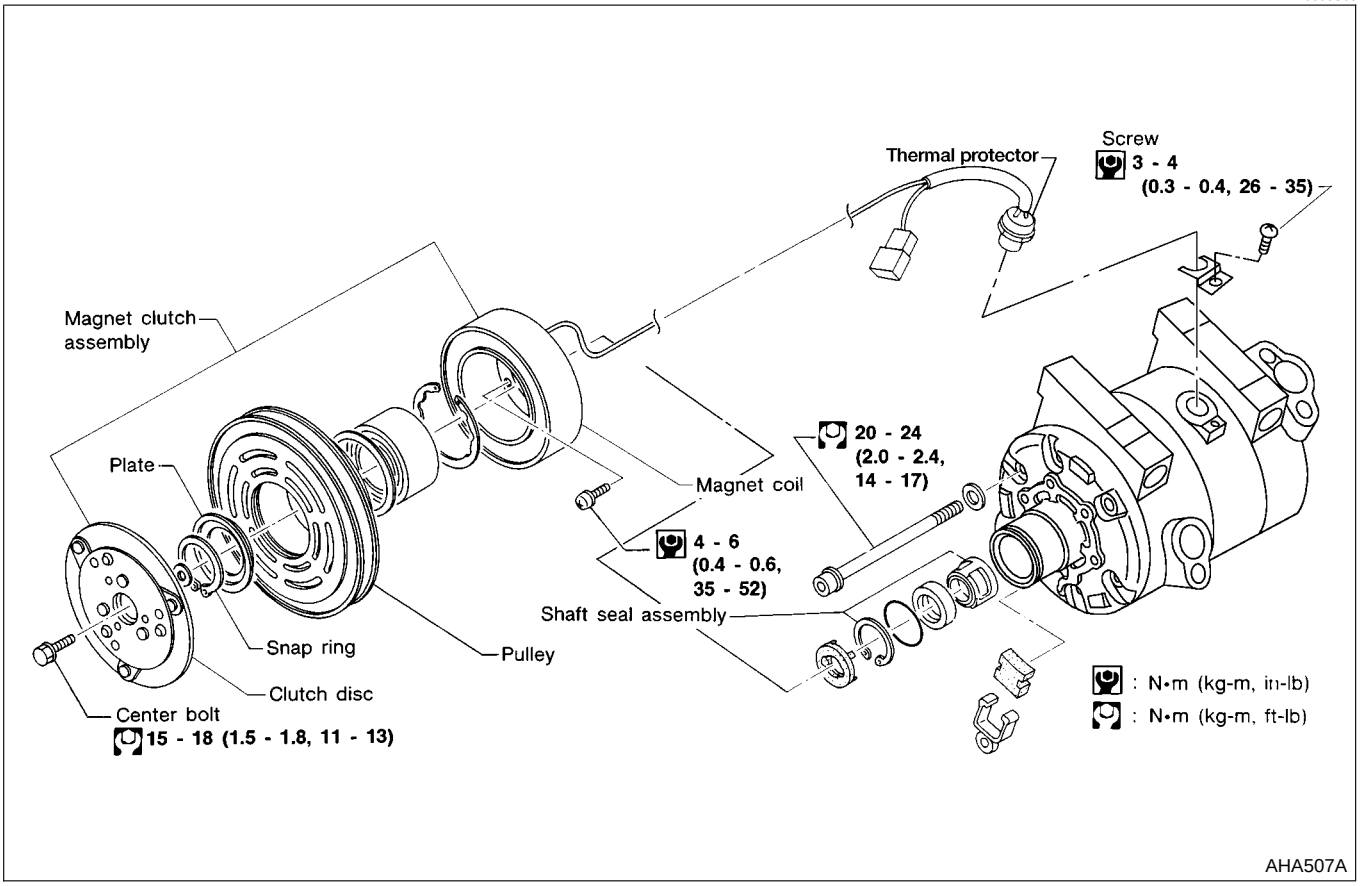
SEC. 274

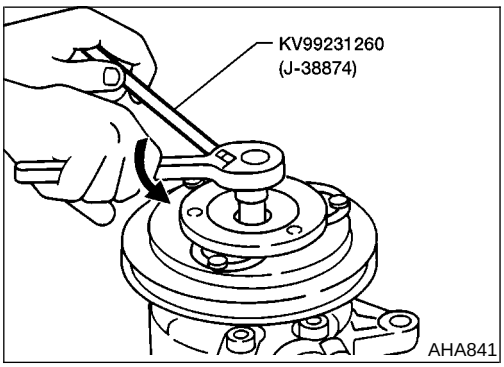


AHA510A

VG33E Models

NEHA0098S05

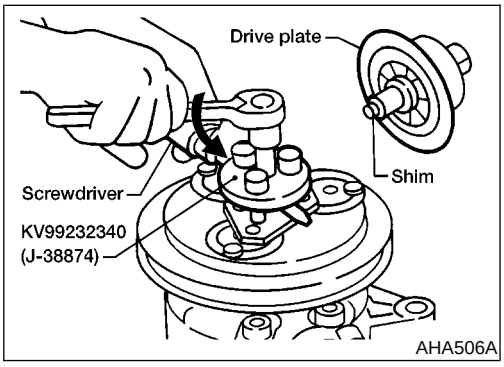




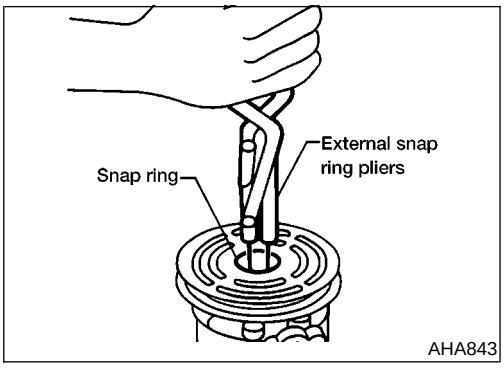
REMOVAL

NEHA0280

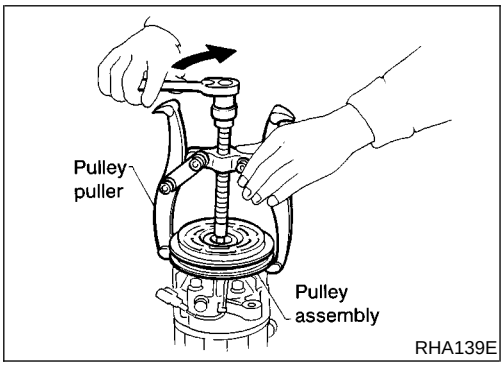
- When removing center bolt, hold clutch disc with clutch disc wrench.



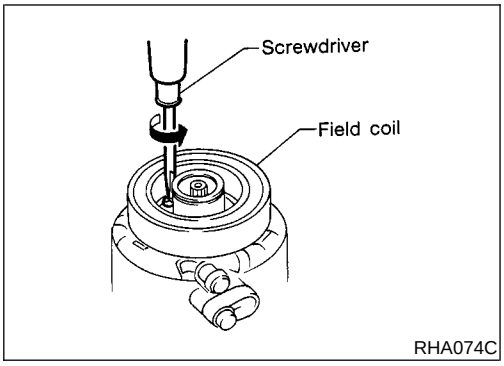
- Remove the drive plate using the clutch disc puller.
  Insert holder's three pins into the drive plate. Rotate the holder clockwise to hook it onto the plate. Then, tighten the center bolt to remove the drive plate.
  While tightening the center bolt, insert a round bar (screwdriver, etc.) between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



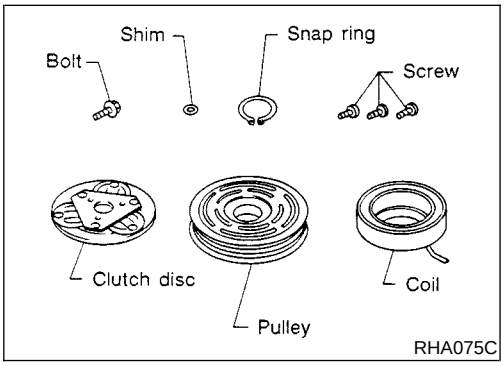
- Remove the snap ring using external snap ring pliers.



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

NEHA0281

Clutch Disc

NEHA0281S01

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

Pulley

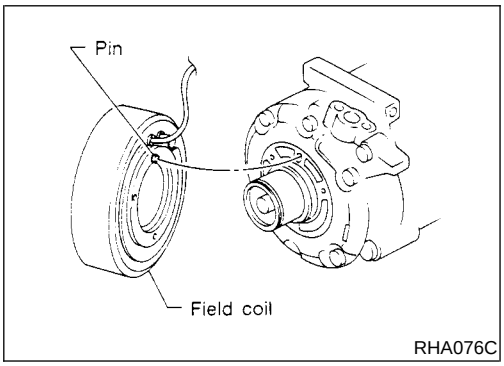
NEHA0281S02

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

NEHA0281S03

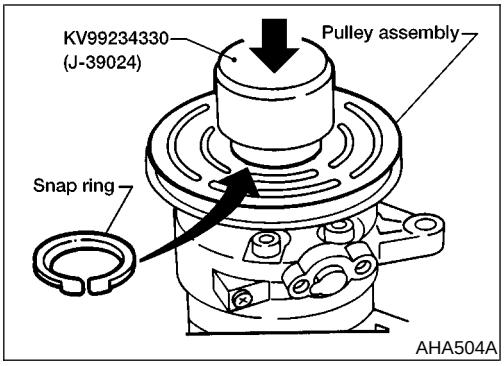
Check coil for loose connection or cracked insulation.



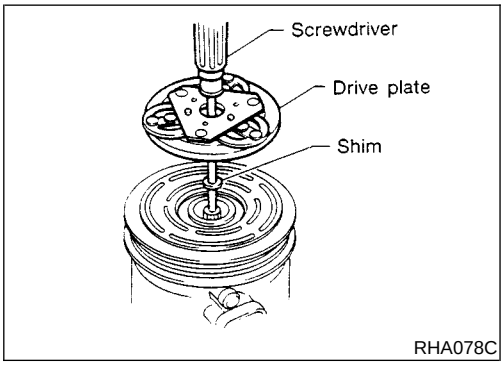
INSTALLATION

NEHA0282

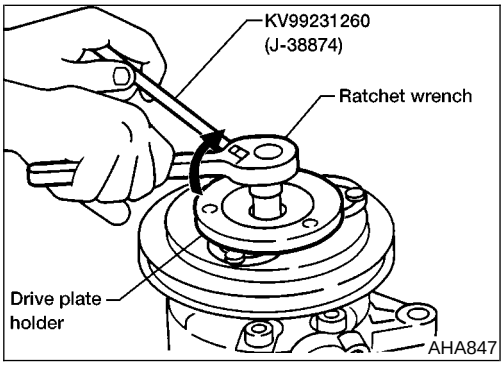
- Install the field coil.
- **Be sure to align the coil's pin with the hole in the compressor's front head.**
- Install the field coil harness clip using a screwdriver.



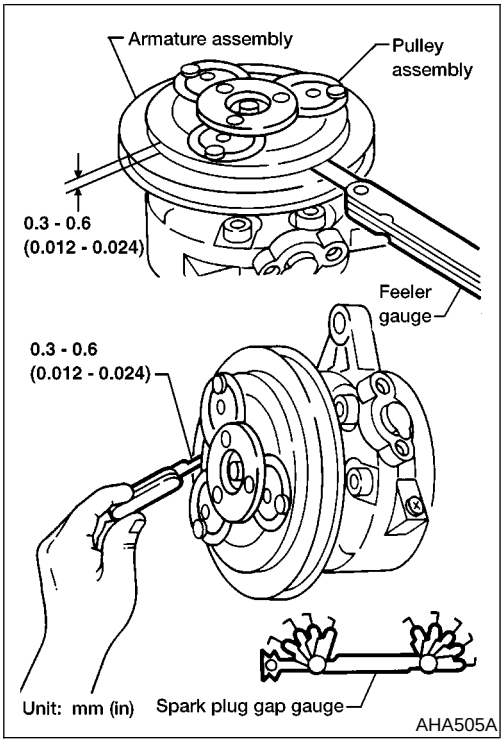
- Install the pulley assembly using the installer and a hand press, and then install the snap ring using snap ring pliers.



- 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.**



- Check clearance all the way around the clutch disc.

  Disc-to-pulley clearance:

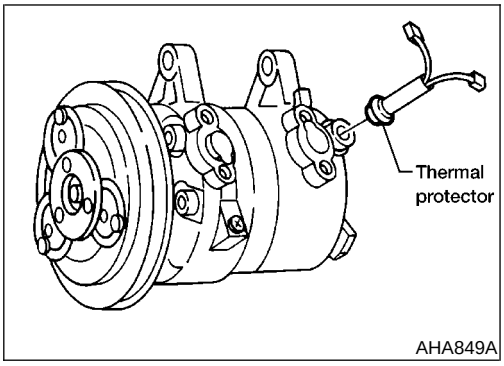
  0.3 - 0.6 mm (0.012 - 0.024 in)

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

Break-in Operation

NEHA0282S01

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.



Thermal Protector

INSPECTION

NEHA0284

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

Refrigerant Lines

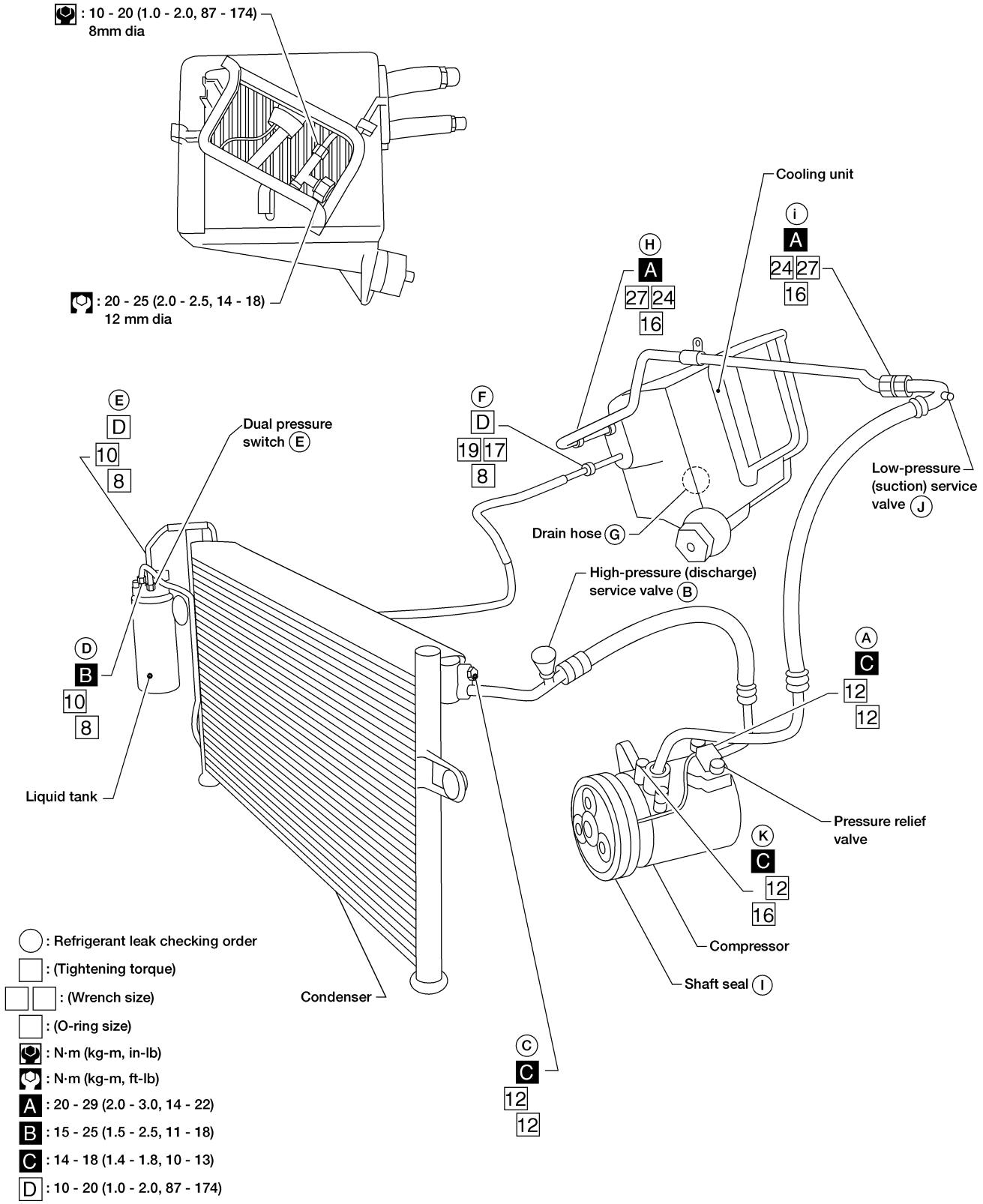
REMOVAL AND INSTALLATION

KA24DE Models

NEHA0101

NEHA0101S02

SEC. 271 • 274 • 276

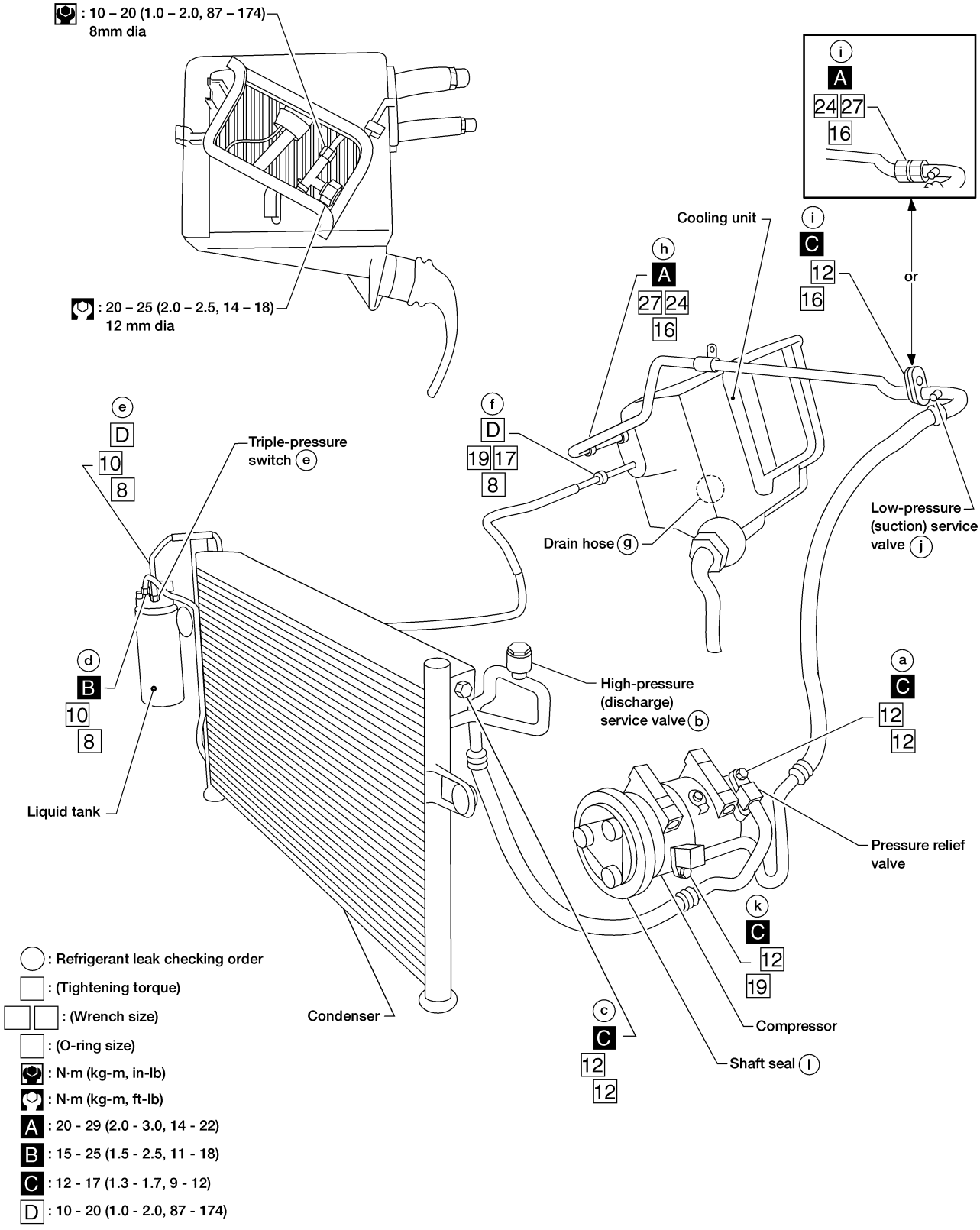


AHA556A

VG33E Models

NEHA0101S03

SEC. 271 • 274 • 276



LHA241

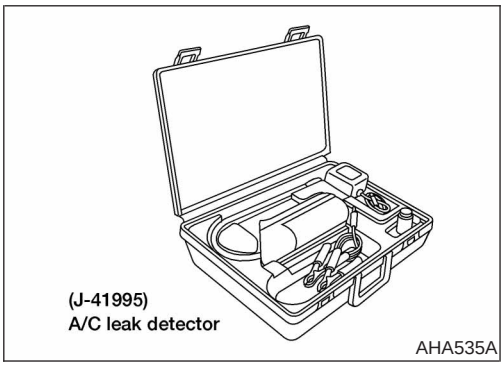
CHECKING REFRIGERANT LEAKS

NEHA0102

Preliminary Check

NEHA0102S01

Perform a visual inspection of all refrigeration parts, fittings, hoses, and components for signs of A/C lubricant leakage, damage and corrosion. Take note of the areas with A/C lubricant leakage to allow extra time in these areas with a electronic leak detector.



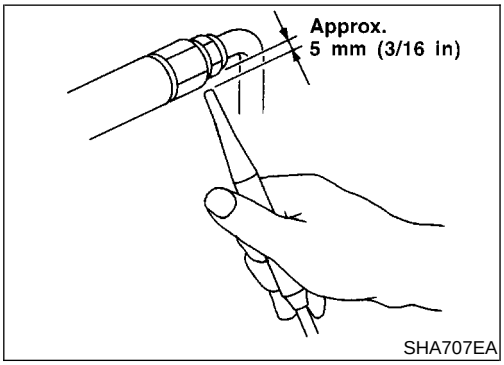
Precautions for Handling Leak Detector

NEHA0102S02

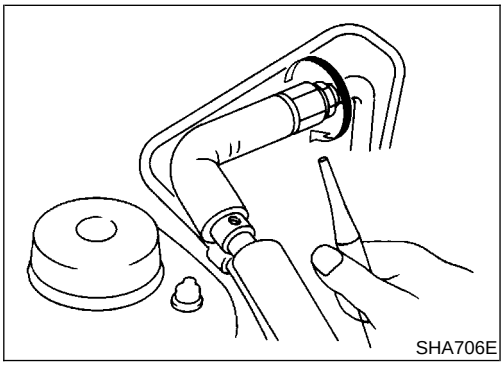
When performing a refrigerant leak check, use a J-41995 A/C leak detector or equivalent. Ensure that the instrument is calibrated and set properly per the operating instructions.

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

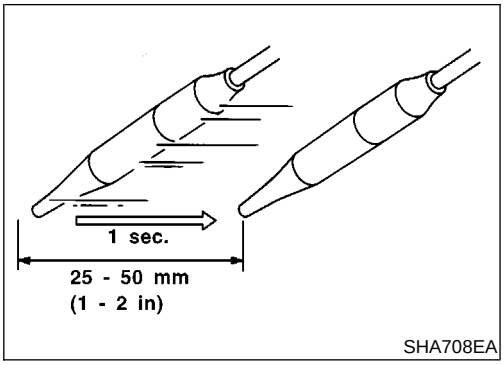
Other gases in the work area or substances on the A/C components, for example, anti-freeze, windshield washer fluid, solvents and lubricants, may falsely trigger the leak detector. Make sure the surfaces to be checked are clean. Clean with a dry cloth or blow off with shop air. Do not allow the sensor 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.



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



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

Checking Procedure

NEHA0102S03

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^2, 50 psi) above 16°C (61°F). If less than specification, recover/evacuate and recharge the system with the specified amount of refrigerant.

NOTE:
At temperatures below 16°C (61°F), leaks may not be detected since the system may not reach 345 kPa (3.52 kg/cm^2, 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**and shaft seal]. Refer to HA-84. Perform a leak check for the following areas carefully. Clean the component to be checked and move the leak detector probe completely around the connection/component.

- **Compressor**
  Check the fitting of high and low pressure hoses, relief valve and shaft seal.
- **Liquid tank**
  Check the pressure switch, tube fitting, weld seams and the fusible plug mounts.
- **Service valves**
  Check all around the service valves. Ensure service valve caps are secured on the service valves (to prevent leaks).

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

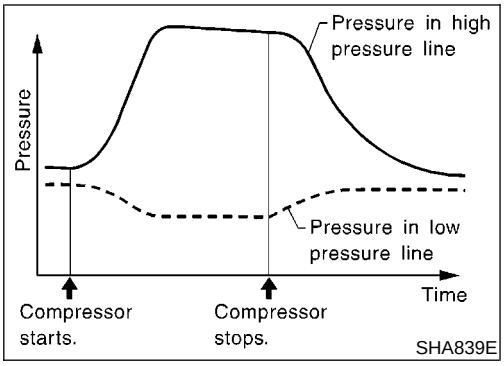
- **Cooling unit (Evaporator)**
  With engine OFF, turn blower fan on "High" for at least 15 seconds to dissipate any refrigerant trace in the cooling unit. Wait a minimum of 10 minutes accumulation time (refer to the manufacturer's recommended procedure for actual wait time) before inserting the leak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

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. Repair the leaking fitting or component as necessary.
15. Evacuate and recharge A/C system and perform the leak test to confirm no refrigerant leaks.
16. Conduct A/C performance test to ensure system works properly.

Belt

TENSION ADJUSTMENT

NEHA0103

- **Refer to *MA-26* ("Checking Drive Belts", "ENGINE MAINTENANCE").**

Fast Idle Control Device (FICD)

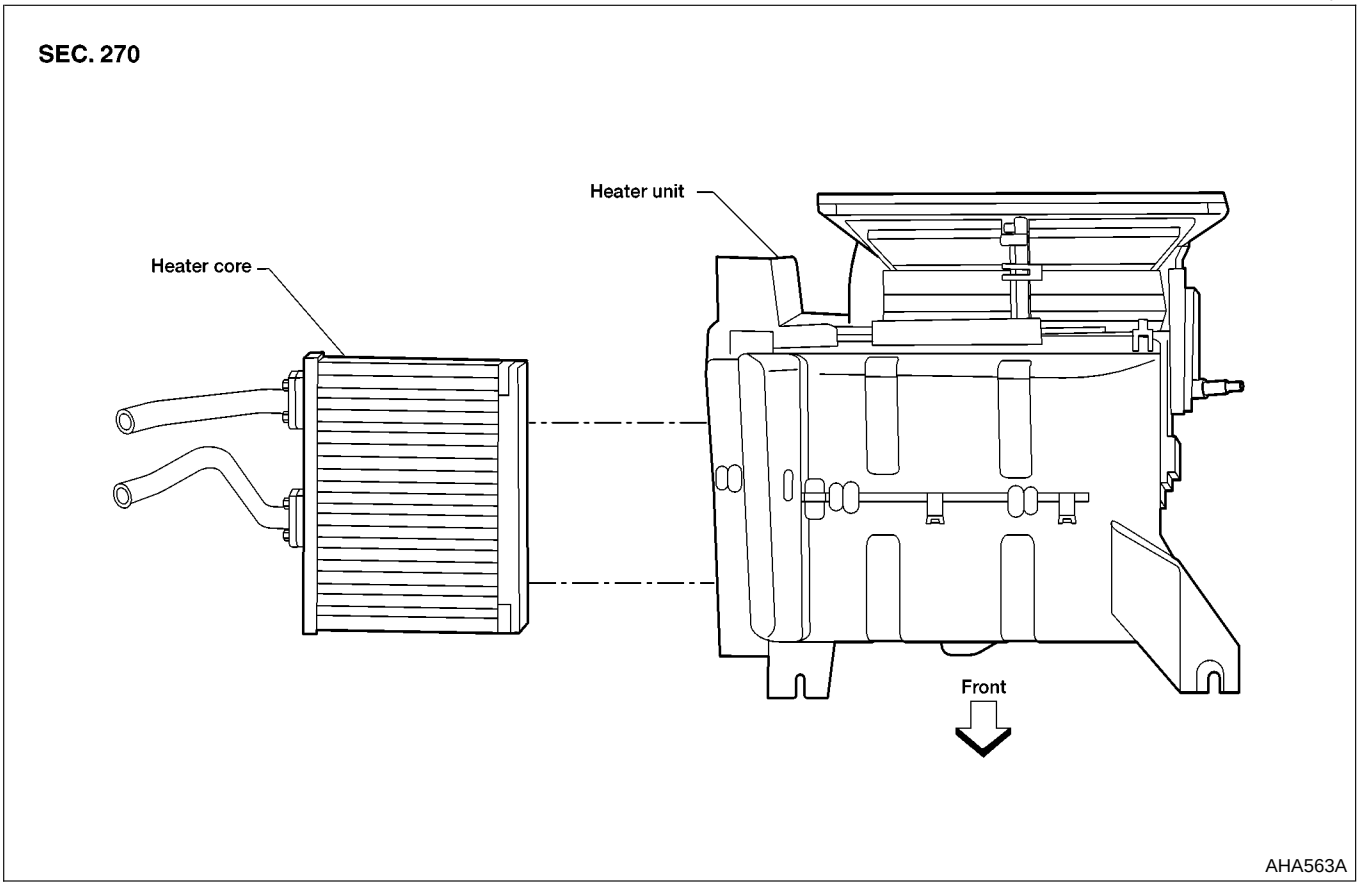
INSPECTION

NEHA0104

- **Refer to *EC-1181*.**

Heater Core

NEHA0171



REMOVAL

NEHA0171S01

1. Drain cooling system. Refer to “Changing Engine Coolant”, ***MA-27***.
2. Disconnect two heater hoses in engine compartment.
3. Remove the cooing unit. Refer to “Evaporator Core”, HA-90.
4. Remove the steering member assembly. Refer to “Instrument Panel Assembly”, ***BT-21***.
5. Remove the heater unit.
6. Remove heater core.

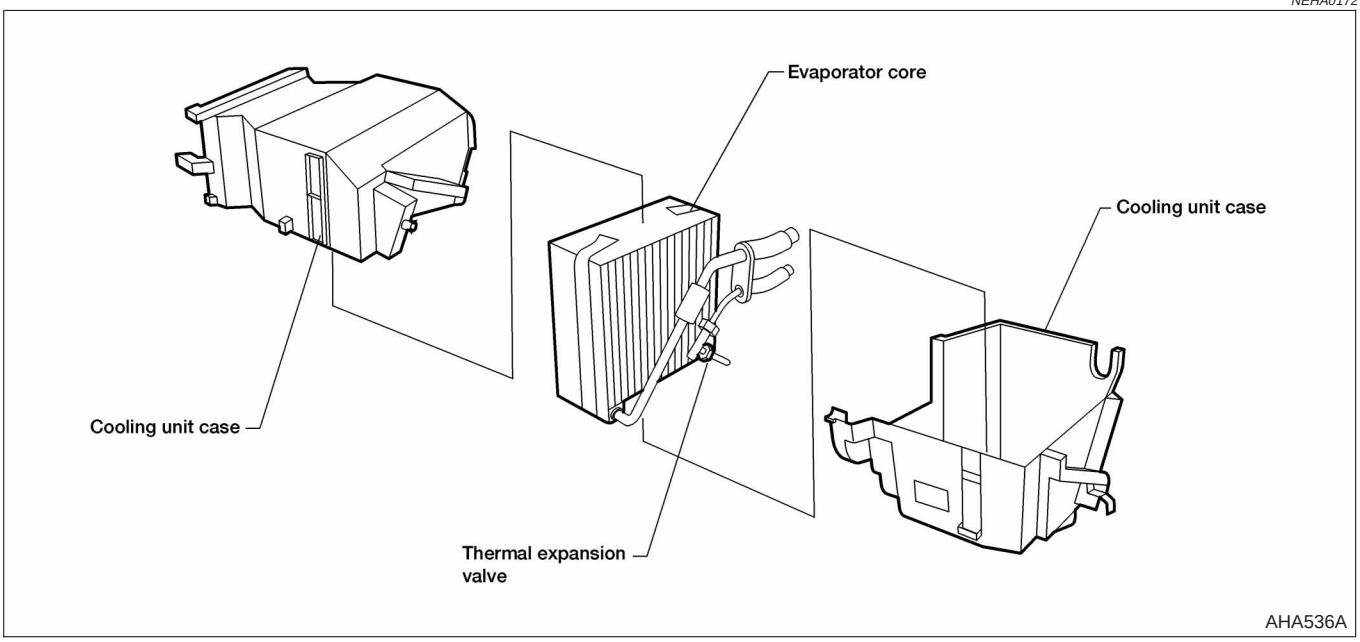
INSTALLATION

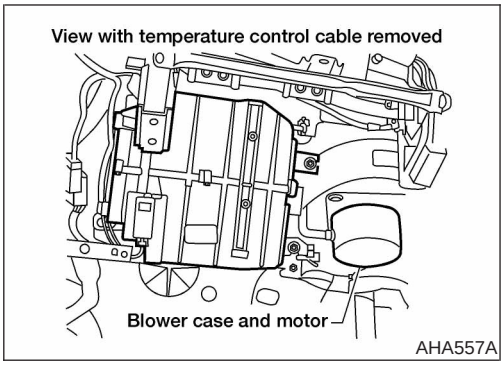
NEHA0171S02

Installation is the reverse order of removal. Inspect system for coolant leaks. Refer to “Changing Engine Coolant”, ***MA-27***.

Evaporator Core

NEHA0172





REMOVAL

NEHA0172S01

1. Discharge the A/C system. Refer to HA-71.
2. Disconnect the two refrigerant lines from the engine compartment.
- Cap the A/C lines to prevent moisture from entering the system.
3. Remove the glove box and mating trim. Refer to “Instrument Panel Assembly”, ***BT-21***.
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 or removal.

Recharge the A/C system.

Inspect system for refrigerant leaks. Refer to HA-86.

Manual

GENERAL SPECIFICATIONS

=NEHA0169

Compressor

NEHA0169S01

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

Lubricant

NEHA0169S02

Model		ZEXEL make DKV-14C
Name		Nissan A/C System Lubricant PAG Type R
Part No.*		KLH00–PAGR1
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		R134a
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 “Idle Speed and Ignition Timing”, ***EC-1188***.

Belt Tension

NEHA0170S02

- Refer to “Checking Drive Belts”, ***MA-26***.

Magnet Clutch

NEHA0170S03

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

NOTES