

SECTION HA

CONTENTS

PRECAUTIONS AND PREPARATION2	Trouble Diagnosis Procedure For Insufficient Cooling.....37	
Supplemental Restraint System (SRS)	Performance Test Diagnoses38	
“AIR BAG”2	Performance Chart40	
Precautions for Working with R-134a.....2	Trouble Diagnoses for Abnormal Pressure41	
General Refrigerant Precautions.....3	Trouble Diagnosis for Insufficient Heating.....44	
Precautions for Refrigerant Connection3	Trouble Diagnosis for Noise46	
Precautions for Servicing Compressor.....6	SERVICE PROCEDURES47	
Special Service Tools7	Refrigerant Lines47	
R-134a Service Tools and Equipment.....8	Checking Refrigerant Leaks48	
Precautions for Service Equipment.....10	R-134a Service Procedure51	
DESCRIPTION12	Compressor Lubricant Quantity.....53	
Refrigeration Cycle12	Compressor Mounting55	
Control Operation13	Belt Tension55	
Component Layout14	Fast Idle Control Device (FICD).....55	
Discharge Air Flow.....15	Condenser55	
Harness Layout.....16	Compressor56	
Circuit Diagram.....18	Compressor Clutch.....56	
Wiring Diagram –HEATER–19	Thermal Protector59	
Wiring Diagram –A/C–.....20	Heater Unit (Heater Core)60	
Operational Check.....22	Cooling Unit (A/C Evaporator).....61	
TROUBLE DIAGNOSES24	Blower Case and Motor.....62	
How to Perform Trouble Diagnoses for Quick and Accurate Repair.....24	Fan Lever and Illumination Bulbs.....63	
Blower Motor Circuit.....25	SERVICE DATA AND SPECIFICATIONS (SDS)64	
Air Outlet.....29	General Specifications.....64	
Intake Door31	Inspection and Adjustment64	
Magnet Clutch Circuit.....32		

When you read wiring diagrams:

- Read GI section, “HOW TO READ WIRING DIAGRAMS”.
- See EL section, “POWER SUPPLY ROUTING” for power distribution circuit.

When you perform trouble diagnoses, read GI section, “HOW TO FOLLOW FLOW CHART IN TROUBLE DIAGNOSES” and “HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT”.

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

HA

EL

IDX

PRECAUTIONS AND PREPARATION

Supplemental Restraint System (SRS) “AIR BAG”

The Supplemental Restraint System “AIR BAG”, used along with a seat belt, helps to reduce the risk or severity of injury to the driver and front passenger in a frontal collision. The Supplemental Restraint System consists of air bag modules (located in the center of the steering wheel and in the instrument panel on the passenger side), a diagnosis sensor unit, a crash zone sensor (4WD models), warning lamp, wiring harness and spiral cable.

The vehicle 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.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses are covered with yellow insulation either just before the harness connectors or on the complete harness, for easy identification.
- The vehicle 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 R-134a

WARNING:

- CFC-12 (R-12) refrigerant and R-134a refrigerant are not compatible. These refrigerants must never be mixed, even in the smallest amounts. If the refrigerants are mixed, compressor malfunction is likely.
- Use only specified lubricant for the R-134a A/C system and R-134a components. If lubricant other than that specified is used, compressor malfunction is likely.
- The specified 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 the 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 to contact styrofoam parts. Damage may result.

PRECAUTIONS AND PREPARATION

WARNING:

General Refrigerant Precautions

- Do not release refrigerant into the air. Use approved recovery/recycling equipment to capture the refrigerant every time an air conditioner system is discharged. Always follow the manufacturers recommendations for use of the recovery/recycling equipment.
- Always wear eye and hand protection (goggles and gloves) when working with any refrigerant or air conditioner 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 pail of warm 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 introduce compressed air to any refrigerant container or refrigerant component.

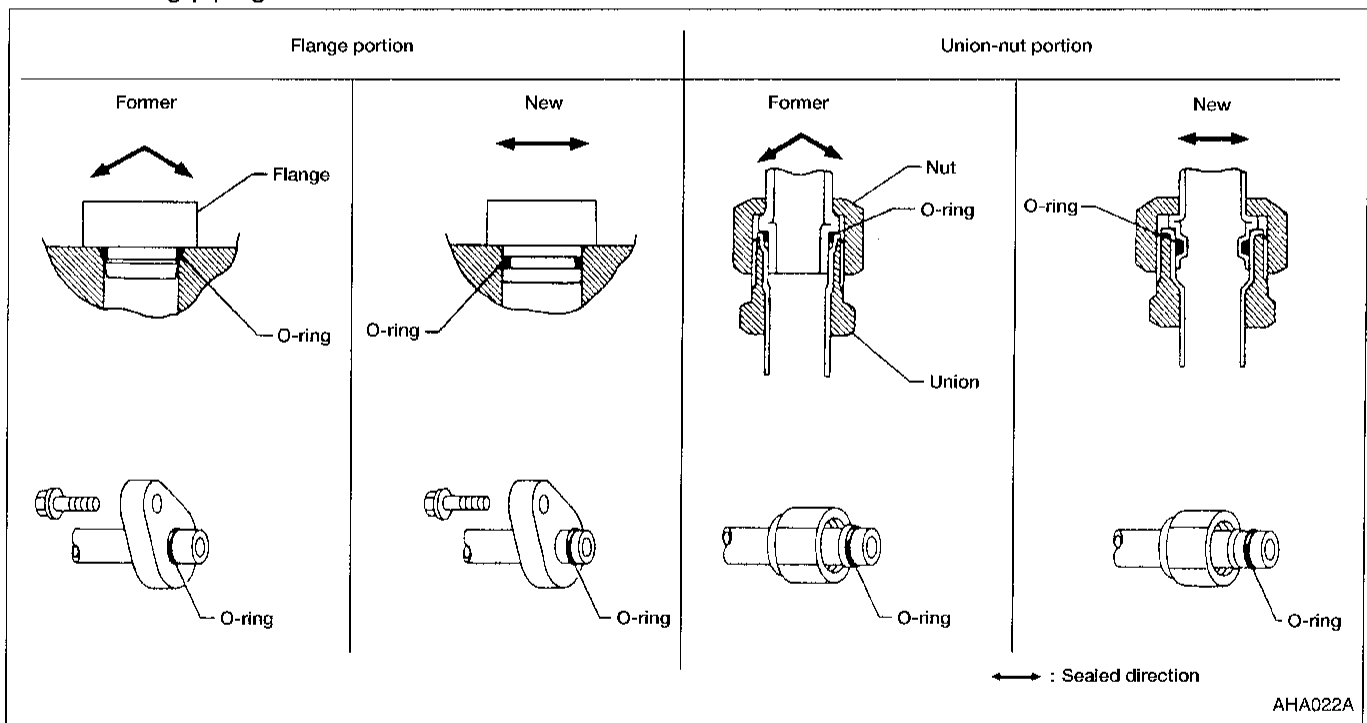
Precautions for Refrigerant Connection

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

- Expansion valve to cooling unit.

FEATURES OF NEW TYPE REFRIGERANT CONNECTION

- The O-ring has been relocated. It has also been provided with a groove for proper installation. This eliminates the chance of the O-ring being caught in, or damaged by, the mating part. The sealing direction of the O-ring is now set vertically in relation to the contacting surface of the mating part to improve sealing characteristics.
- The reaction force of the O-ring will not occur in the direction that causes the joint to pull out, thereby facilitating piping connections.



GI
MA
EW
LC
EC
FE
CL
MT
AT
TF
PD
FA
RA
BR
ST
RS
BT

HA

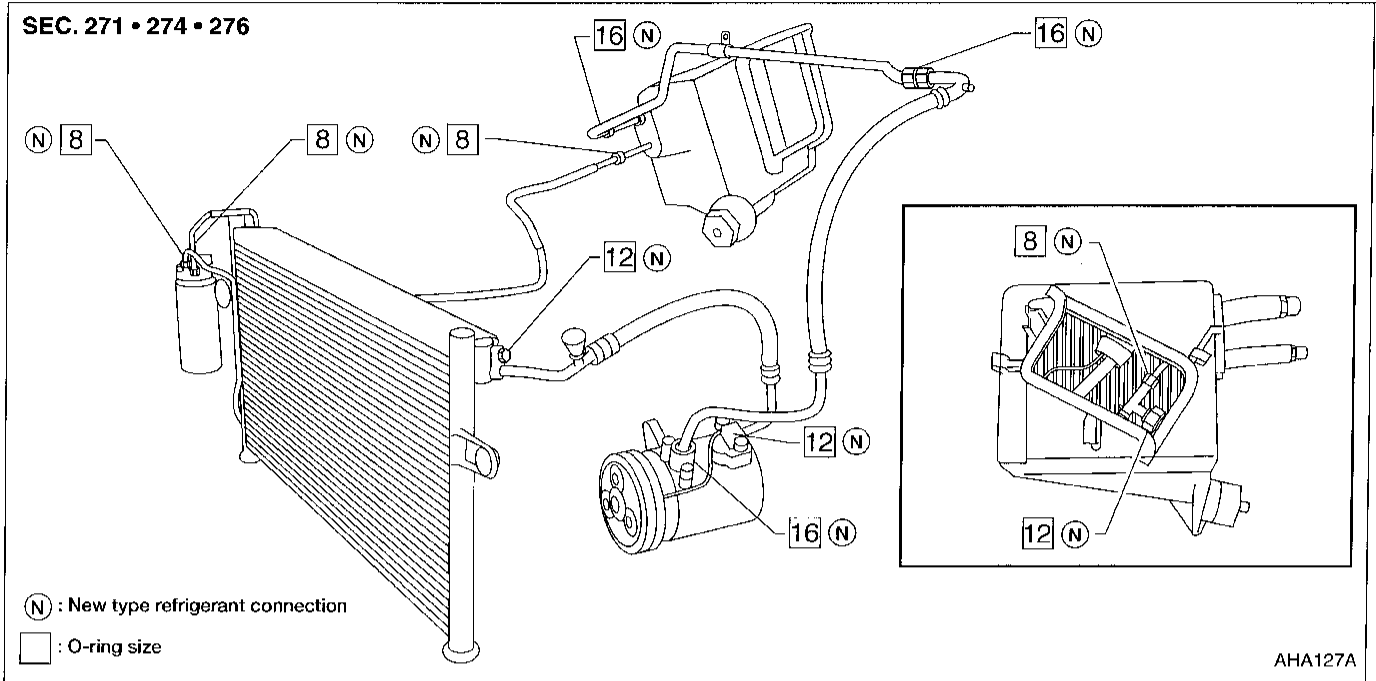
EL

IDX

PRECAUTIONS AND PREPARATION

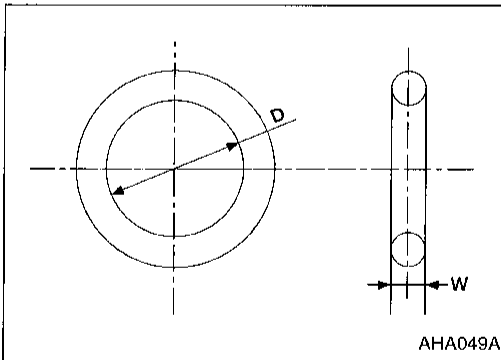
Precautions for Refrigerant Connection (Cont'd)

O-RING AND REFRIGERANT CONNECTION



CAUTION:

The new and former refrigerant connections use different O-ring configurations. Do not confuse O-rings since they are not interchangeable. If a wrong O-ring is installed, refrigerant will leak at, or around, the connection.



O-ring part numbers and specifications

Connection type	O-ring size	Part number	D	mm (in)	W	mm (in)
New	8	92471 N8210	6.8	(0.268)	1.85	(0.0728)
Former		92470 N8200	6.07	(0.2390)	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)
Former		92475 72L00	14.3	(0.563)	2.3	(0.0906)

PRECAUTIONS AND PREPARATION

Precautions for Refrigerant Connection (Cont'd)

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:

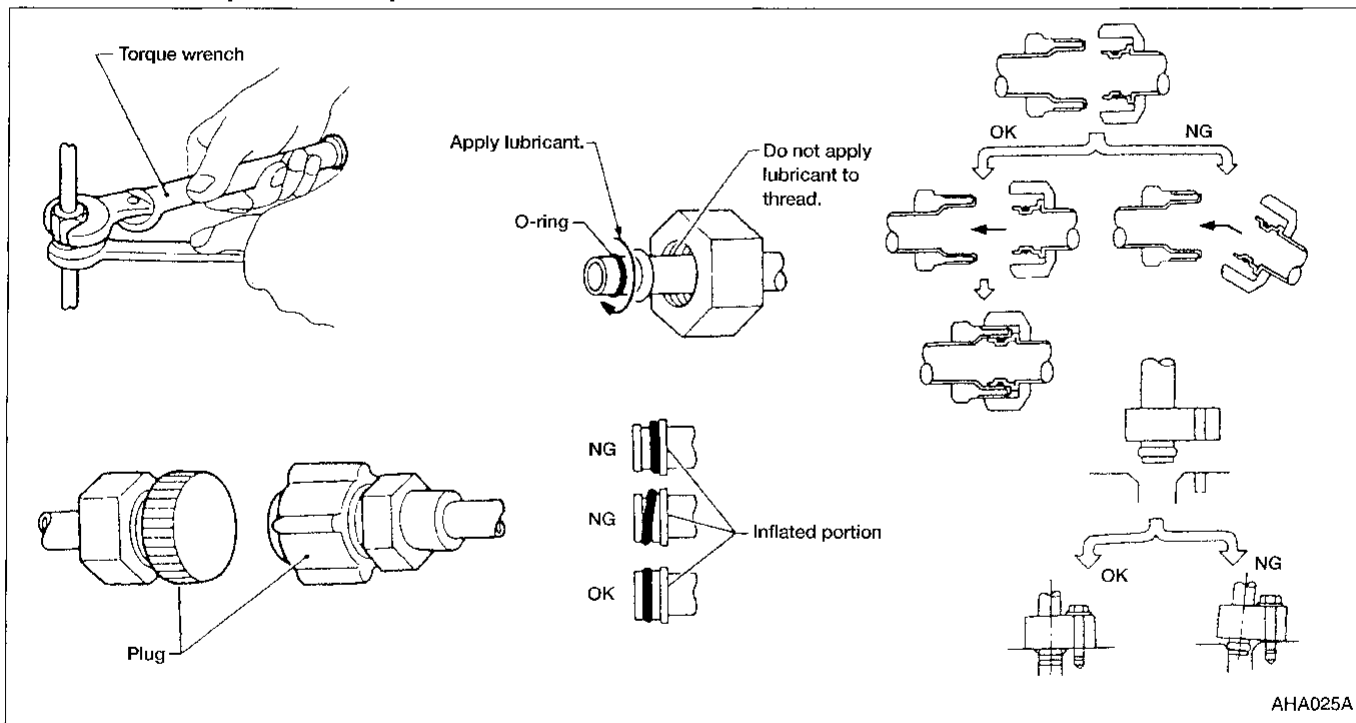
When replacing or cleaning refrigerant cycle components, observe the following.

- Do not leave compressor on its side or upside down for more than 10 minutes. Compressor lubricant will enter low pressure chamber.
- When connecting tubes, always use a torque wrench and a back-up wrench.
- After disconnecting tubes, plug all openings immediately to prevent entry of dirt and moisture.
- When installing an air conditioner unit in the vehicle, connect the pipes as the final stage of the operation. Do not remove seal caps from pipes and other components until just before 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 portions shown in illustration. Be careful not to apply lubricant to threaded portion.

Name: Nissan A/C System Lubricant Type R

Part No.: KLH00-PAGR0

- O-ring must be closely attached to inflated portion of tube.
- After inserting tube into union until O-ring is no longer visible, tighten nut to specified torque.
- After connecting line, conduct leak test and make sure that there is no leakage. When the gas leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.



GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

HA

EL

IDX

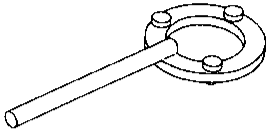
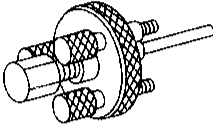
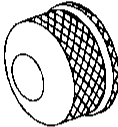
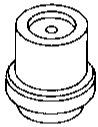
Precautions for Servicing Compressor

- 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, be sure to remove lubricant from the compressor and check the lubricant quantity extracted.
- When replacing or repairing compressor, follow lubricant checking and adjusting procedure exactly. Refer to "Compressor Lubricant Quantity", "SERVICE PROCEDURES", HA-53.
- Keep friction surfaces between clutch and pulley clean. If the surface is contaminated with oil, 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 AND PREPARATION

Special Service Tools

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	GI MA EM LC EC
KV99232340 (J-38874) Clutch disc puller	 NT206	EC FE CL
KV99234330 (J-39024) Pulley installer	 NT207	MT AT
KV99233130 (J-39023) Pulley puller	 NT208	TF PD

FA

RA

BR

ST

RS

BT

HA

EL

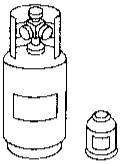
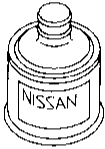
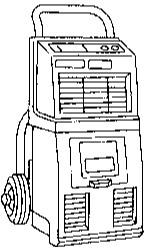
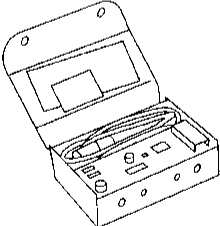
IDX

PRECAUTIONS AND PREPARATION

R-134a Service Tools and Equipment

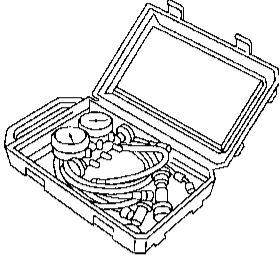
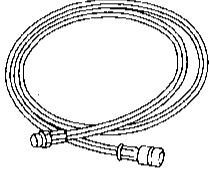
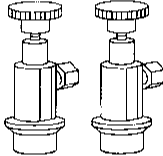
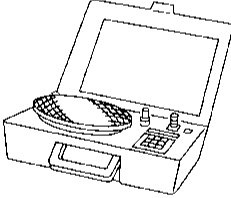
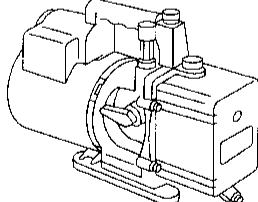
Never mix R-134a refrigerant and/or its specified lubricant with CFC-12 (R-12) refrigerant and/or its lubricant. Separate and non-interchangeable service equipment must be used for each type of refrigerant/lubricant. Refrigerant container fittings, service hose fittings, and service equipment fittings (equipment which handles refrigerant and/or lubricant) are different between CFC-12 (R-12) and R-134a. This is to avoid mixed use of the refrigerants/lubricants.

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

Tool number (Kent-Moore No.) Tool name	Description	Note
R-134a refrigerant	 NT196	Container color: Light blue Container marking: R-134a Fitting size: Thread size ● large container 1/2"-16 ACME
KLH00-PAGR0 (—) Nissan A/C System Lubri- cant Type R	 NT197	Type: Polyalkylene glycol oil (PAG), type R Application: R-134a vane rotary compres- sors (Nissan only) Lubricity: 40 ml (1.4 US fl oz, 1.4 Imp fl oz)
(J-39500-NI) Recovery/Recycling equip- ment (ACR4)	 NT195	Function: Refrigerant Recovery and Recy- cling and Recharging
(J-39400) Electronic leak detector	 NT198	Power supply: ● DC 12 V (Cigarette lighter)

PRECAUTIONS AND PREPARATION

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

Tool number (Kent-Moore No.) Tool name	Description	Note
(J-39183) Manifold gauge set (with hoses and couplers)	 <p>NT199</p>	<p>Identification:</p> <ul style="list-style-type: none"> ● The gauge face indicates R-134a. Fitting size: Thread size ● 1/2"-16 ACME
<p>Service hoses</p> <ul style="list-style-type: none"> ● High-side hose (J-39501-72) ● Low-side hose (J-39502-72) ● Utility hose (J-39476-72) 	 <p>NT201</p>	<p>Hose color:</p> <ul style="list-style-type: none"> ● Low hose: Blue with black stripe ● High hose: Red with black stripe ● Utility hose: Yellow with black stripe or green with black stripe <p>Hose fitting to gauge:</p> <ul style="list-style-type: none"> ● 1/2"-16 ACME
<p>Service couplers</p> <ul style="list-style-type: none"> ● High-side coupler (J-39500-20) ● Low-side coupler (J-39500-24) 	 <p>NT202</p>	<p>Hose fitting to service hose:</p> <ul style="list-style-type: none"> ● M14 x 1.5 fitting (optional) or permanently attached
(J-39650) Refrigerant weight scale	 <p>NT200</p>	<p>For measuring of refrigerant</p> <p>Fitting size: Thread size</p> <ul style="list-style-type: none"> ● 1/2"-16 ACME
(J-39649) Vacuum pump (Including the isolator valve)	 <p>NT203</p>	<p>Capacity:</p> <ul style="list-style-type: none"> ● Air displacement: 4 CFM ● Micron rating: 20 microns ● Oil capacity: 482 g (17 oz) <p>Fitting size: Thread size</p> <ul style="list-style-type: none"> ● 1/2"-16 ACME

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

HA

EL

IDX

PRECAUTIONS AND PREPARATION

Precautions for Service Equipment

RECOVERY/RECYCLING EQUIPMENT

Follow the manufacturer's instructions for machine operation and machine maintenance. Never introduce any refrigerant other than that specified into the machine.

ELECTRONIC LEAK DETECTOR

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

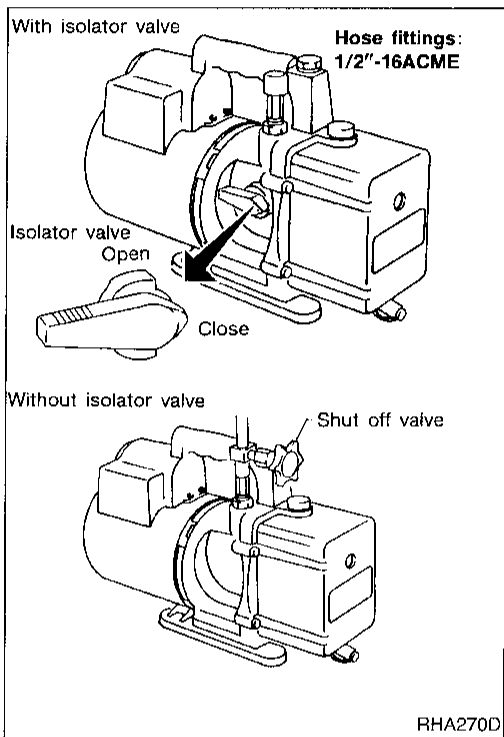
VACUUM PUMP

The lubricating oil contained inside the vacuum pump is not compatible with the specified lubricant for R-134a A/C systems. The vent side of the vacuum pump is exposed to atmospheric pressure. Therefore, if the pump is switched off after evacuation the lubricating oil may migrate into the hose. To prevent this, isolate the pump from the hose after evacuation (vacuuming).

This migration is avoided by placing a manual shut-off valve near the hose-to-pump connection, as follows:

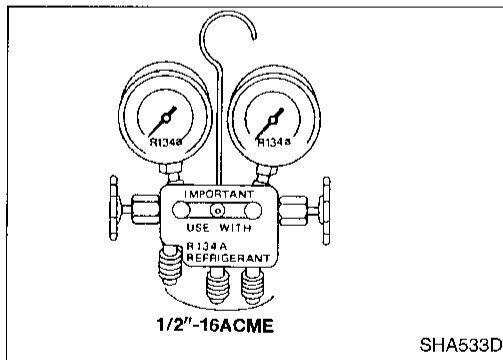
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator valve, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has an automatic shut-off valve, disconnect the hose from the pump. As long as the hose is connected, the valve is open and lubricating oil may migrate.

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



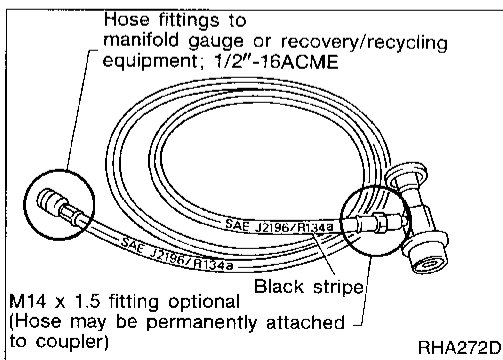
MANIFOLD GAUGE SET

Be sure the gauge set has 1/2"-16 ACME threaded connections for service hoses. Confirm the set has been used only with refrigerant R-134a along with specified lubricants.



SERVICE HOSES

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



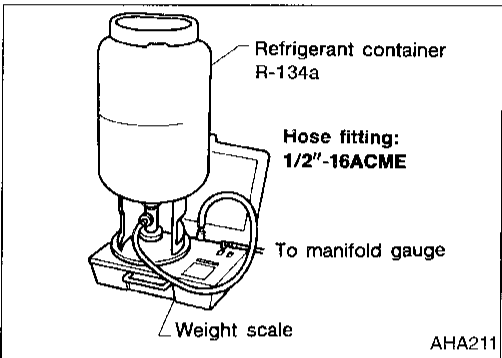
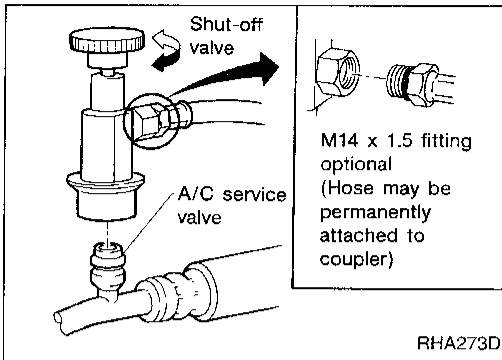
PRECAUTIONS AND PREPARATION

Precautions for Service Equipment (Cont'd)

SERVICE COUPLERS

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

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



REFRIGERANT WEIGHT SCALE

When using a scale which controls refrigerant flow electronically, assure the following:

- Hose fitting size is 1/2"-16 ACME
- No refrigerant other than R-134a (along with specified lubricant) has been used with the scale.

CHARGING CYLINDER

Using a charging cylinder is not recommended. Refrigerant may be vented into the air through the cylinder's top valve when filling the cylinder.

GI
MA
EM
LC
EC
FE
CL
MT
AT
TF
PD
FA
RA
BR
ST
RS
BT
HA
EL
IDX

Refrigeration Cycle

REFRIGERANT FLOW

The refrigerant flow is in the standard pattern. Refrigerant flows through the compressor, condenser, liquid tank, evaporator, and back to the compressor.

The refrigerant evaporation through the evaporator coil is controlled by an externally equalized expansion valve, located inside the evaporator case.

FREEZE PROTECTION

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

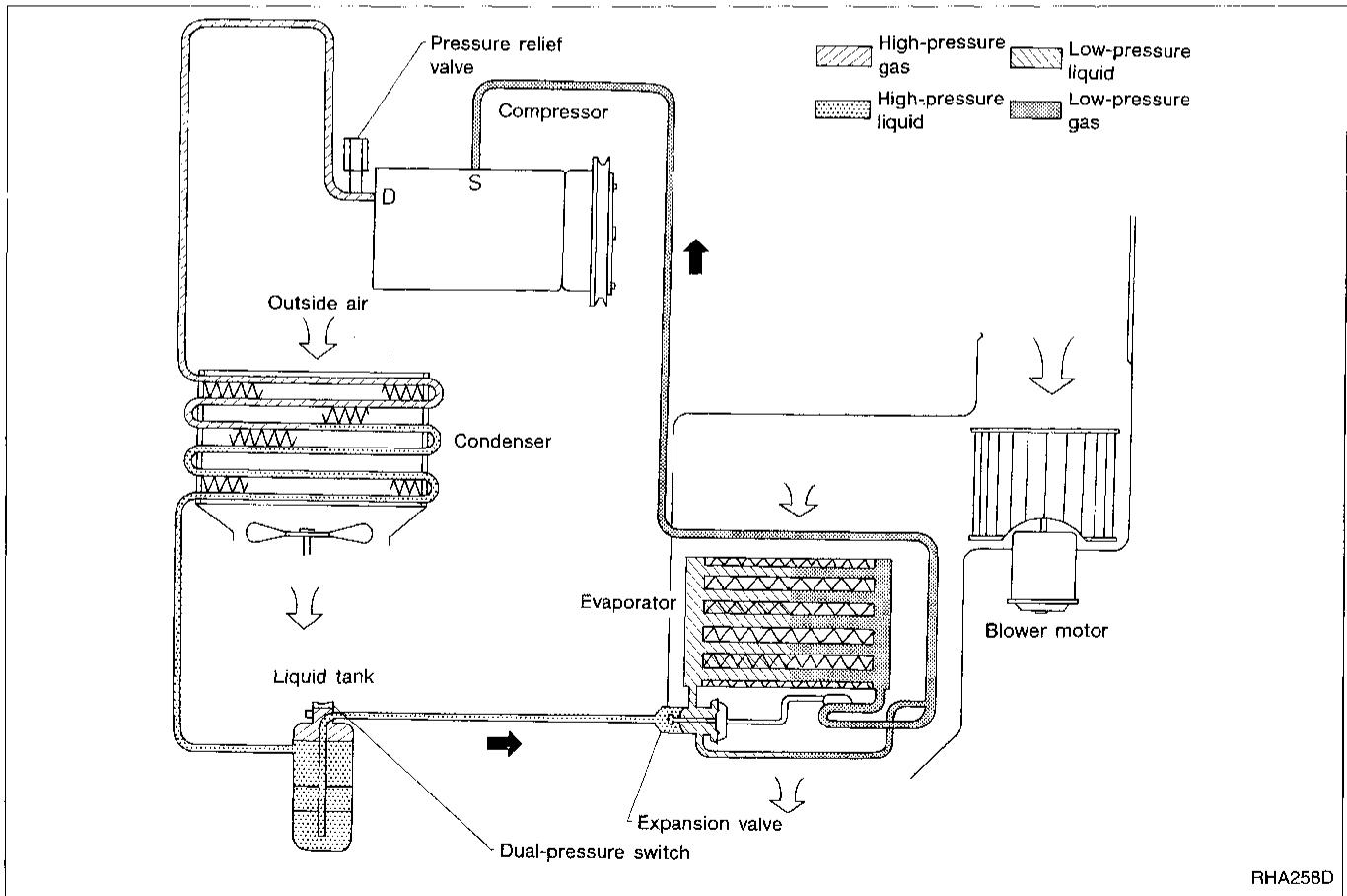
REFRIGERANT SYSTEM PROTECTION

Dual-pressure switch

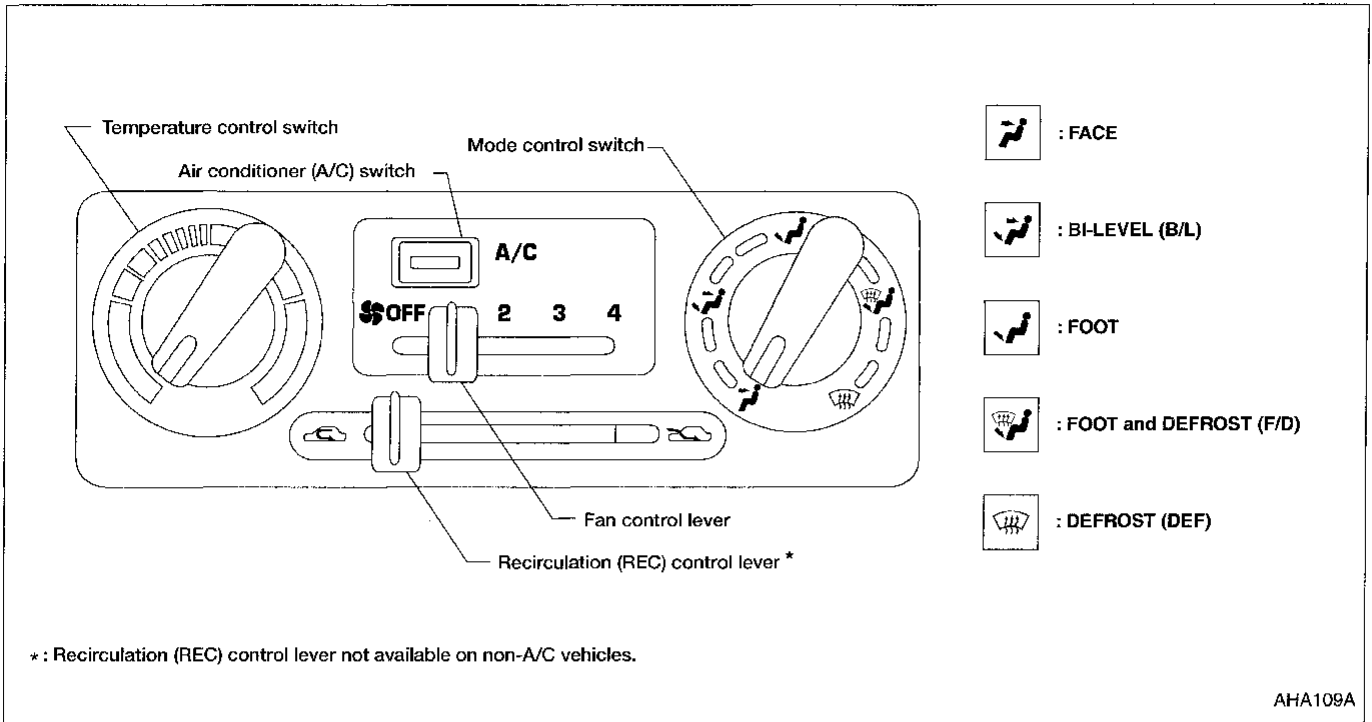
The refrigerant system is protected against excessively high or low pressure. The protection is effected by the dual-pressure switch located on the liquid tank. If the pressure rises or falls out of specifications, the switch opens to interrupt the compressor operation.

Pressure relief valve

The refrigerant system is protected by a pressure relief valve. The valve is located on the end of the flexible high pressure hose near the compressor. When refrigerant system pressure increases abnormally [over 3,727 kPa (38 kg/cm², 540 psi)], the relief valve's port opens. The valve then releases refrigerant into the atmosphere.



Control Operation



FAN CONTROL LEVER

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

MODE CONTROL SWITCH

This switch controls the outlet air flow.

TEMPERATURE CONTROL SWITCH

This switch allows adjustment of the temperature of the outlet air.

RECIRCULATION (REC) CONTROL LEVER

FRESH  position:

Outside air is drawn into the passenger compartment.

Recirculation REC  position:

Interior air is recirculated inside the vehicle.

AIR CONDITIONER SWITCH

The air conditioner switch controls the A/C system. When the switch is depressed with the fan ON, the compressor will turn ON. The indicator lamp will also light.

The air conditioner cooling function operates only when the engine is running.

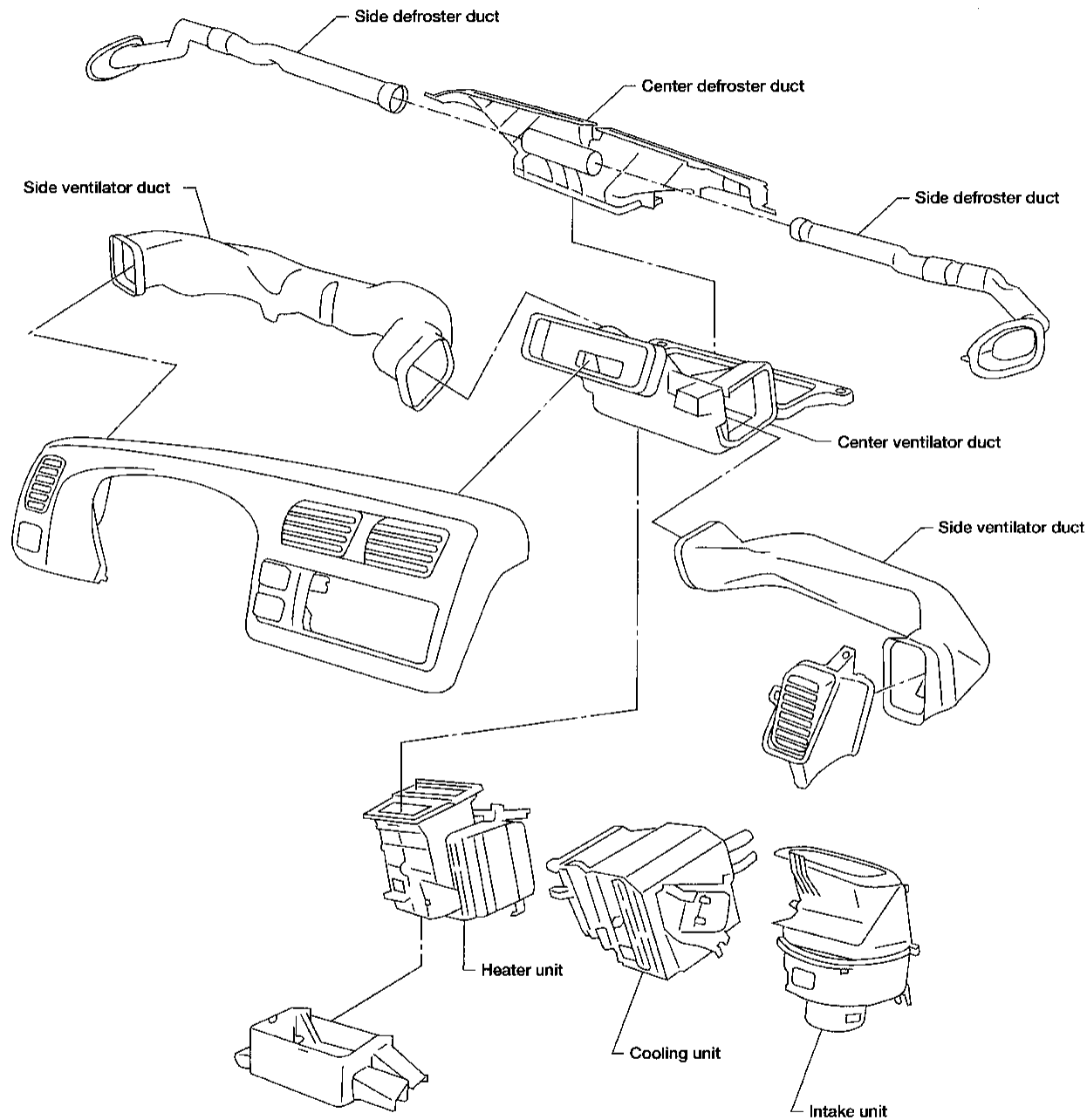
GI
MA
EM
LC
EC
FE
CL
MT
AT
TF
PD
FA
RA
BR
ST
RS
BT
HA
EL
IDX

AHA109A

DESCRIPTION

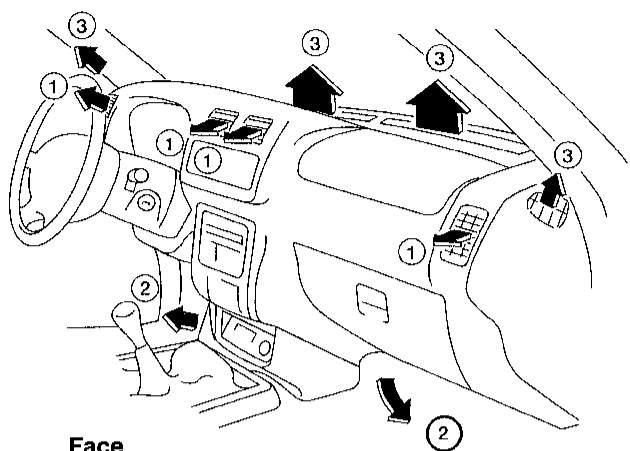
Component Layout

SEC. 270 • 271 • 272 • 273 • 685

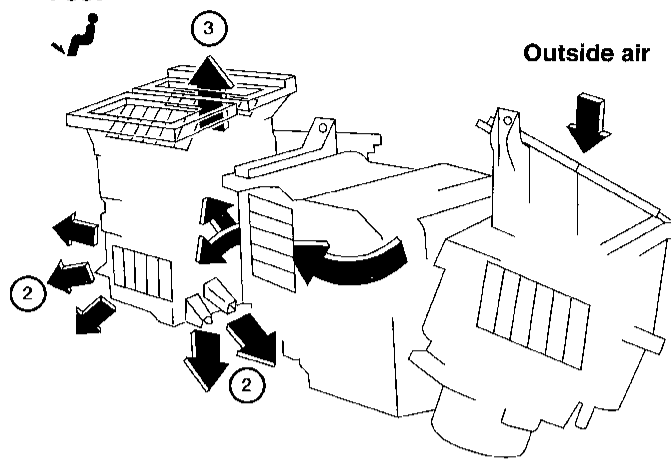


Discharge Air Flow

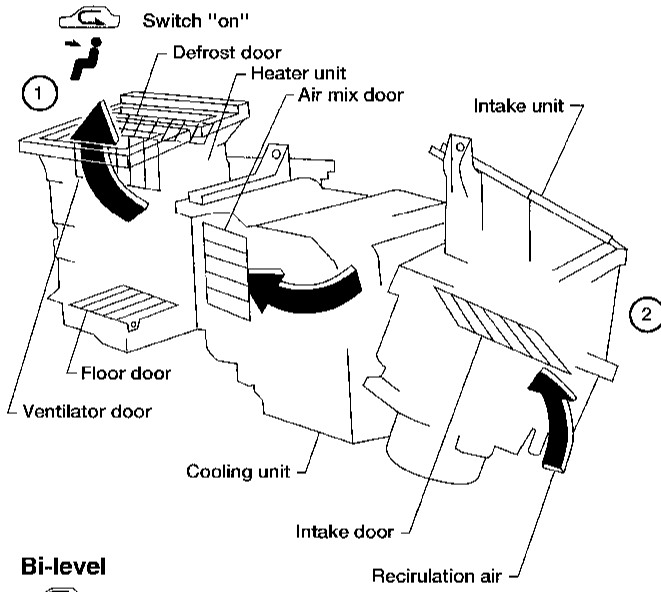
Air outlets



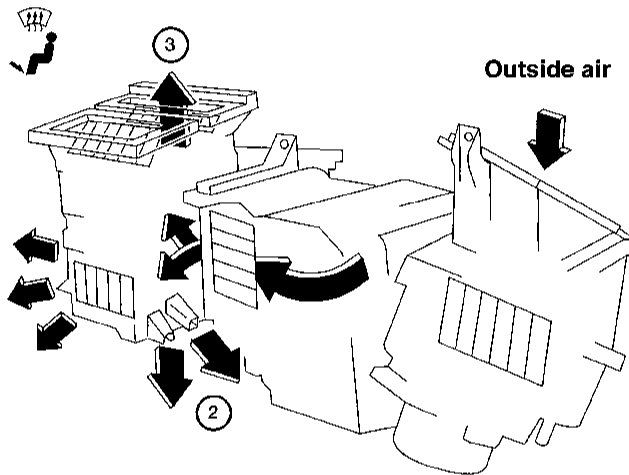
Foot



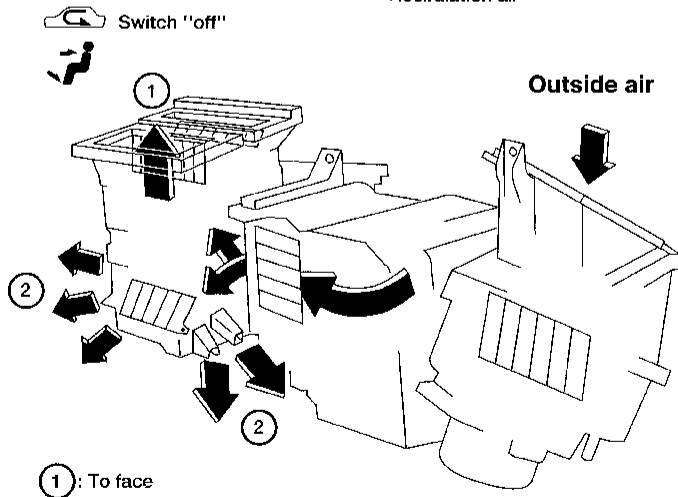
Face



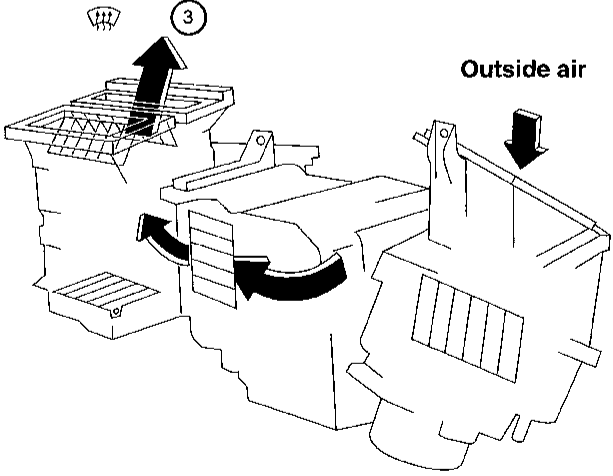
Foot and defrost



Bi-level



Defrost



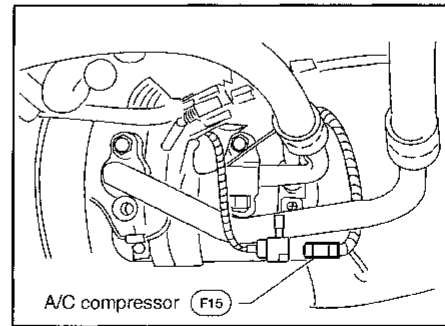
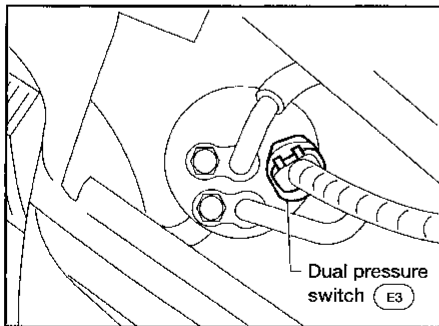
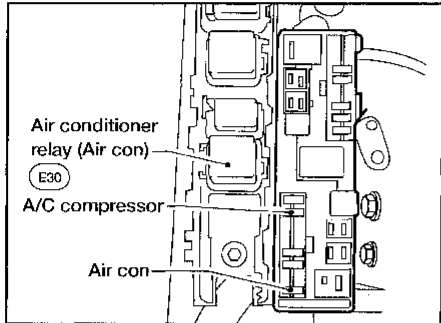
- ① : To face
- ② : To foot
- ③ : To defrost

For air flow %, refer to "DESCRIPTION".

GI
MA
EM
LC
EC
FE
CL
MT
AT
TF
PD
FA
RA
BR
ST
RS
BT
HA
EL
IDX

Harness Layout

Engine compartment

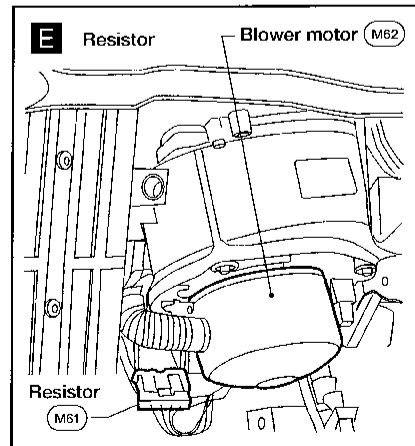
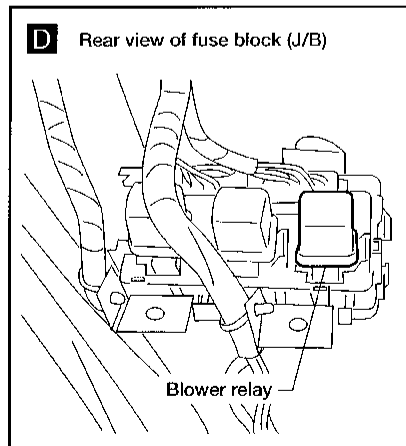
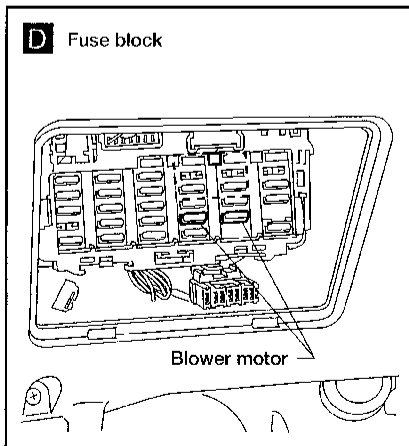
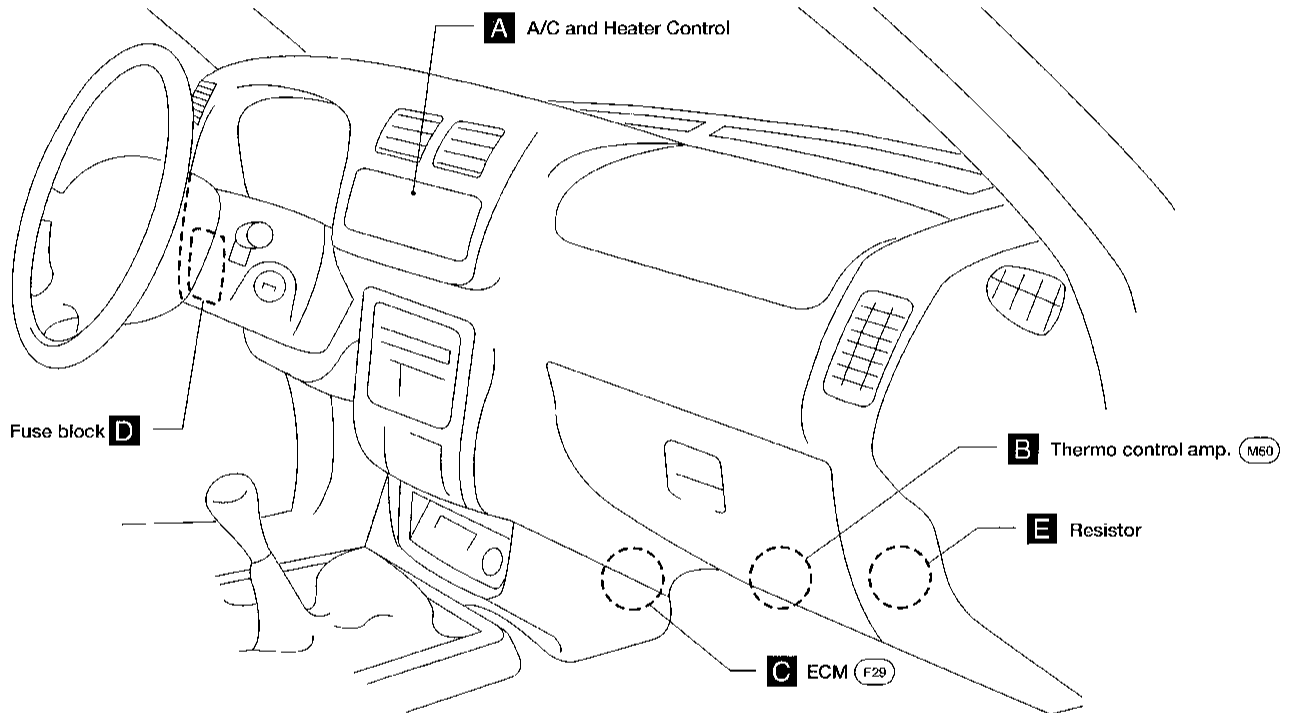
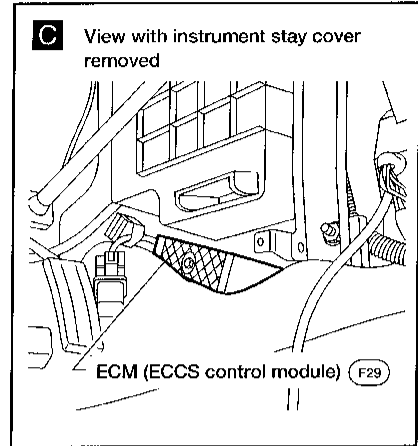
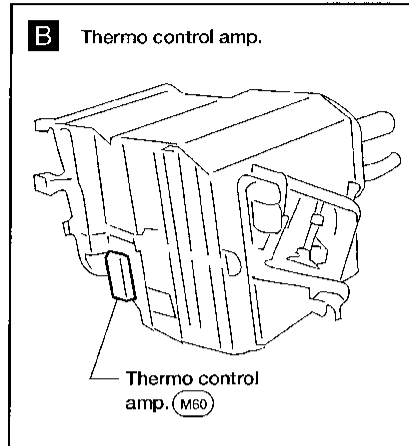
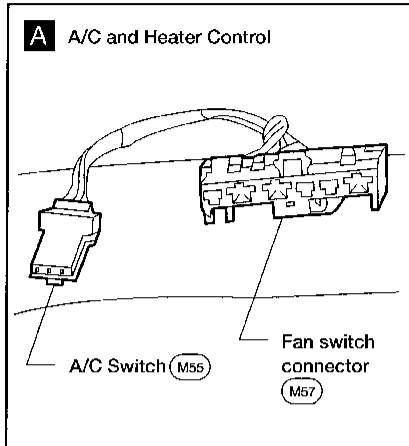


DESCRIPTION

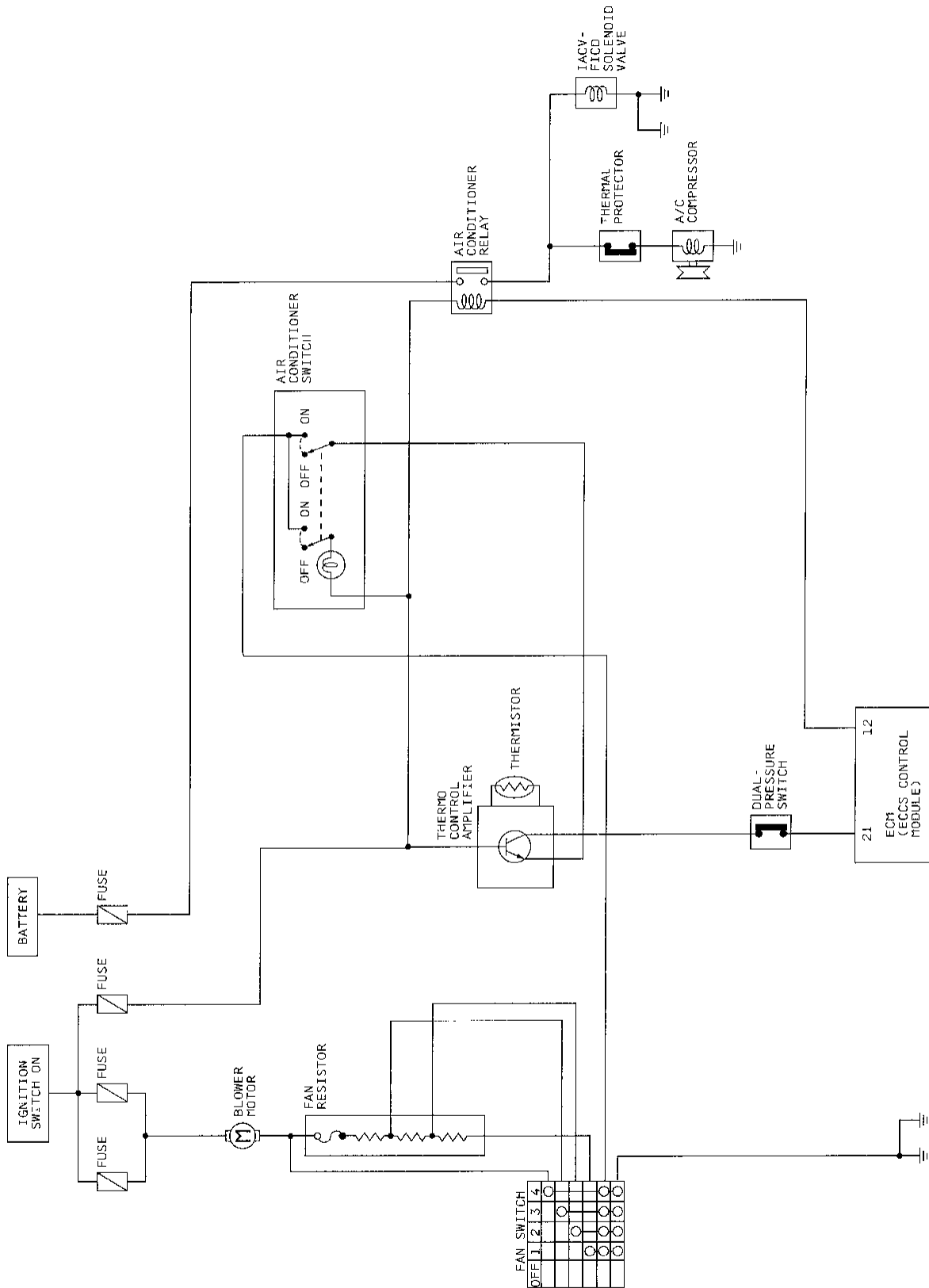
Harness Layout (Cont'd)

Passenger Compartment

GI
 MA
 EM
 LC
 EC
 FE
 CL
 MT
 AT
 TF
 PD
 FA
 RA
 BR
 ST
 RS
 BT
HA
 EL
 IDX

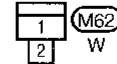
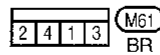
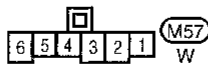
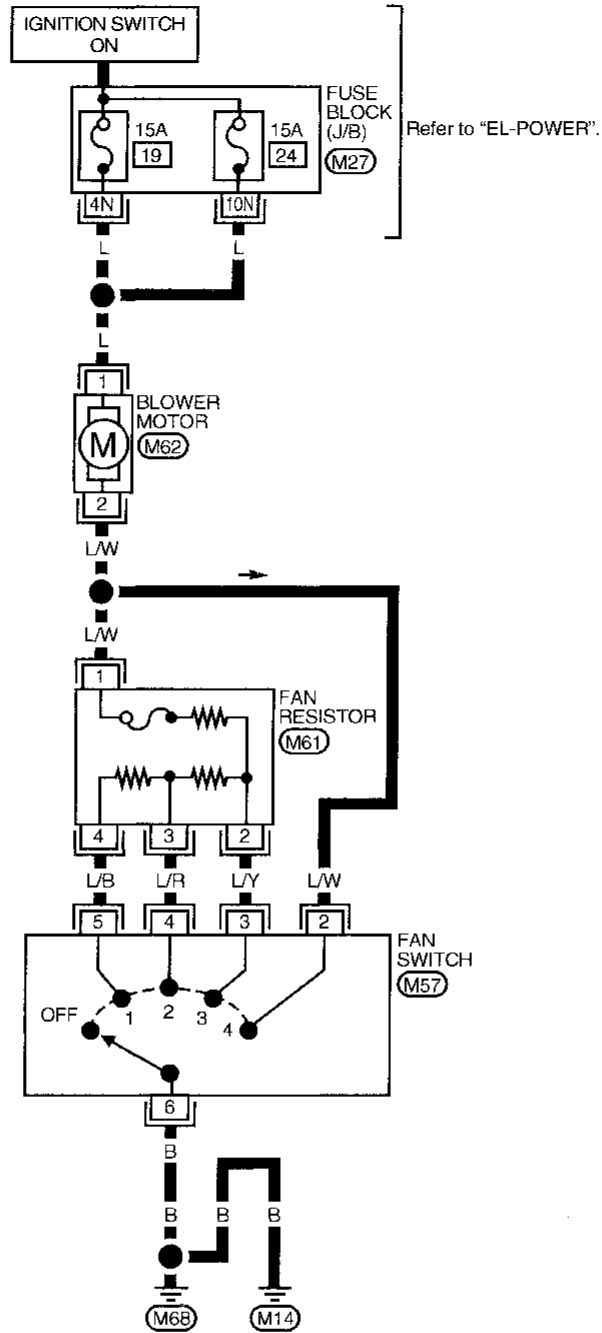


Circuit Diagram



Wiring Diagram -HEATER-

HA-HEATER-01



GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

HA

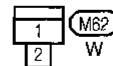
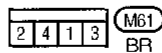
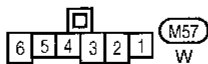
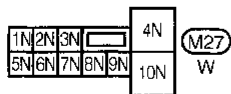
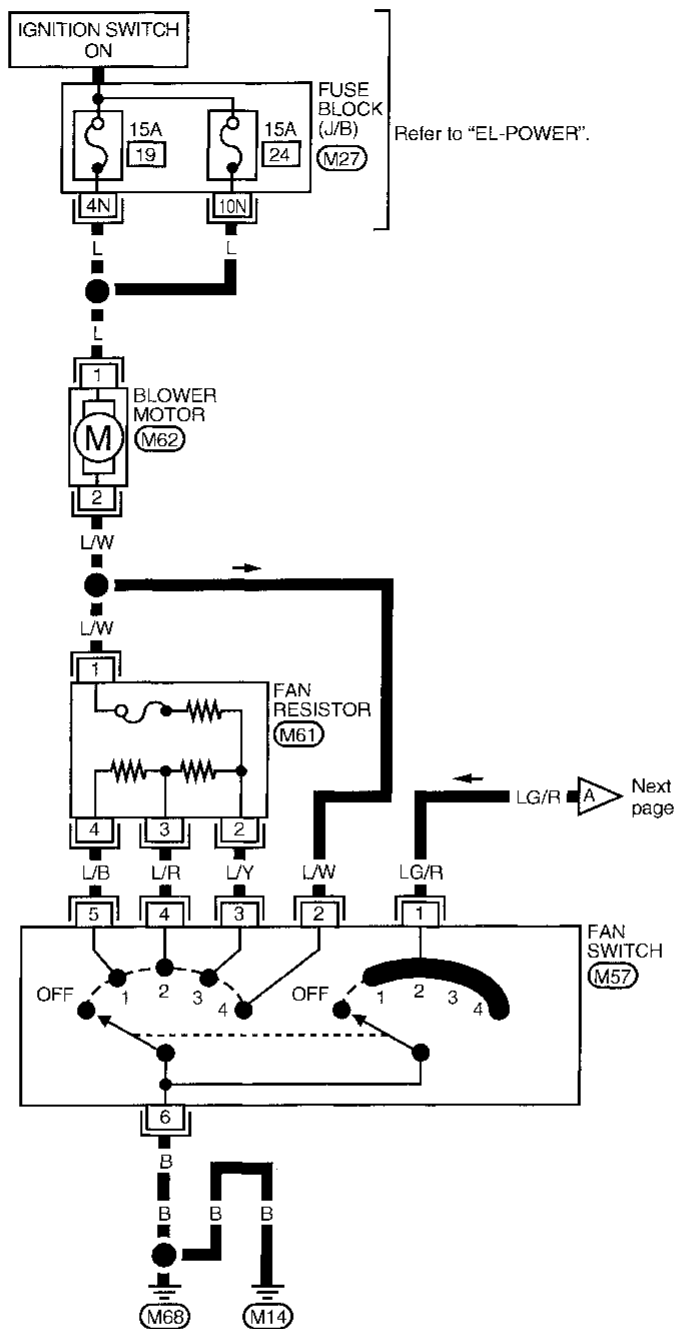
EL

IDX

DESCRIPTION

Wiring Diagram -A/C-

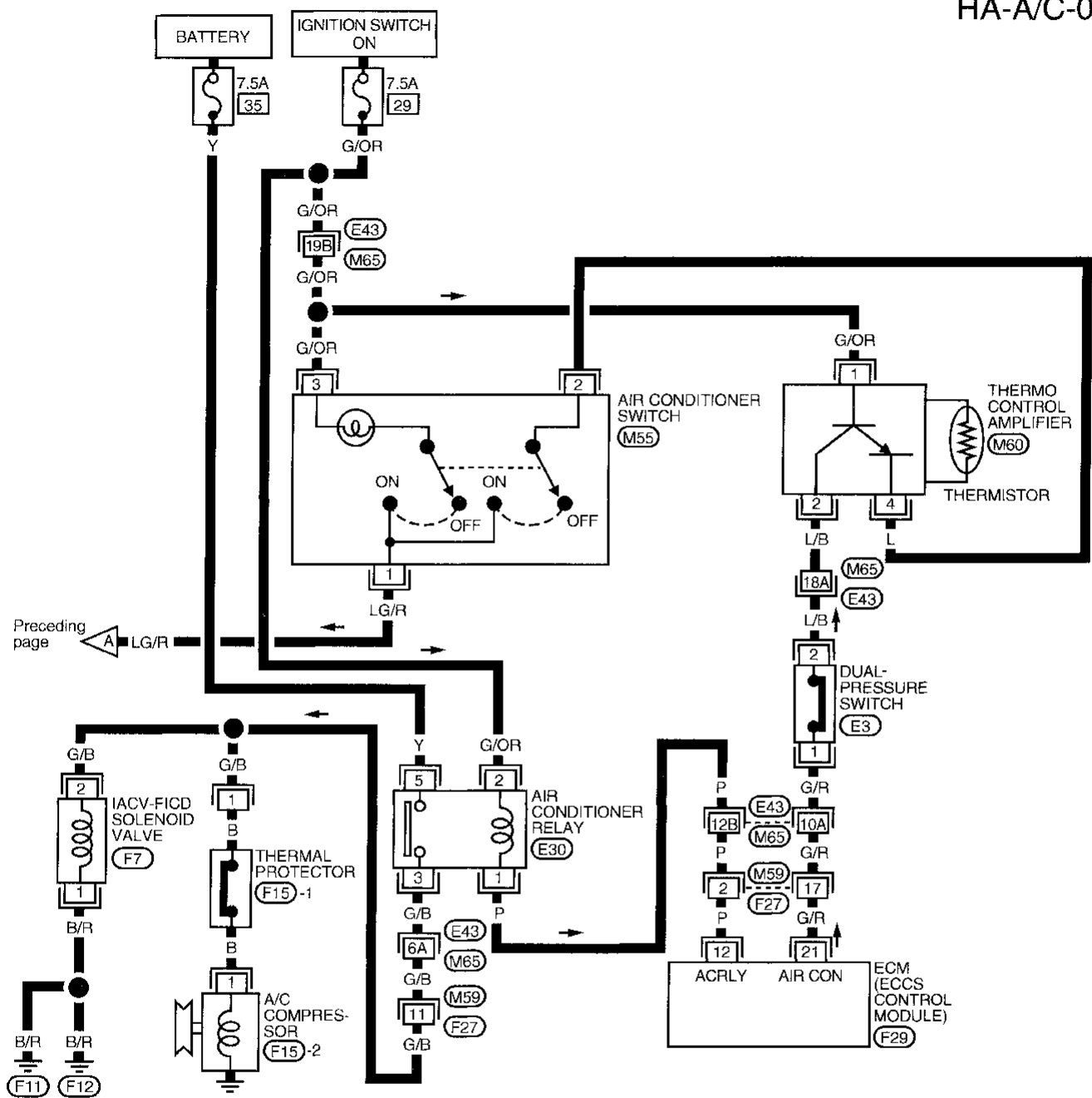
HA-A/C-01



DESCRIPTION

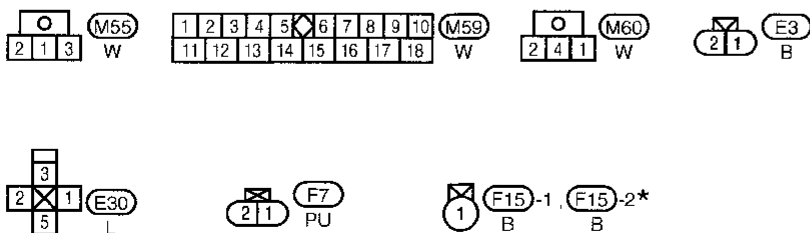
Wiring Diagram -A/C- (Cont'd)

HA-A/C-02



Preceding page

Refer to last page (Foldout page).



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

M65, E43
F29

GI
MA
EM
LC
EC
FE
CL
MT
AT
TF
PD
FA
RA
BR
ST
RS
BT
HA
EL
IDX

DESCRIPTION

Operational Check

The purpose of the operational check is to confirm that the system operates properly.

After operational check is completed, go to SYMPTOM TABLE in How to Perform Trouble Diagnoses for Quick and Accurate Repair, HA-24.

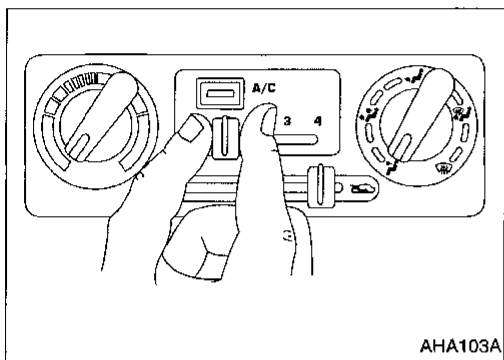
CONDITIONS:

- Engine running and at normal operating temperature.

PROCEDURE:

1. Check blower

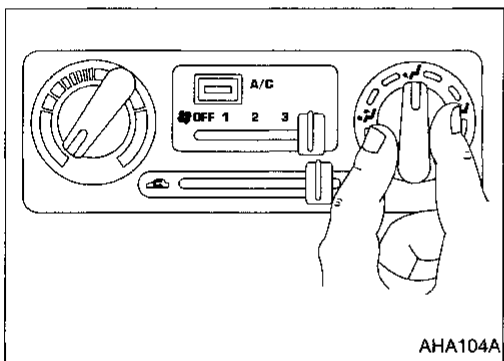
- Slide fan control lever to 1-speed. Blower should operate on 1-speed.
- Then slide fan control lever to 2-speed, and continue checking blower speed until all speeds are checked.
- Leave blower on 4-speed.



AHA103A

2. Check discharge air

- Turn mode switch to each mode.
- Confirm that air discharge comes out each mode.



AHA104A

NOTE:

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

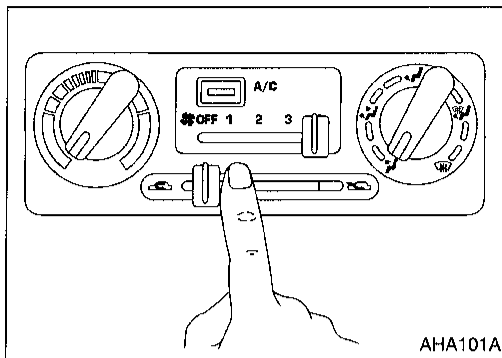
Discharge air flow

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


AHA983

DESCRIPTION

Operational Check (Cont'd)



3. Check recirculation

- Slide REC control lever to REC  position.
- Listen for intake door position to change (you should hear blower sound change slightly).

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

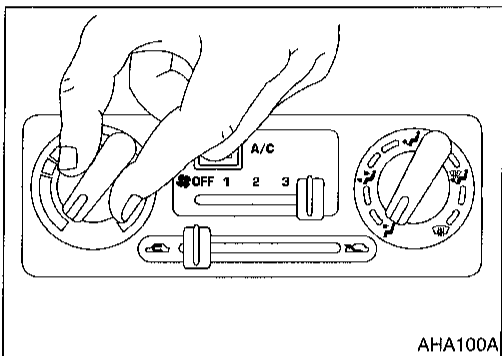
RS

BT

HA

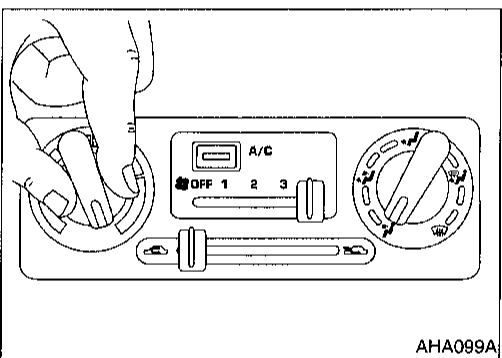
EL

IDX



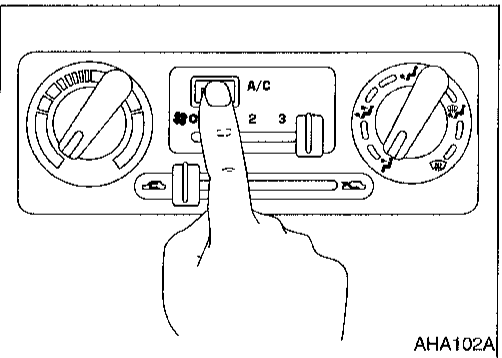
4. Check temperature decrease

- Turn temperature switch to full cold.
- Check for cold air at discharge air outlets.



5. Check temperature increase

- Turn temperature control switch to full hot.
- Check for hot air at discharge air outlets.



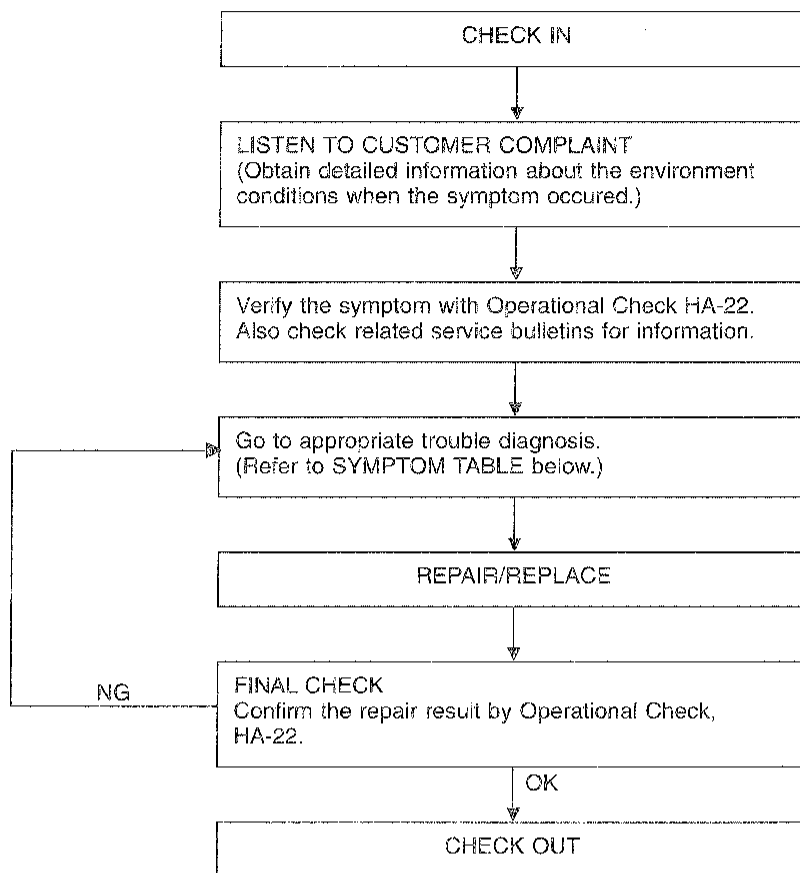
6. Check air conditioner switch

Slide the fan control lever to the desired (1 to 4 speed) position and push the A/C switch to turn ON the air conditioner. The indicator lamp should come on when air conditioner is ON.

TROUBLE DIAGNOSES

How to Perform Trouble Diagnoses for Quick and Accurate Repair

WORK FLOW



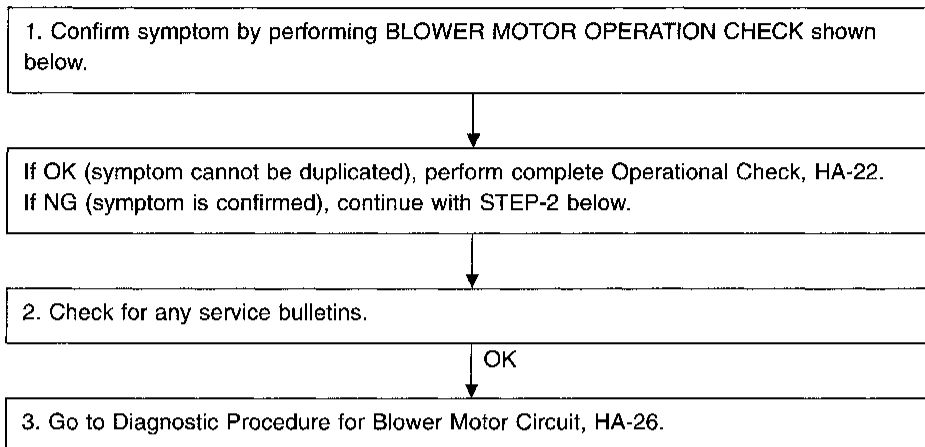
SYMPTOM TABLE

Symptom	Reference page
● Intake door position does not change.	● Go to Trouble Diagnoses for Intake Door, HA-31.
● Blower motor does not rotate.	● Go to Blower Motor Circuit, HA-25.
● Air outlet does not change.	● Go to Air Outlet, HA-29.
● Magnet clutch does not engage when A/C switch and fan switch are ON.	● Go to Magnet Clutch Circuit, HA-32.
● Insufficient Cooling.	● Go to Trouble Diagnosis for Insufficient Cooling, HA-37. ● Go to Performance Test Diagnosis, HA-38. ● Go to Performance Chart, HA-40. ● Go to Trouble Diagnoses for Abnormal Pressure, HA-41.
● Insufficient heating.	● Go to Trouble Diagnoses for Insufficient Heating, HA-44.
● Noise.	● Go to Trouble Diagnoses for Noise, HA-46.

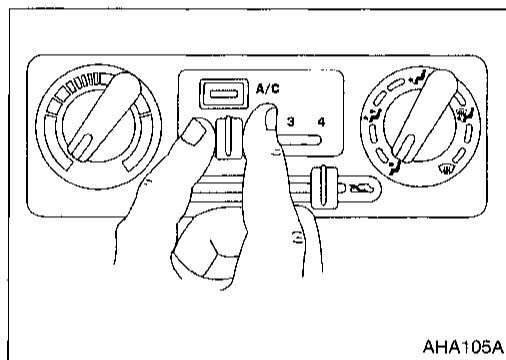
Blower Motor Circuit

SYMPTOM: Blower motor does not rotate.

INSPECTION FLOW



BLOWER MOTOR OPERATION CHECK



1. Start engine.
2. Check blower motor.
3. Slide fan control lever to 1-speed and blower motor should operate on 1-speed.
4. Slide fan control lever to 2-speed and continue checking blower speed until all speeds are checked.

GI
 MA
 EM
 LC
 EC
 FE
 CL
 MT
 AT
 TF
 PD
 FA
 RA
 BR
 ST
 RS
 BT
HA
 EL
 IDX

TROUBLE DIAGNOSES

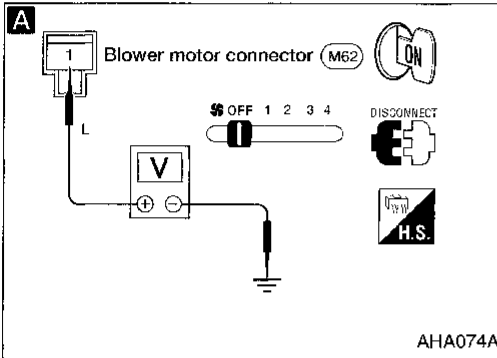
Blower Motor Circuit (Cont'd) DIAGNOSTIC PROCEDURE

	INCIDENT	Flow chart
1	Fan fails to rotate.	1
2	Fan does not rotate at 1-speed.	2
3	Fan does not rotate at 2-speed.	3
4	Fan does not rotate at 3-speed.	4
5	Fan does not rotate at 4-speed.	5

Check if blower motor rotates properly at each fan speed.
Conduct check as per flow chart at left.

2 3 4 5
(Go to next page.)

ⓑ

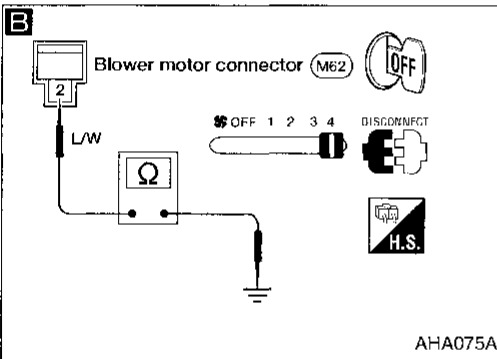


A
CHECK POWER SUPPLY FOR BLOWER MOTOR.
Disconnect blower motor harness connector.
Does approx. 12 volts exist between blower motor harness terminal ① and body ground?

No

Check 15A fuses No. 19 and 24, located in fuse block (J/B). Refer to EL section ("Wiring Diagram", "POWER SUPPLY ROUTING").

Yes



B
1. Slide fan control lever to 4-speed.
2. Check circuit continuity between blower motor harness terminal ② and body ground.
Continuity should exist.

OK

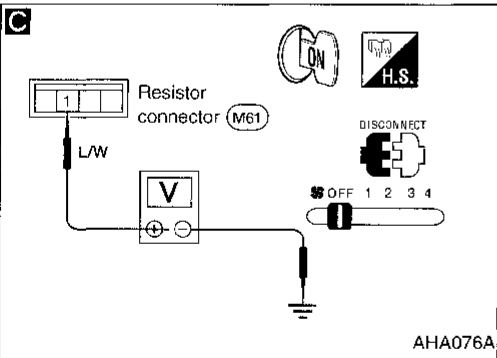
Check blower motor. Refer to HA-28.

NG

Replace blower motor.

NG

Reconnect blower motor harness connector.



C
CHECK BLOWER MOTOR CIRCUIT BETWEEN BLOWER MOTOR AND RESISTOR.
Do approx. 12 volts exist between resistor harness terminal ① and body ground?

No

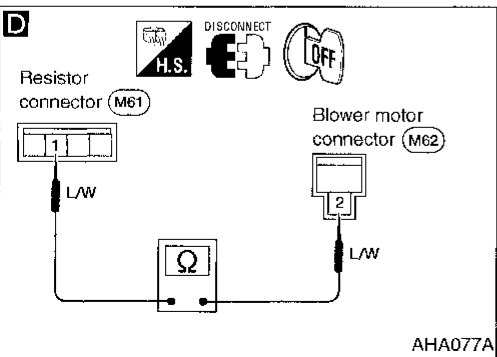
Disconnect blower motor and resistor harness connectors.

Yes

D Note
Check circuit continuity between blower motor harness terminal ② and resistor harness terminal ①.
Continuity should exist.
If OK, check harness for short.

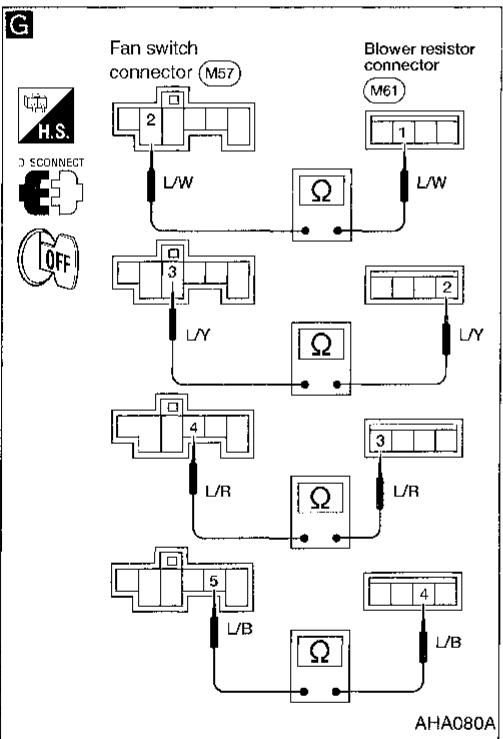
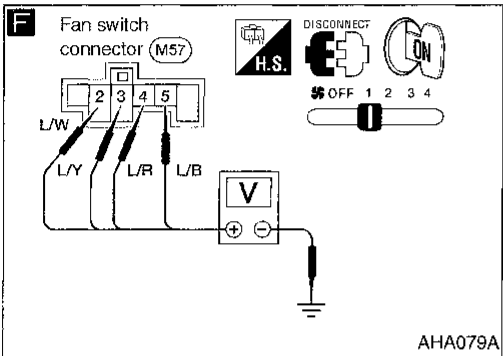
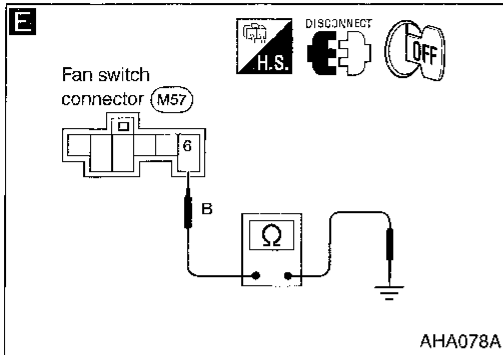
Ⓐ
(Go to next page.)

Note:
If the result is NG or No after checking circuit continuity, repair harness or connector.



TROUBLE DIAGNOSES

Blower Motor Circuit (Cont'd)



Note

E CHECK GROUND CIRCUIT FOR FAN SWITCH.
Check circuit continuity between fan switch harness terminal No. ⑥ and body ground.

OK

2

3

4

2 CHECK BLOWER RESISTOR AFTER DISCONNECTING IT.
(Refer to Electrical Components Inspection.) (HA-28).

OK

NG

Replace resistor.

Reconnect resistor harness connector.

1 **2** **3** **4** **5**

F CHECK FAN SWITCH CIRCUIT.
Do approx. 12 volts exist between each fan switch harness terminal and body ground?

Flow chart No.	Terminal No.		Voltage
	⊕	⊖	
②	⑤	Body ground	Approx. 12V
③	④		
④	③		
⑤	②		

Yes

No

G **Note**
Check circuit continuity between fan switch terminal and resistor harness terminal.

Terminal No.		Continuity
Fan switch	Resistor	
②	①	Yes
③	②	
④	③	
⑤	④	

If OK, check harness for short.

NG

Replace fan switch.

1 CHECK FAN SWITCH AFTER DISCONNECTING IT.
(Refer to COMPONENT INSPECTION.) (HA-28)

Note:
If the result is NG after checking circuit continuity, repair harness or connector.

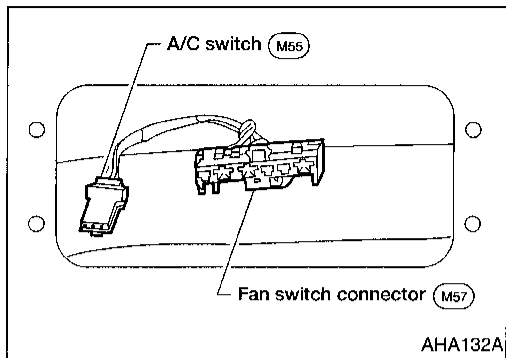
TROUBLE DIAGNOSES

Blower Motor Circuit (Cont'd)

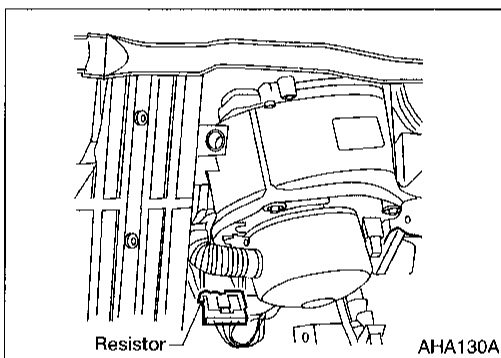
COMPONENT INSPECTION

Fan switch

Check continuity between terminals at each position.



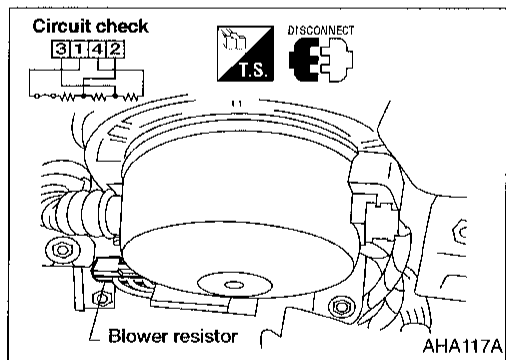
TERMINAL	POSITION				
	OFF	1	2	3	4
1		○	○	○	○
2		○	○		○
3		○		○	
4		○	○		
5		○	○	○	○
6		○	○	○	○



Blower motor

Confirm smooth rotation of the blower motor.

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



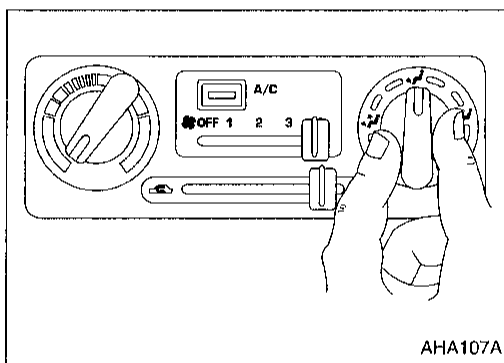
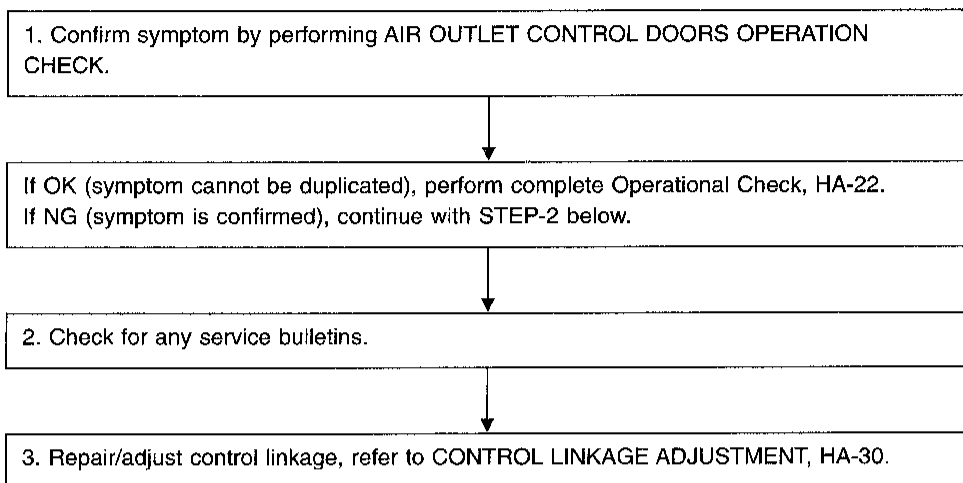
Blower resistor

Check continuity between terminals.





Air Outlet

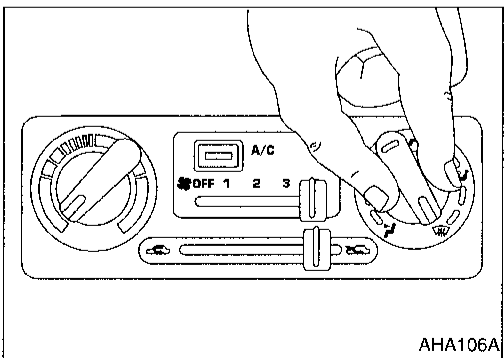
SYMPTOM: Air outlet does not change.


INSPECTION FLOW



AIR OUTLET CONTROL DOORS OPERATION CHECK

1. Start engine.
2. Slide fan control lever to max speed.
3. Check discharge air.
 - a. Turn mode control switch to  position
 - b. Confirm that all discharge air comes out of face vents.
 - c. Turn mode control switch to  position.
 - d. Confirm that discharge air comes out of face vents and foot vents.
 - e. Turn mode control switch to  position.
 - f. Confirm that discharge air comes out of foot vents, with some air from defrost vents.
 - g. Turn mode control switch to  position.
 - h. Confirm that discharge air comes out of foot vents with some air from defrost vents.



- i. Turn mode control switch to  position.
- j. Confirm that all discharge air comes out of defrost vents.

Note:

Confirm that discharge air comes out according to the air distribution table, HA-22.

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

HA

EL


IDX

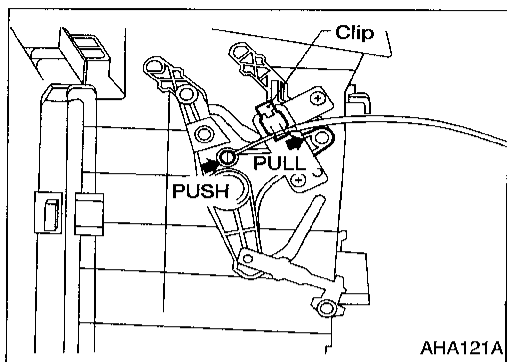
TROUBLE DIAGNOSES

Air Outlet (Cont'd)

CONTROL LINKAGE ADJUSTMENT

Mode control cable

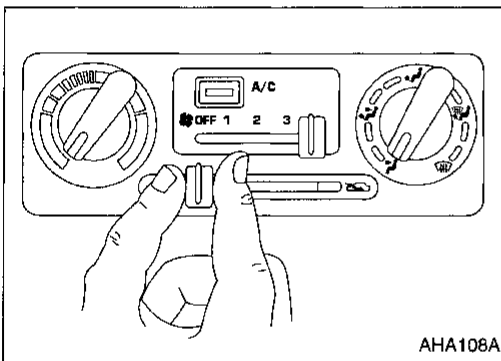
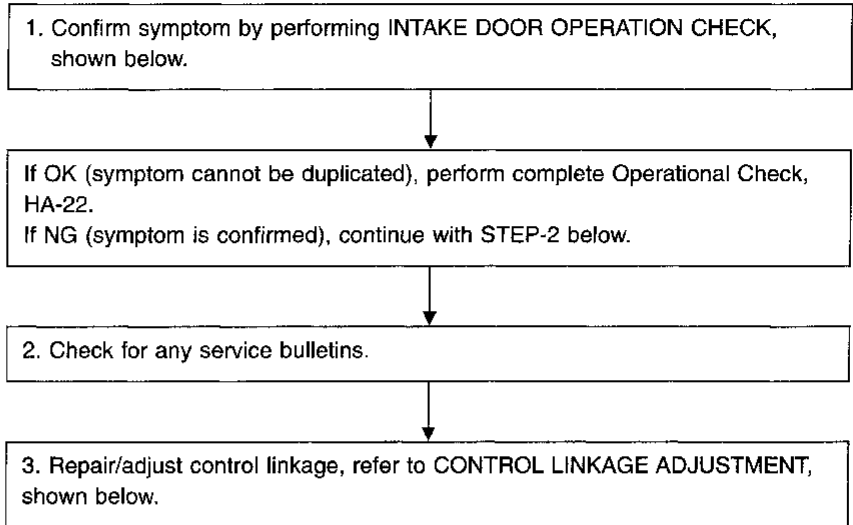
- Turn mode control switch to  position.
Set side link in DEF mode.
Pull on outer cable in direction of arrow and then clamp it.
- **After positioning mode control cable, check that it operates properly.**



Intake Door

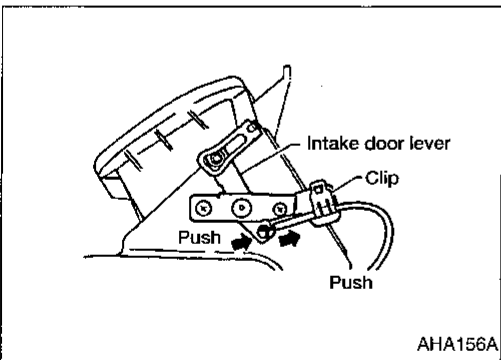
SYMPTOM: Intake door position does not change.

INSPECTION FLOW



INTAKE DOOR OPERATION CHECK

1. Start engine.
2. Slide fan control switch to max speed.
3. Check recirculation.
 - a. Slide recirculation control lever to the REC position.
 - b. Listen for intake door position change (you should hear blower sound change slightly).



CONTROL LINKAGE ADJUSTMENT

Recirculation control cable

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

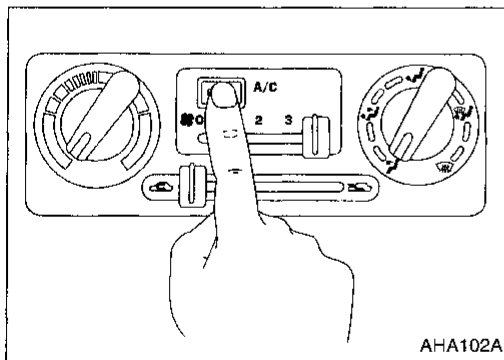
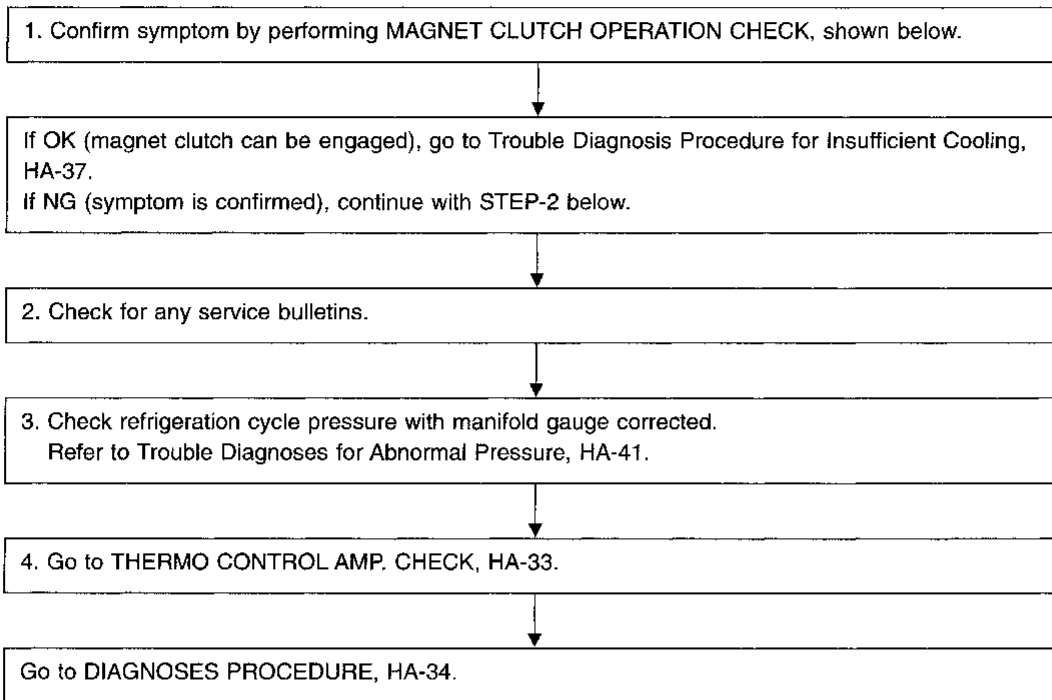
GI
 MA
 EM
 LC
 EC
 FE
 CL
 MT
 AT
 TF
 PD
 FA
 RA
 BR
 ST
 RS
 BT
 HA
 EL
 IDX

TROUBLE DIAGNOSES

Magnet Clutch Circuit

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

INSPECTION FLOW



MAGNET CLUTCH OPERATION CHECK

1. Start engine.
2. Slide fan control lever to operate blower motor.
3. Push A/C switch to ON. Make sure that magnet clutch is engaged. (You can hear magnet clutch engage sound.)
4. Push A/C switch to OFF. Make sure that magnet clutch is disengaged.

Note: If magnet clutch sticks, check magnet clutch. Refer to HA-34.

TROUBLE DIAGNOSES

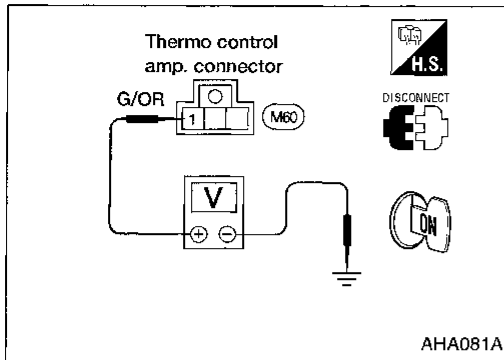
Magnet Clutch Circuit (Cont'd)

THERMO CONTROL AMP. CHECK

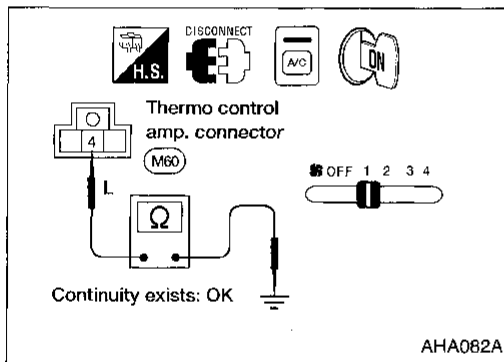
Power supply circuit check

Check power supply circuit for thermo control amp. with ignition switch ON.

1. Disconnect thermo control amp. harness connector.
2. Connect voltmeter from harness side.
3. Measure voltage across terminal ① and body ground.



Voltmeter terminal		Voltage
⊖	⊖	
①	Body ground	Approx. 12V



Ground circuit check

Check body ground circuit for thermo control amp. with ignition switch ON, air conditioner switch ON and fan switch ON.

1. Disconnect thermo control amp. harness connector.
2. Connect ohmmeter from harness side.
3. Check for continuity between terminal No. ② and body ground.

Ohmmeter terminal		Continuity
⊕	⊖	
④	Body ground	Yes

If the ground circuit is NG, check the following.

- A/C switch (Refer to HA-36.)
- Fan switch (Refer to HA-28.)
- Harness for open or short between thermo control amp. and A/C switch
- Harness for open or short between A/C switch and fan switch
- Fan switch ground circuit

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

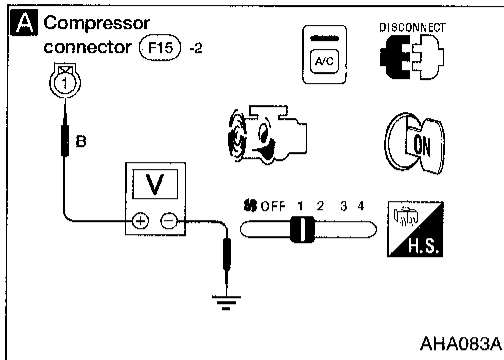
HA

EL

IDX

TROUBLE DIAGNOSES

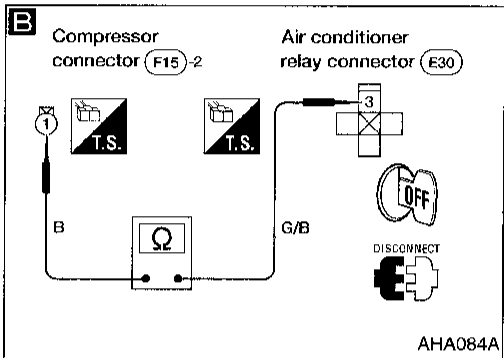
Magnet Clutch Circuit (Cont'd) DIAGNOSTIC PROCEDURE



A **CHECK POWER SUPPLY FOR COMPRESSOR.**
Disconnect compressor harness connector.
Do approx. 12 volts exist between compressor harness terminal No. ① and body ground?

Yes → Check the following.
 • Magnet clutch coil
 • Thermal protector
 Refer to HA-36.

NG → Replace magnet clutch.
 Refer to HA-56.

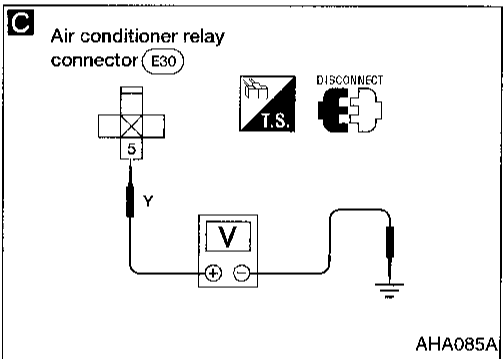


B **Check circuit continuity between A/C relay harness terminal No. ③ and compressor harness terminal No. ①.**
Continuity should exist.
If OK, check harness for short.

Note

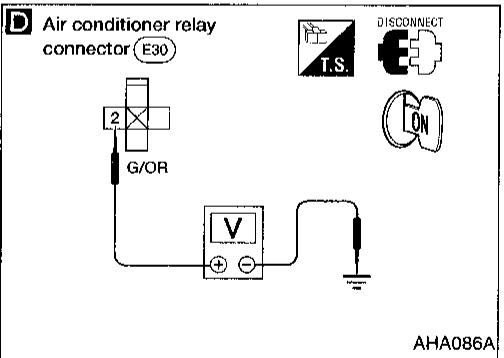
C **CHECK POWER SUPPLY FOR A/C RELAY.**
Do approx. 12 volts exist between A/C relay harness terminal No. ⑤ and body ground?

No → Check power supply circuit and 7.5A fuse (No. ③⑤, located in the fuse block). (Refer to "POWER SUPPLY ROUTING" in EL section and Wiring Diagram.)



D **CHECK POWER SUPPLY FOR A/C RELAY.**
Do approx. 12 volts exist between A/C relay harness terminal No. ② and body ground?

No → Check power supply circuit and 7.5A fuse (No. ②⑨, located in the fuse block). (Refer to "POWER SUPPLY ROUTING" in EL section and Wiring Diagram.)



CHECK A/C RELAY AFTER DISCONNECTING IT.
Refer to HA-36.

NG → Replace A/C relay.

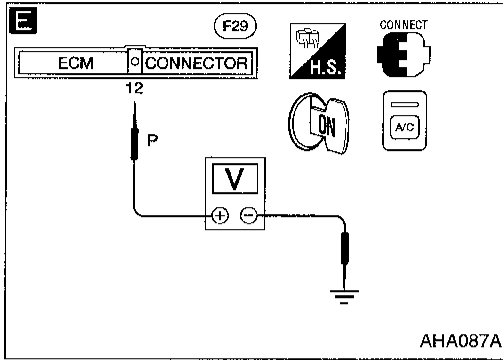
OK → Reconnect A/C relay.

(Go to next page.)

Note:
If the result is NG after checking circuit continuity, repair harness or connector.

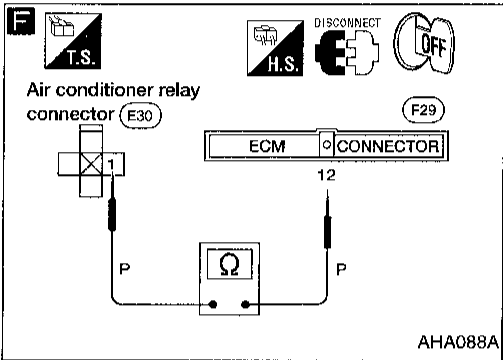
TROUBLE DIAGNOSES

Magnet Clutch Circuit (Cont'd)



E **CHECK COIL SIDE CIRCUIT OF A/C RELAY.**
Do approx. 12 volts exist between ECM harness terminal No. 12 and body ground?

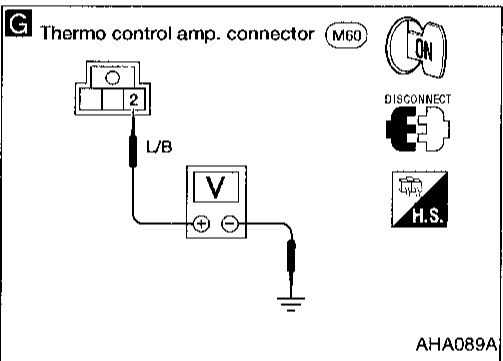
F **Note**
Check circuit continuity between A/C relay harness terminal No. 1 and ECM harness terminal No. 12. **Continuity should exist.** If OK, check harness for short.



F **CHECK POWER SUPPLY AND GROUND CIRCUIT FOR THERMO CONTROL AMP.**
Refer to HA-33.

G **CHECK VOLTAGE FOR THERMO CONTROL AMP.**
Do approx. 5 volts exist between thermo control amp. harness terminal No. 2 and body ground?

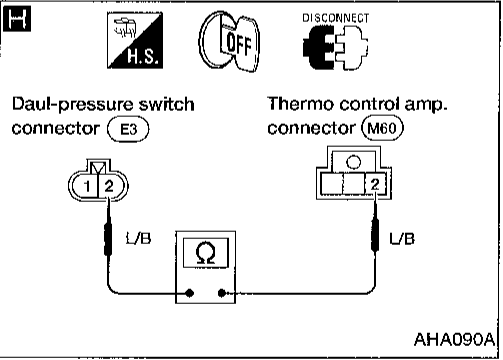
Yes Replace thermo control amp.



H **Check circuit continuity between thermo control amp. harness terminal No. 2 and dual-pressure switch harness terminal No. 2.**
Continuity should exist. If OK, check harness for short.

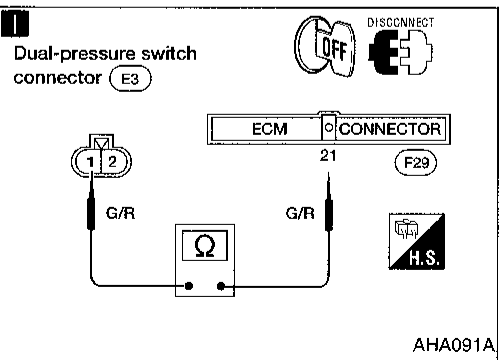
NG **CHECK DUAL-PRESSURE SWITCH.**
Refer to HA-36.

NG Replace thermo control amp.



I **Note**
Check circuit continuity between ECM harness terminal No. 21 and dual-pressure switch harness terminal No. 1.

OK **CHECK ECM.**
Refer to EC section.



Note:
If the result is NG or No after checking circuit continuity, repair harness or connector.

GI
MA
EM
LC
EC
FE
CL
MT
AT
TF
PD
FA
RA
BR
ST
RS
BT
HA
EL
IDX

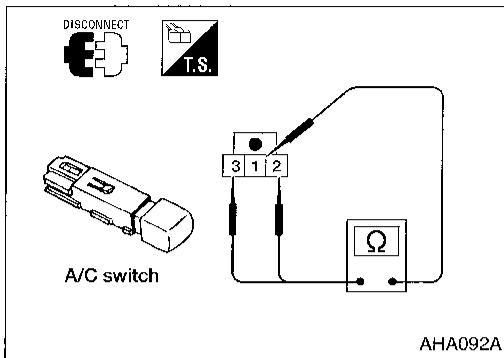
TROUBLE DIAGNOSES

Magnet Clutch Circuit (Cont'd)

ELECTRICAL COMPONENT INSPECTION

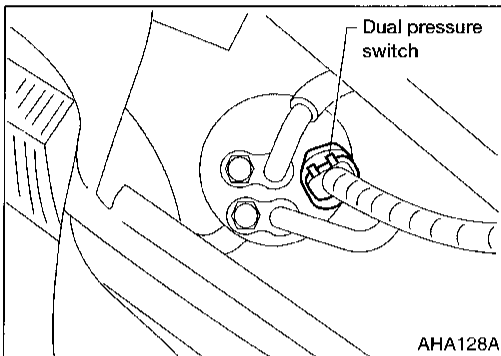
Air conditioner switch

Check continuity between terminals at each switch position



Switch condition	Terminal No.	Continuity
ON	① - ②,	Yes
OFF	① - ③	No

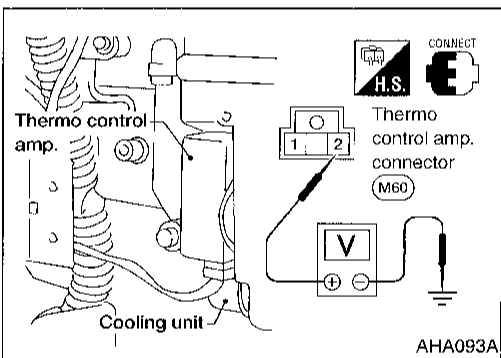
Dual pressure switch



High-pressure side line pressure kPa (kg/cm ² , psi)	Operation	Continuity
Decreasing to 157 - 216 (1.6 - 2.2, 23 - 31) Increasing to 2,648 - 2,844 (27 - 29, 384 - 412)	Turn OFF	Does not exist
Increasing to 157 - 235 (1.6 - 2.4, 23 - 34) Decreasing to 392 - 785 (4 - 8, 57 - 114)	Turn ON	Exists

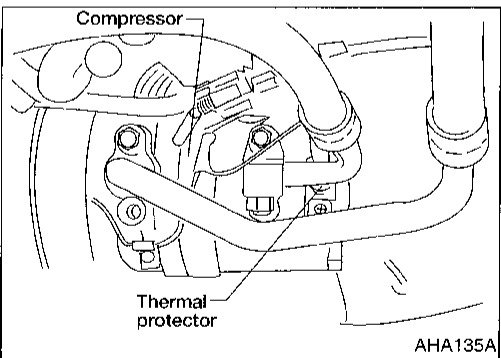
Thermo control amp.

1. Run engine, and operate A/C system.
2. Connect the voltmeter from harness side.
3. Check thermo control amp. operation 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

Thermal protector

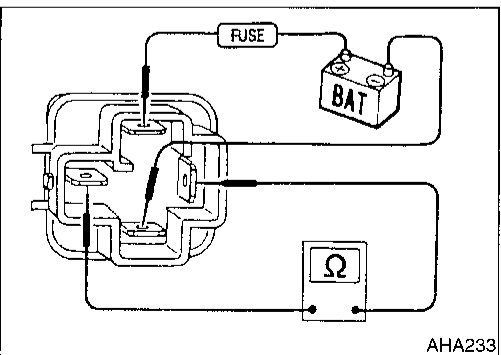


Temperature of compressor °C (°F)	Operation
Increasing to approx. 145 - 155 (293 - 311)	Turn OFF
Decreasing to approx. 130 - 140 (266 - 284)	Turn ON

If NG, replace thermal protector.

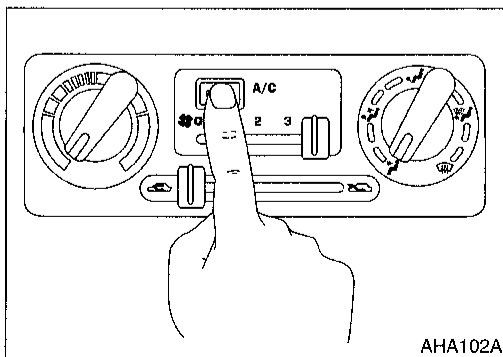
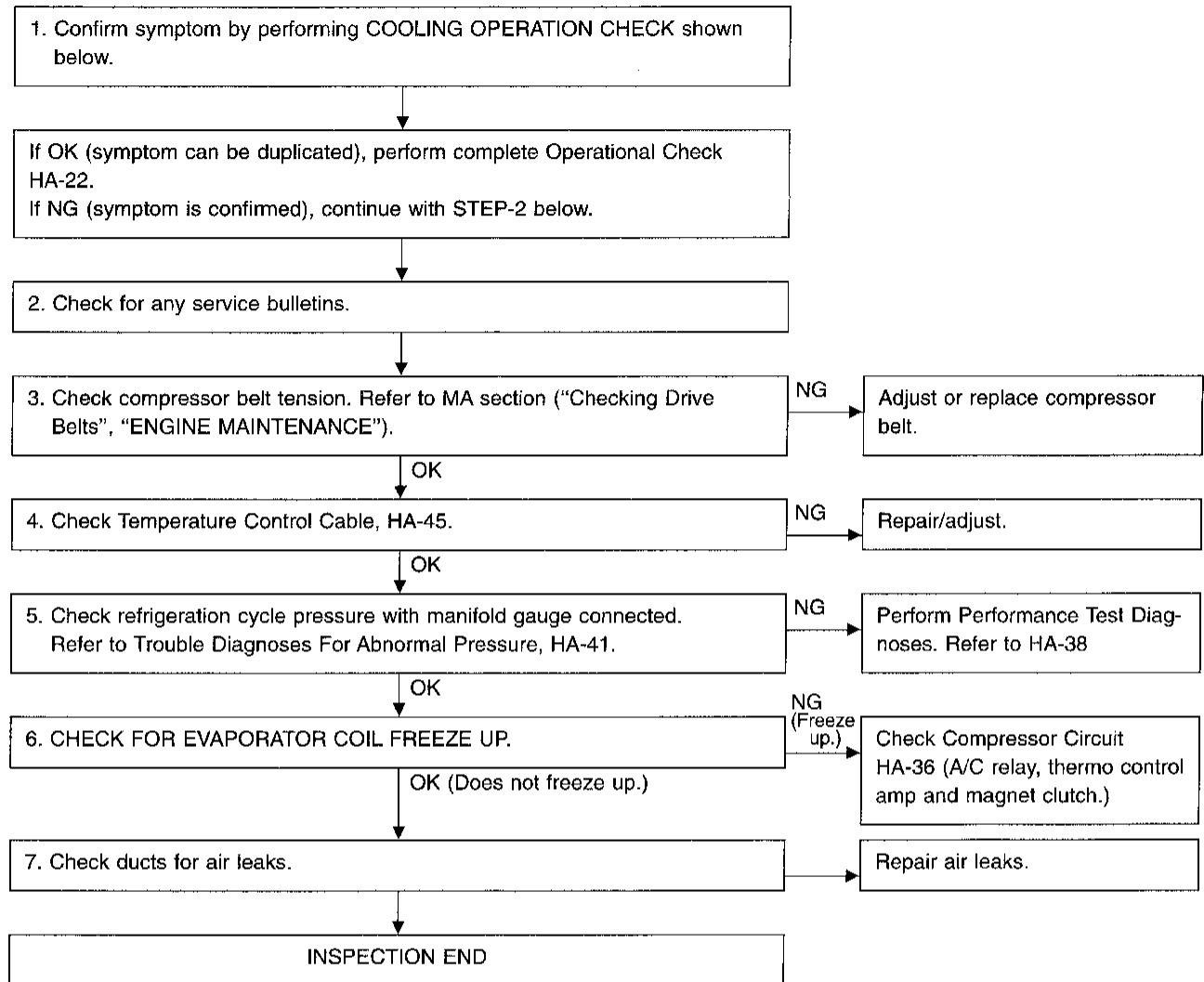
Air conditioner relay

Check circuit continuity between terminals by supplying 12 volts to coil side terminals of air conditioner relay.



Trouble Diagnosis Procedure For Insufficient Cooling

INSPECTION FLOW



COOLING OPERATION CHECK

1. Start engine.
2. Slide fan control lever to max speed.
3. Turn air conditioner switch ON.
4. Check temperature decrease.
 - a. Turn temperature switch to full cold.
 - b. Check for cold air at discharge air outlets.

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

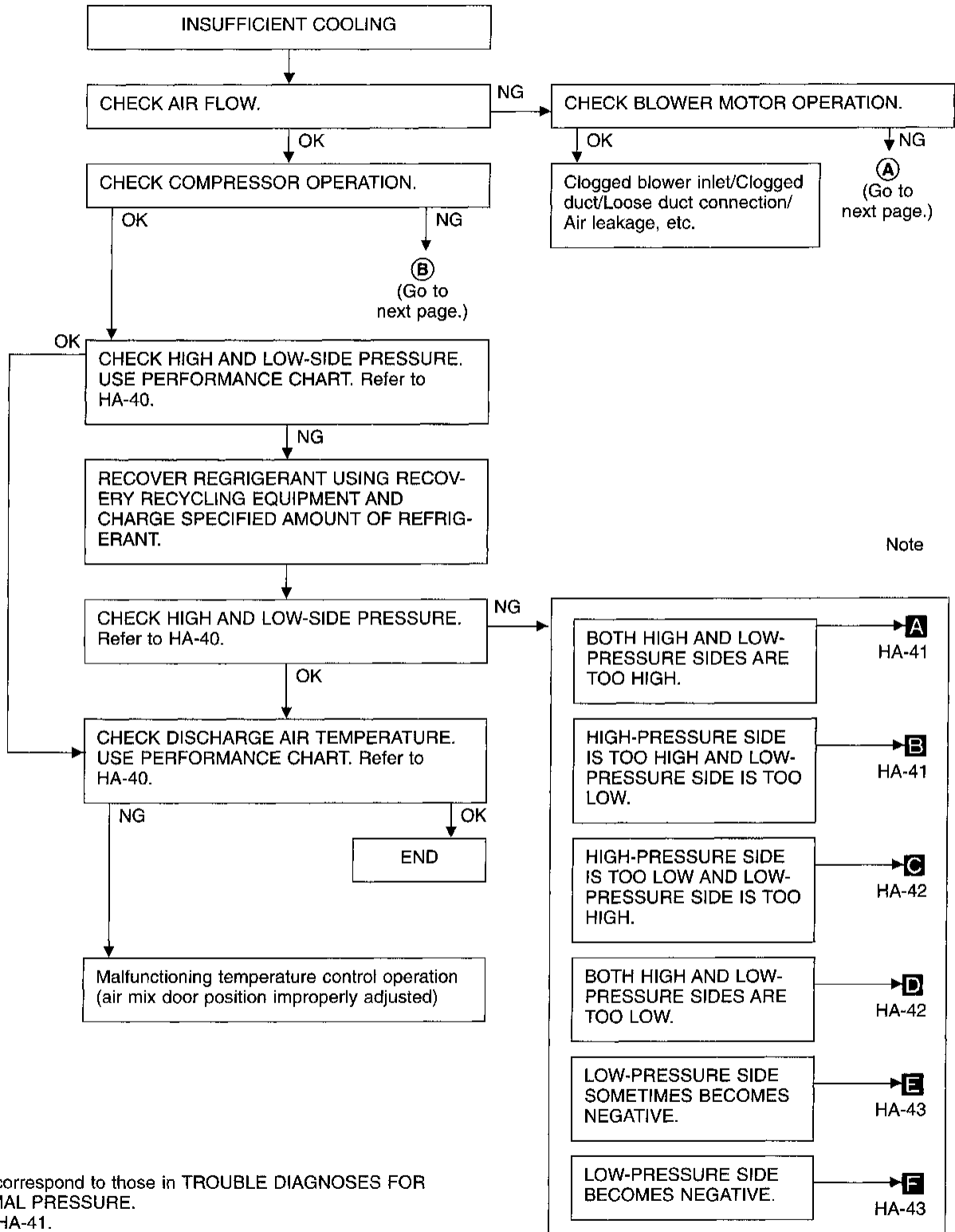
HA

EL

IDX

Performance Test Diagnoses

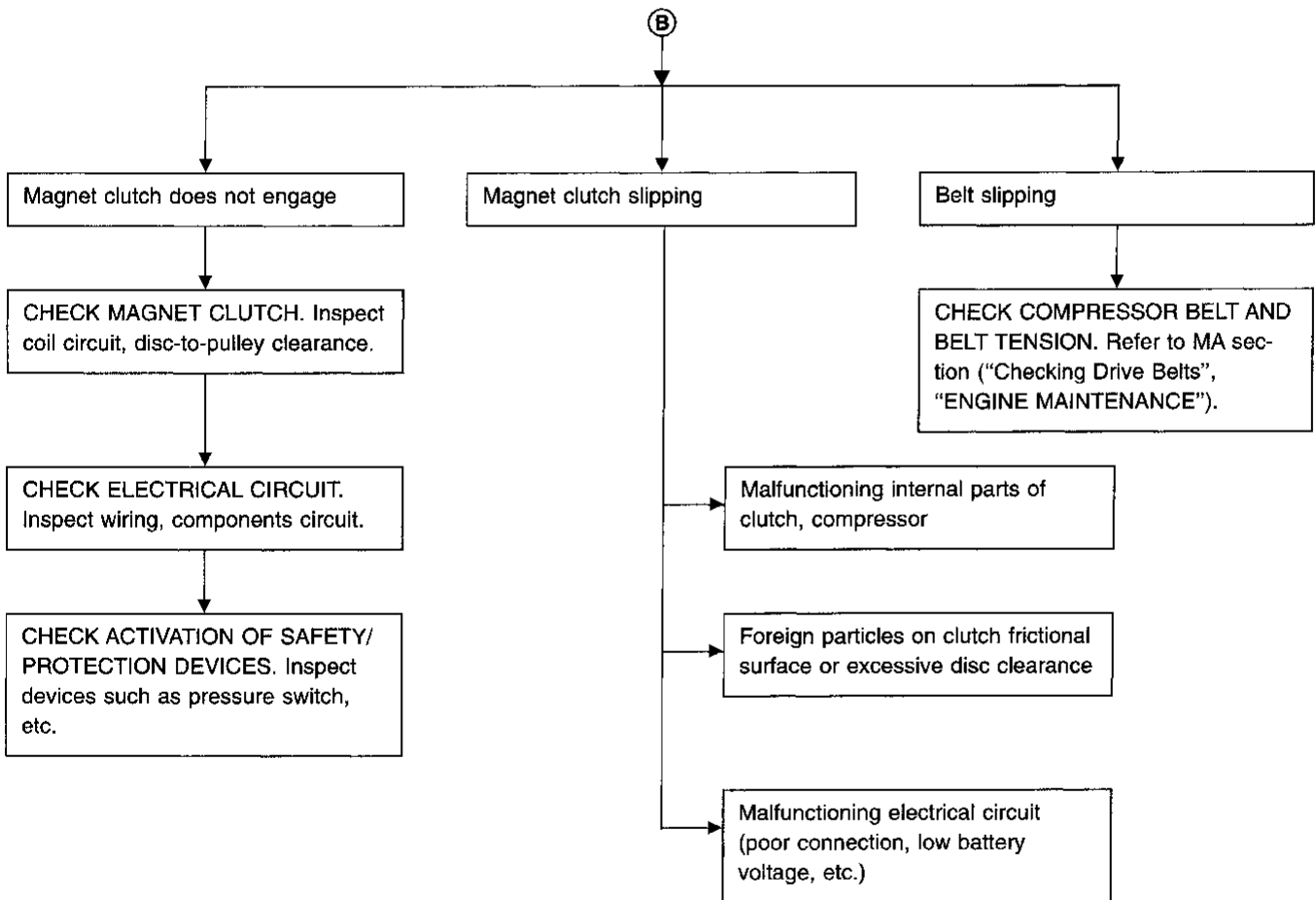
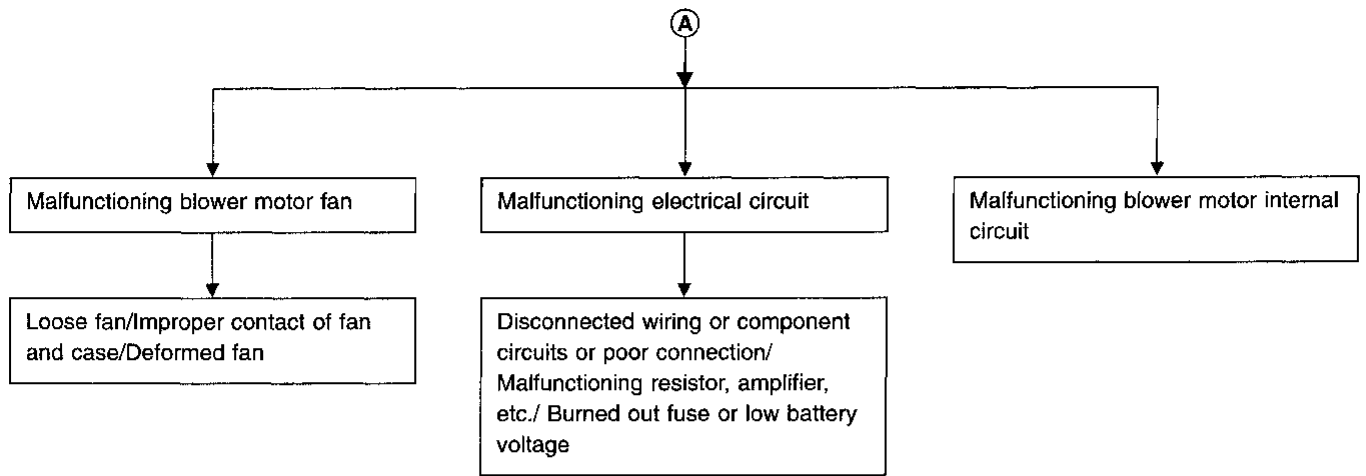
INSUFFICIENT COOLING



Note: **A-F** correspond to those in TROUBLE DIAGNOSES FOR ABNORMAL PRESSURE. Refer to HA-41.

TROUBLE DIAGNOSES

Performance Test Diagnoses (Cont'd)



GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

HA

EL

IDX

TROUBLE DIAGNOSES

Performance Chart

TEST CONDITION

Testing must be performed as follows:

Vehicle location: Indoors or in the shade (in a well-ventilated place)

Doors: Closed

Door window: Open

Hood: Open

TEMP. setting: Max. COLD

Discharge Air: FACE VENT

INTAKE

lever position:  (Recirculation)

FAN speed: 4-speed

Engine speed: 1,500 rpm

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

TEST READING

Recirculating-to-discharge air temperature table

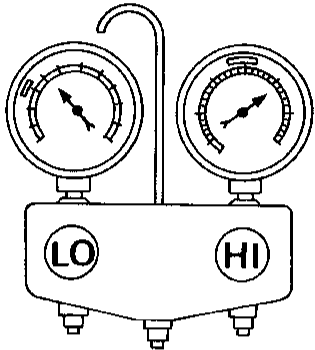
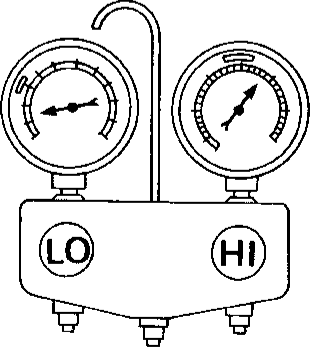
Inside air (Recirculating air) at blower assembly inlet		Discharge air temperature at center ventilator °C (°F)
Relative humidity %	Air temperature °C (°F)	
50 - 60	20 (68)	6.6 - 8.3 (44 - 47)
	25 (77)	10.4 - 12.4 (51 - 54)
	30 (86)	14.2 - 16.7 (58 - 62)
	35 (95)	18.2 - 21.0 (65 - 70)
	40 (104)	22.0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

Ambient air temperature-to-operating pressure table

Ambient air		High-pressure (Discharge side) kPa (kg/cm ² , psi)	Low-pressure (Suction side) kPa (kg/cm ² , psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	20 (68)	961 - 1,187 (9.8 - 12.1, 139 - 172)	108 - 157 (1.1 - 1.6, 16 - 23)
	25 (77)	1,295 - 1,599 (13.2 - 16.3, 188 - 232)	161.8 - 215.8 (1.65 - 2.2, 23.5 - 31.3)
	30 (86)	1,285 - 1,569 (13.1 - 16, 186 - 228)	167 - 216 (1.7 - 2.2, 24 - 31)
	35 (95)	1,520 - 1,863 (15.5 - 19, 220 - 270)	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)

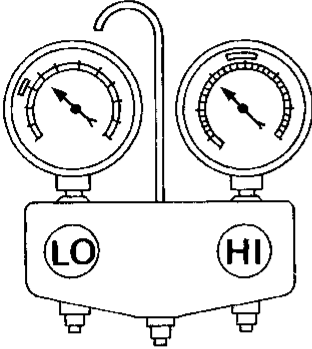
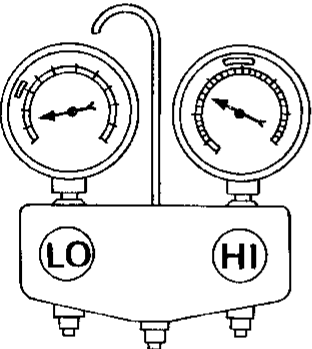
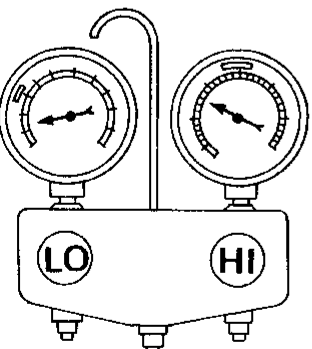
Trouble Diagnoses for Abnormal Pressure

Whenever system's high or low-side pressure is abnormal, diagnose using a manifold gauge. The marker above the gauge scale in the following table indicates the standard (normal) pressure range. Since the standard normal pressure differs from vehicle to vehicle, refer to HA-40 ("Ambient air temperature-to-operating pressure table"). **Pressure measurements are effective only when ambient temperature is in the range indicated under the Performance Chart.**

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Both high and low-pressure sides are too high.</p> <p>A</p>  <p style="text-align: center;">AC359A</p>	<ul style="list-style-type: none"> ● Pressure is reduced soon after water is splashed on condenser. 	<p>Excessive refrigerant charge in refrigeration cycle.</p>	<p>Reduce refrigerant until specified pressure is obtained.</p>
	<ul style="list-style-type: none"> ● Air suction by radiator or cooling fan is insufficient. 	<p>Insufficient condenser cooling performance.</p> <p style="text-align: center;">↓</p> <p>① Condenser fins are clogged. ② Improper rotation of cooling fan.</p>	<ul style="list-style-type: none"> ● Clean condenser. ● Check and repair radiator or cooling fan as necessary.
	<ul style="list-style-type: none"> ● Low-pressure pipe is not cold. ● When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm², 28 psi). It then decreases gradually thereafter. 	<p>Poor heat exchange in condenser. (After compressor operation stops, high-pressure decreases too slowly.)</p> <p style="text-align: center;">↓</p> <p>Air in refrigeration cycle.</p>	<p>Evacuate repeatedly and recharge system.</p>
	<p>Engine tends to overheat.</p>	<p>Engine cooling systems malfunction.</p>	<p>Check and repair each engine cooling system.</p>
	<ul style="list-style-type: none"> ● An area of the low-pressure pipe is colder than near the evaporator outlet. ● Plates are sometimes covered with frost. 	<ul style="list-style-type: none"> ● Excessive liquid refrigerant on low-pressure side. ● Excessive refrigerant discharge flow. ● Expansion valve is open a little compared with the specification. <p style="text-align: center;">↓</p> <p>① Improper thermal valve installation. ② Improper expansion valve adjustment.</p>	<p>Replace expansion valve.</p>
<p>High-pressure side is too high and low-pressure side is too low.</p> <p>B</p>  <p style="text-align: center;">AC360A</p>	<p>Upper side of condenser and high-pressure side are hot, however, liquid tank is not as hot.</p>	<p>High-pressure tube or parts located between compressor and condenser are clogged or crushed.</p>	<ul style="list-style-type: none"> ● Check and repair or replace malfunctioning parts. ● Check lubricant for contamination.

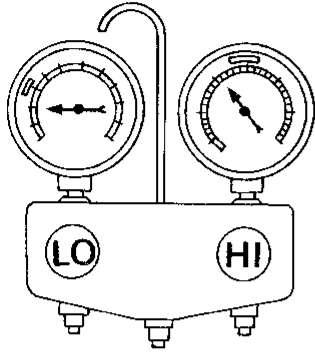
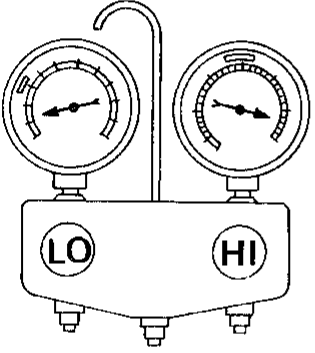
TROUBLE DIAGNOSES

Trouble Diagnoses for Abnormal Pressure (Cont'd)

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 discharge capacity does not change. (Compressor stroke is set at maximum.)	Replace compressor.
Both high and low-pressure sides are too low. D  AC353A	<ul style="list-style-type: none"> ● There is a big temperature difference between liquid tank outlet and inlet. Outlet temperature is extremely low. ● Liquid tank inlet and expansion valve are frosted. 	Liquid tank is partly clogged.	<ul style="list-style-type: none"> ● Replace liquid tank. ● Check lubricant for contamination.
	<ul style="list-style-type: none"> ● Temperature of expansion valve inlet is extremely low as compared with areas near liquid tank. ● Expansion valve inlet may be frosted. ● Temperature difference occurs somewhere in high-pressure side. 	High-pressure pipe located between liquid tank and expansion valve is clogged.	<ul style="list-style-type: none"> ● Check and repair malfunctioning parts. ● Check lubricant for contamination.
	<ul style="list-style-type: none"> ● Expansion valve and liquid tank are warm or only cool to the touch. 	Low refrigerant charge. ↓ Leaking fittings or components.	<ul style="list-style-type: none"> ● Check for refrigerant leaks. Refer to "Checking Refrigerant Leaks", HA-48.
Both high and low-pressure sides are too low. D  AC353A	There is a big temperature difference between expansion valve inlet and outlet while the valve itself is frosted.	Expansion valve closes a little compared with the specification. ↓ ① Improper expansion valve adjustment. ② Malfunctioning thermal valve. ③ Outlet and inlet may be clogged.	<ul style="list-style-type: none"> ● Remove foreign particles by using compressed air. ● Check lubricant for contamination.
	An area of low-pressure pipe is colder than areas near the evaporator outlet.	Low-pressure pipe is clogged or crushed.	<ul style="list-style-type: none"> ● Check and repair malfunctioning parts. ● Check lubricant for contamination.
	Air flow volume is not enough or is too low.	Compressor pressure operation is improper.	Replace compressor.

TROUBLE DIAGNOSES

Trouble Diagnoses for Abnormal Pressure (Cont'd)

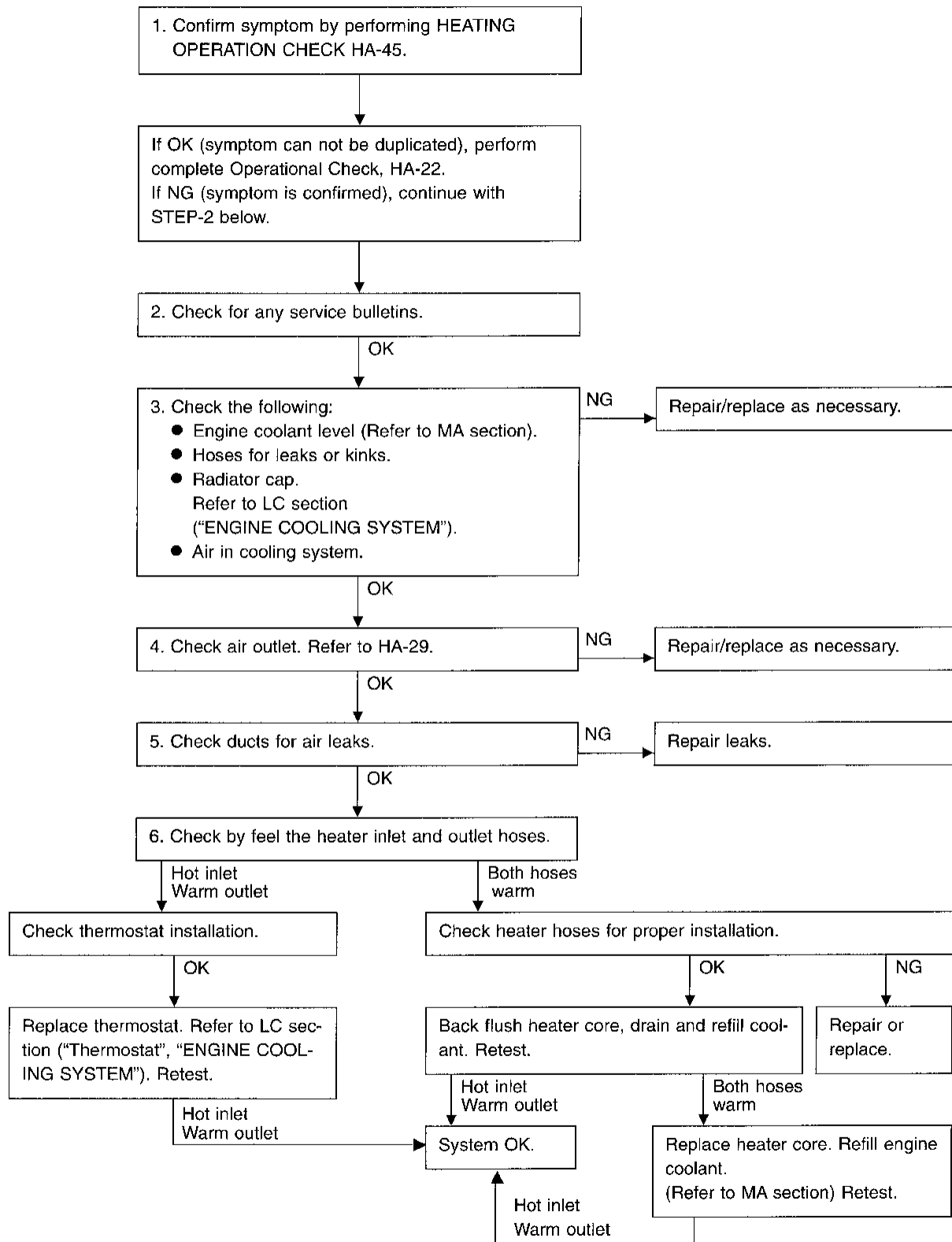
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Low-pressure side sometimes becomes negative.</p> <p>E</p>  <p style="text-align: right; font-size: small;">AC354A</p>	<ul style="list-style-type: none"> ● Air conditioner system does not function and does not cyclically cool the compartment air. ● The system constantly functions for a certain period of time after compressor is stopped and restarted. 	<p>Refrigerant does not discharge cyclically.</p> <p style="text-align: center;">↓</p> <p>Moisture is frozen at expansion valve outlet and inlet.</p> <p style="text-align: center;">↓</p> <p>Water is mixed with refrigerant.</p>	<ul style="list-style-type: none"> ● Replace refrigerant. ● Replace liquid tank.
<p>Low-pressure side becomes negative.</p> <p>F</p>  <p style="text-align: right; font-size: small;">AC362A</p>	<p>Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.</p>	<p>High-pressure side is closed and refrigerant does not flow.</p> <p style="text-align: center;">↓</p> <p>Expansion valve or liquid tank is frosted.</p>	<p>Leave the system at rest . Start it again to check whether or not the problem is caused by water or foreign particles.</p> <ul style="list-style-type: none"> ● If water is the cause, initially cooling is okay. Then the water freezes, causing a blockage. Drain water from refrigerant or replace refrigerant. ● If due to foreign particles, remove expansion valve and remove the particles with dry and compressed air. ● If either of the above methods cannot correct the problem, replace expansion valve. ● Replace liquid tank. ● Check lubricant for contamination.

GI
 MA
 EM
 LC
 EC
 FE
 CL
 MT
 AT
 TF
 PD
 FA
 RA
 BR
 ST
 RS
 BT
 HA
 EL
 IDX

TROUBLE DIAGNOSES

Trouble Diagnosis for Insufficient Heating

INSPECTION FLOW



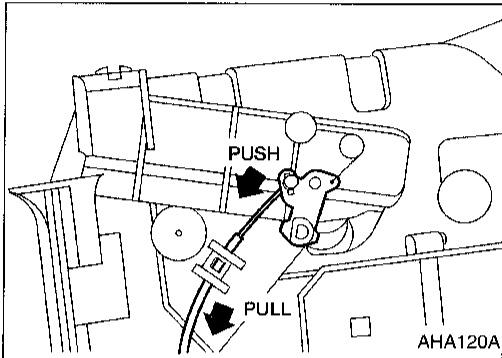
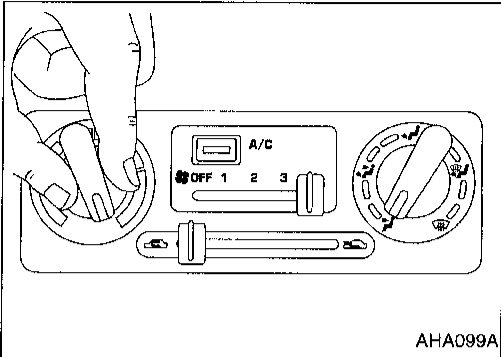
TROUBLE DIAGNOSES

Trouble Diagnosis for Insufficient Heating

(Cont'd)

HEATING OPERATION CHECK

1. Start and warm up engine.
2. Slide fan control lever to max speed.
3. Turn air conditioner switch OFF.
4. Check temperature increase.
 - a. Turn temperature switch to full hot.
 - b. Check hot air at discharge air outlets.



TEMPERATURE CONTROL LINKAGE ADJUSTMENT

Temperature control cable

- When adjusting ventilator door rod and defrost door rod, first disconnect mode control cable from side link. Reconnect and readjust mode control cable.
- Move temperature control lever 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.

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

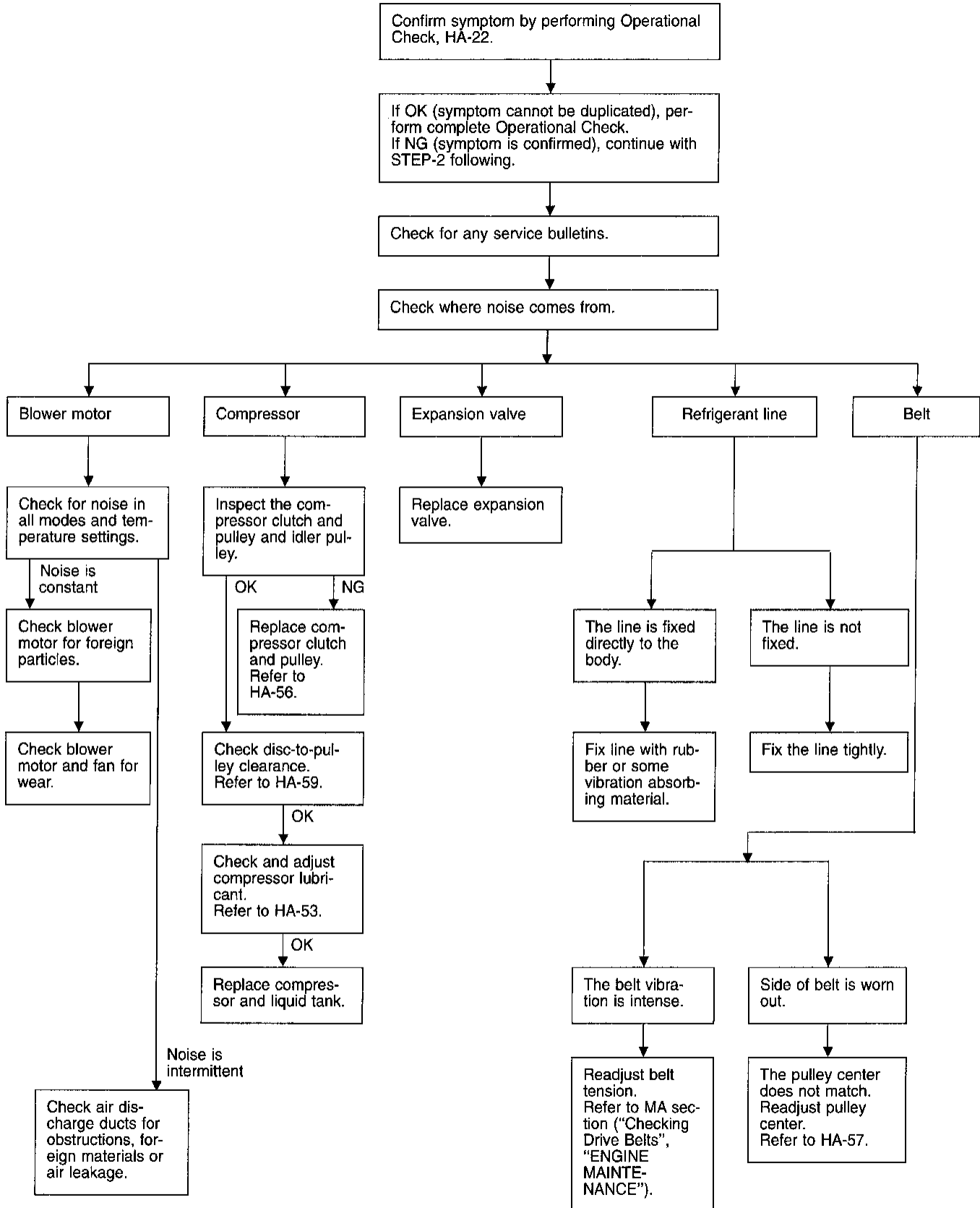
HA

EL

IDX

TROUBLE DIAGNOSES

Trouble Diagnosis for Noise





SERVICE PROCEDURES

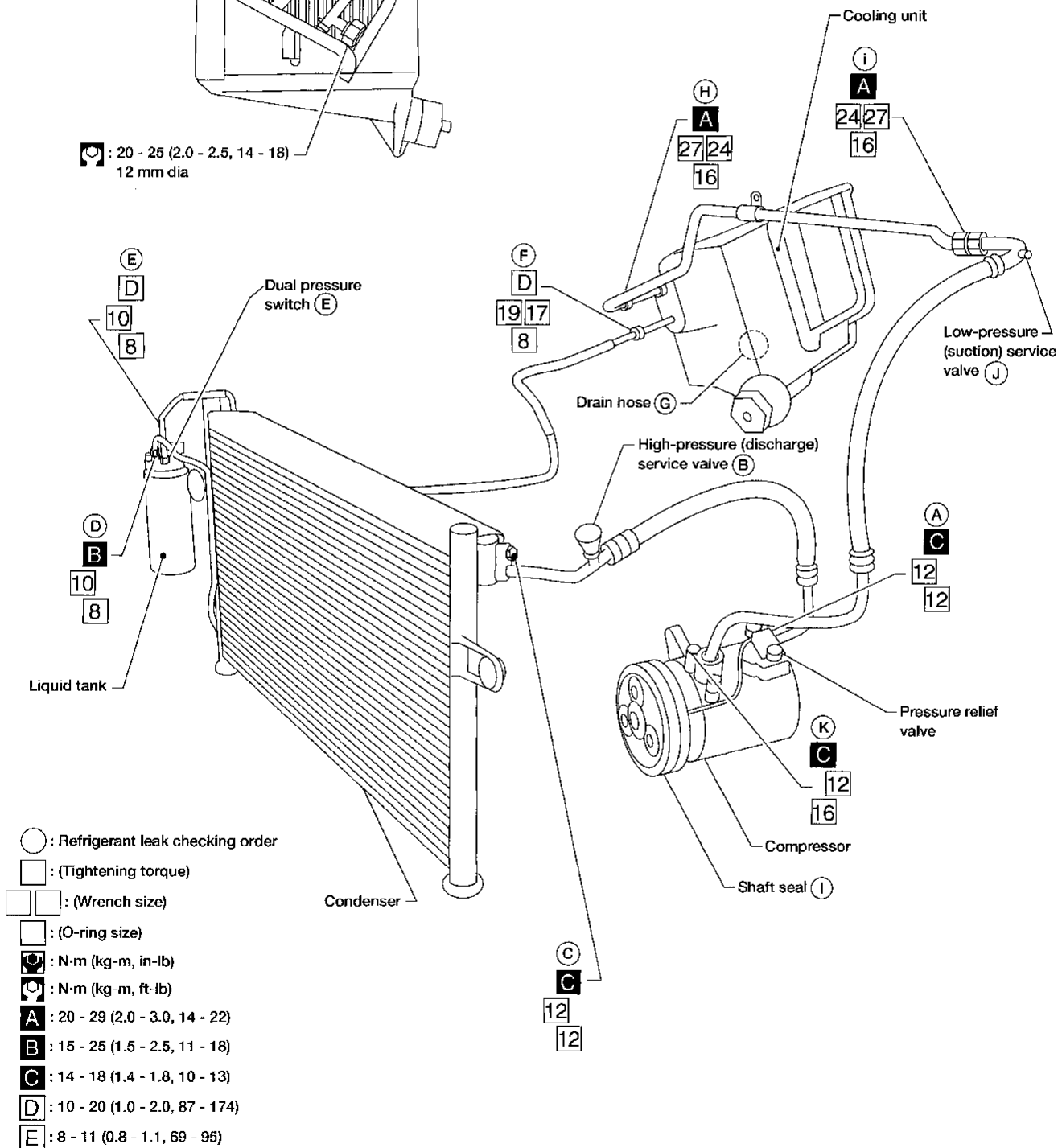
Refrigerant Lines

- Refer to HA-3.

SEC. 271 • 274 • 276

 : 10 - 20 (1.0 - 2.0, 87 - 174)
8mm dia

 : 20 - 25 (2.0 - 2.5, 14 - 18)
12 mm dia

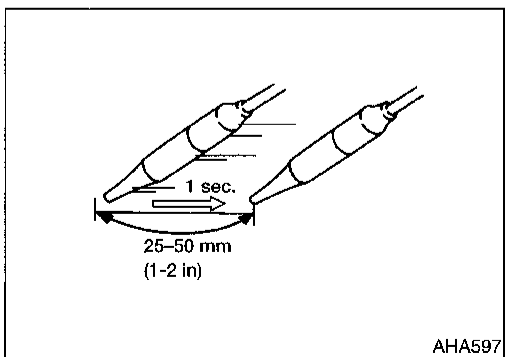
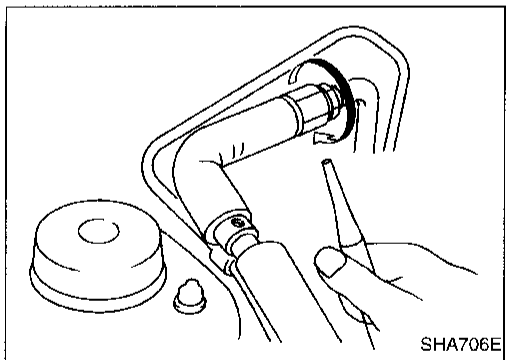
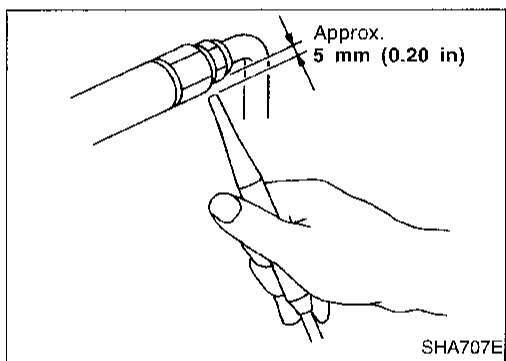
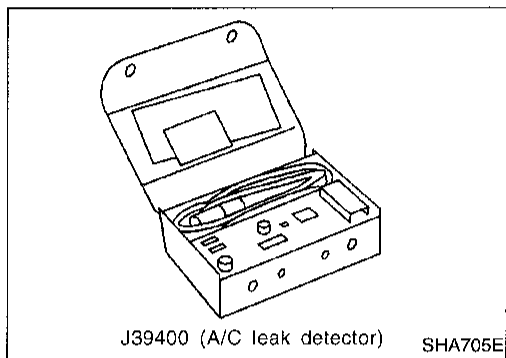


GI
 MA
 EM
 LC
 EC
 FE
 CL
 MT
 AT
 TF
 PD
 FA
 RA
 BR
 ST
 RS
 BT
HA
 EL
 IDX

Checking Refrigerant Leaks

PRELIMINARY CHECK

Perform a visual inspection of all refrigeration parts, fittings, hoses, and components for signs of A/C lubricant leakage, damage and corrosion.



PRECAUTIONS FOR HANDLING LEAK DETECTOR

When performing a refrigerant leak check, use a J39400 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 cleaners, may falsely trigger the leak detector. Make sure the surfaces to be checked are clean. Do not allow the sensor tip of the detector to come into contact with any substance. This can also cause false readings and may damage the detector.

1. Position probe approximately 5 mm (0.20 in) away from point to be checked.

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

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

SERVICE PROCEDURES

Checking Refrigerant Leaks (Cont'd)

CHECKING PROCEDURE

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

1. Turn engine off.
2. Connect a suitable A/C manifold gauge set to the A/C service ports.
3. Check if the A/C refrigerant pressure is at least 345 kPa (50 psi) above 16°C (60°F). If less than specification, evacuate and recharge the system with the specified amount of refrigerant.
NOTE: At temperatures below 16°C (60°F), leaks may not be detected since the system may not reach 345 kPa (50 psi).
4. Conduct the leak test from the high side to the low side at points (a) through (k). Refer to HA-4.
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 fittings 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)**
Slide blower fan on "High" for at least 15 seconds to dissipate any refrigerant trace in the cooling unit. Insert the leak detector probe into the drain hose immediately after stopping engine. (Keep the probe inserted for at least ten seconds.)
5. If the leak detector detects a leak, verify at least once by blowing compressed air into area of suspected leak, then repeat check.
6. Do not stop when one leak is found. Continue to check for additional leaks at all system components.
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 1500 rpm for at least 2 minutes.
10. Turn engine off and perform leak check again following steps 4 through 6 above.

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

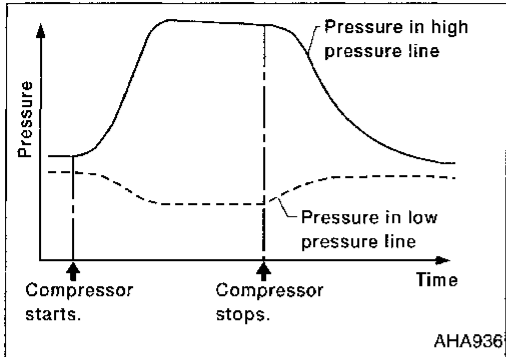
HA

EL

IDX

SERVICE PROCEDURES

Checking Refrigerant Leaks (Cont'd)



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

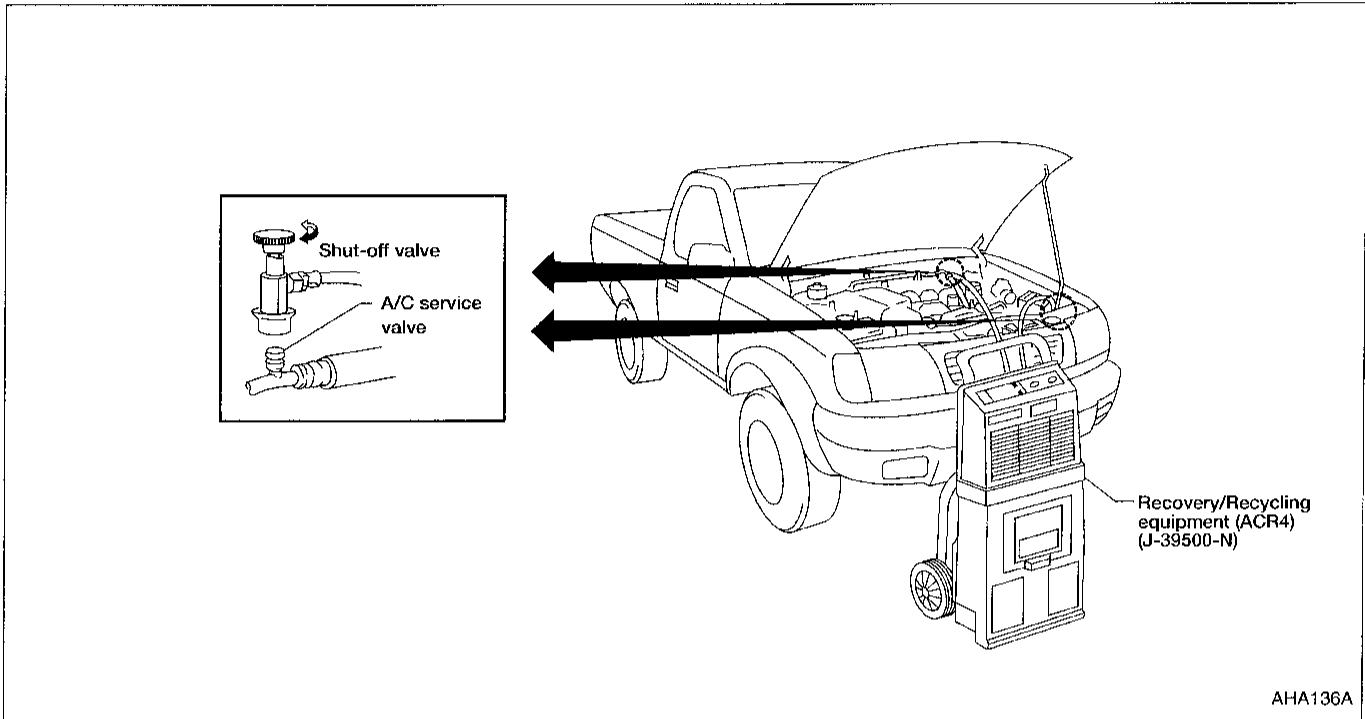
11. Discharge A/C system using approved refrigerant recovery equipment. Repair the leaking fitting or component as necessary.
12. Evacuate and recharge A/C system and perform the leak test to confirm no refrigerant leaks.
13. Conduct A/C performance test to ensure system works properly.

R-134a Service Procedure

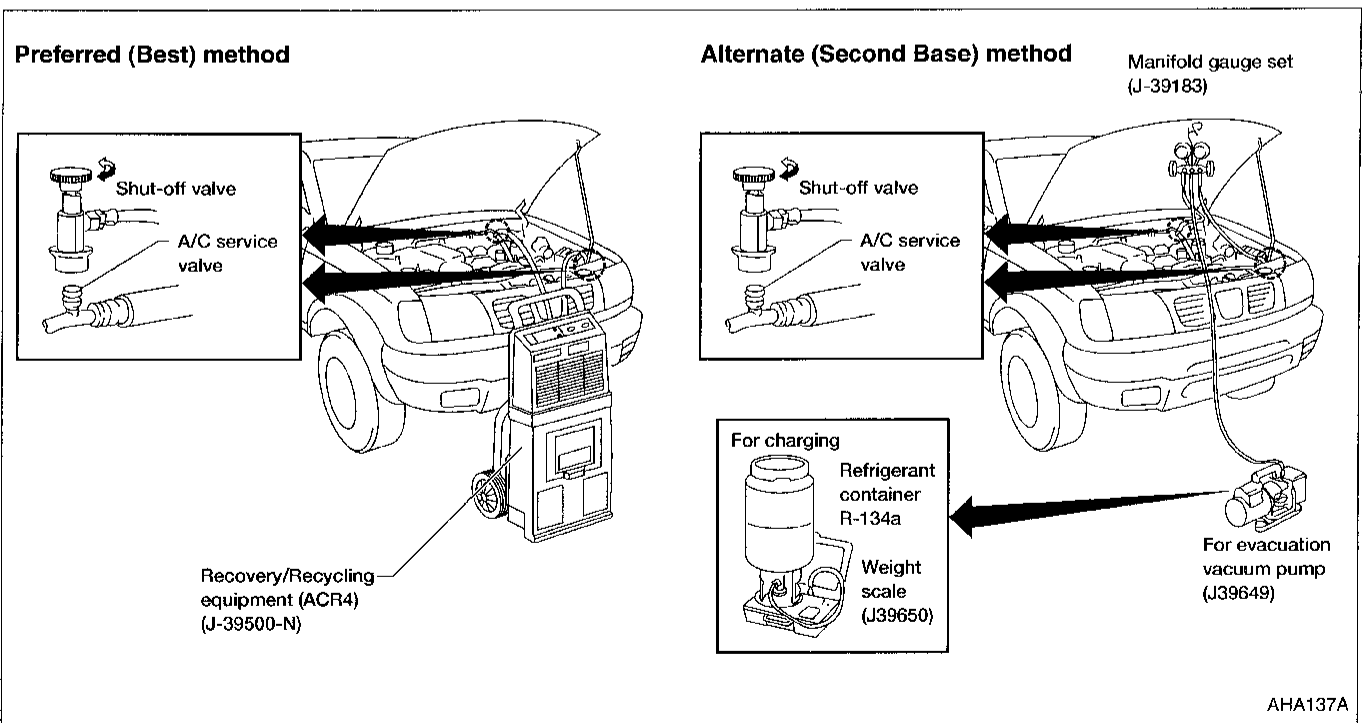
DISCHARGING REFRIGERANT

WARNING:

Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Remove R-134a from the A/C system using certified service equipment meeting requirements of SAE J2210 (R-134a recycling equipment) or J2209 (R-134a recovery equipment). If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.

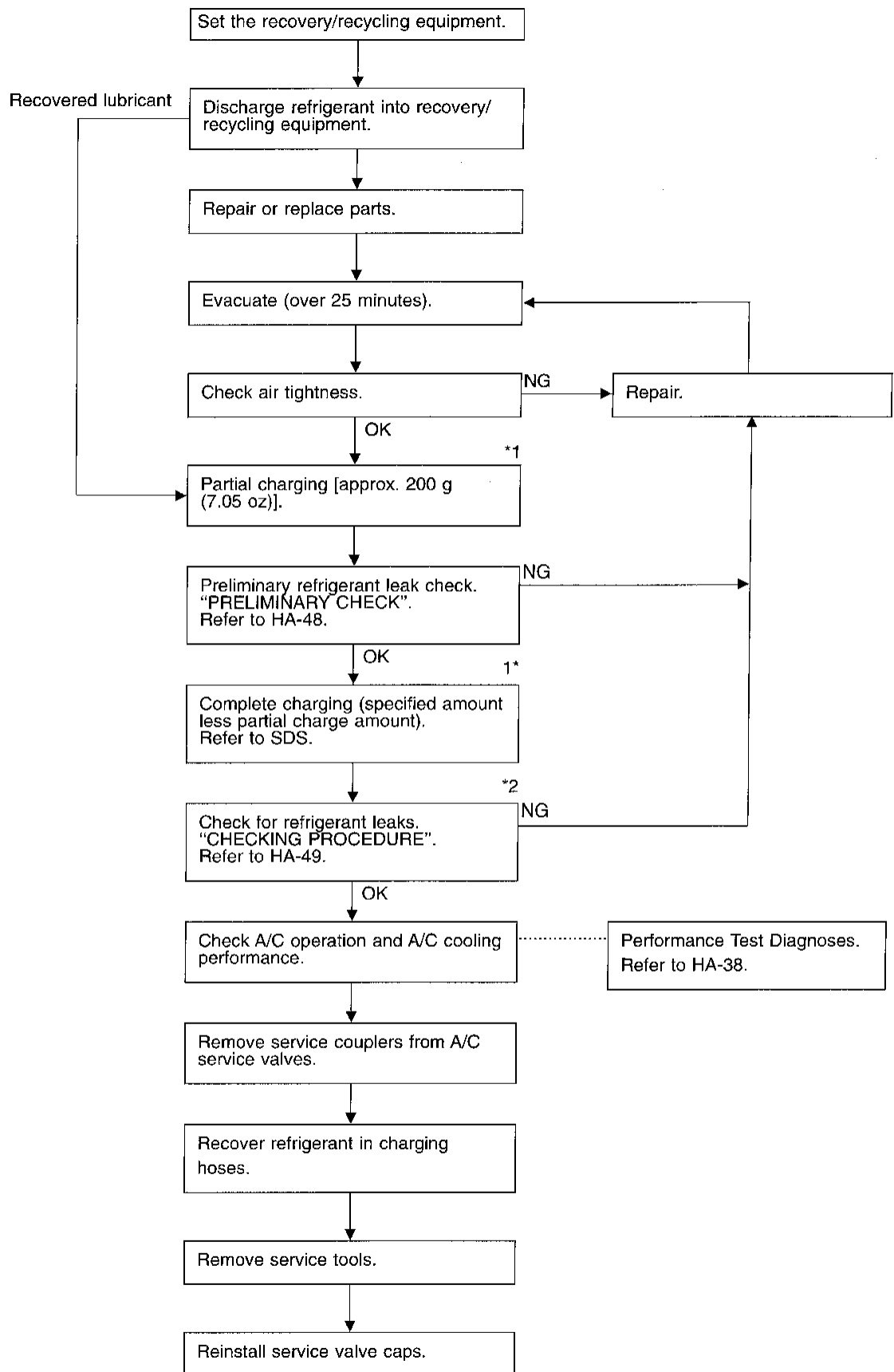


EVACUATING SYSTEM AND CHARGING REFRIGERANT



SERVICE PROCEDURES

R-134a Service Procedure (Cont'd)



Note: *1 Before charging refrigerant, ensure engine is OFF.

*2 Before checking for leaks, start engine to activate air conditioner system then turn engine OFF. Service valve caps must be installed to prevent leakage.

Compressor Lubricant Quantity

The lubricant used to lubricate the compressor circulates through the system with the refrigerant. Whenever any A/C component is replaced or gas leakage occurs, lubricant must be added.

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

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

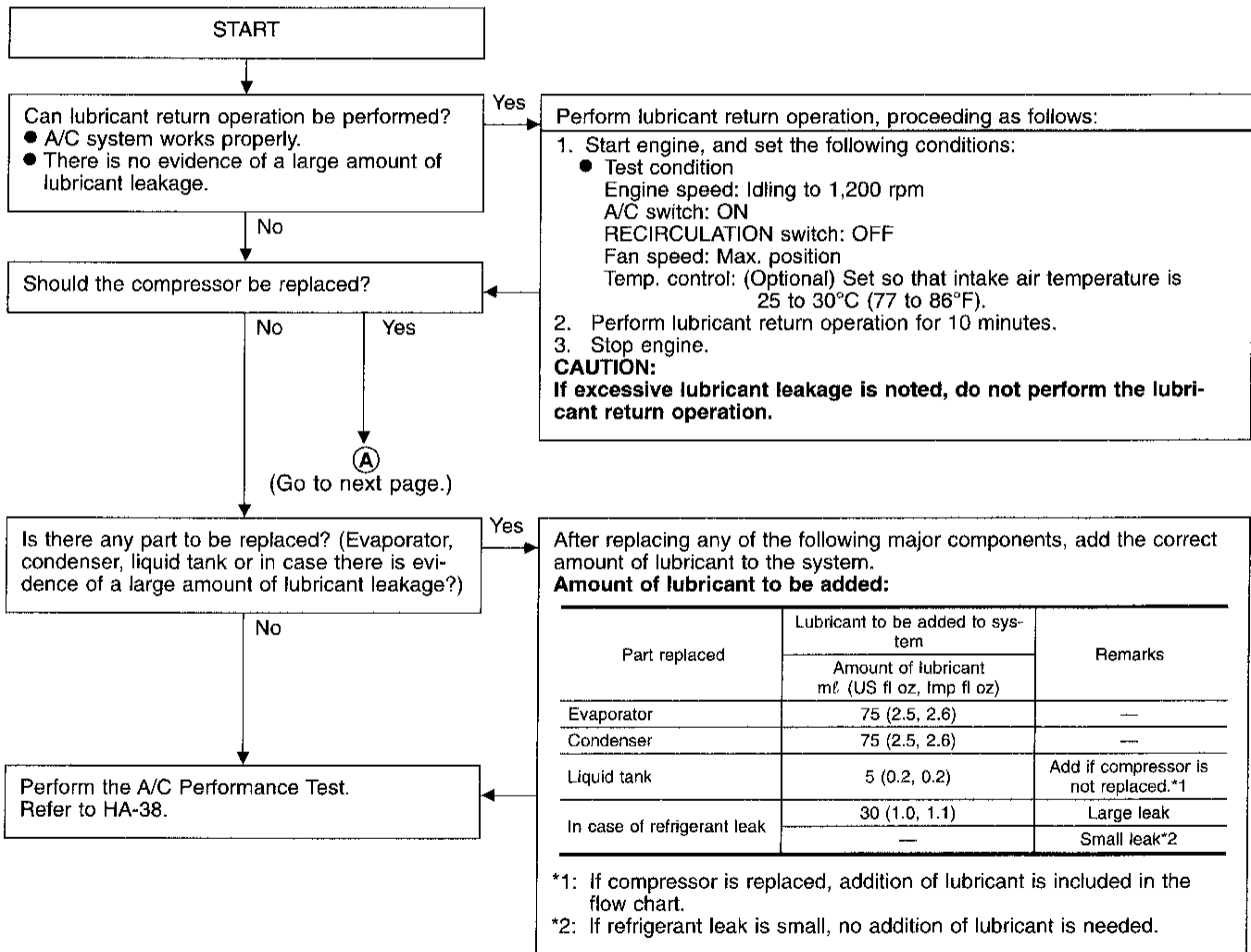
LUBRICANT

Name: Nissan A/C System Lubricant Type R

Part No.: KLH00-PAGR0

CHECKING AND ADJUSTING

Adjust the lubricant quantity according to the flowchart shown below.



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.

GI
MA
EM
LC
EC
FE
CL
MT
AT
TF
PD
EA
RA
BR
ST
RS
BT
HA
EL
IDX

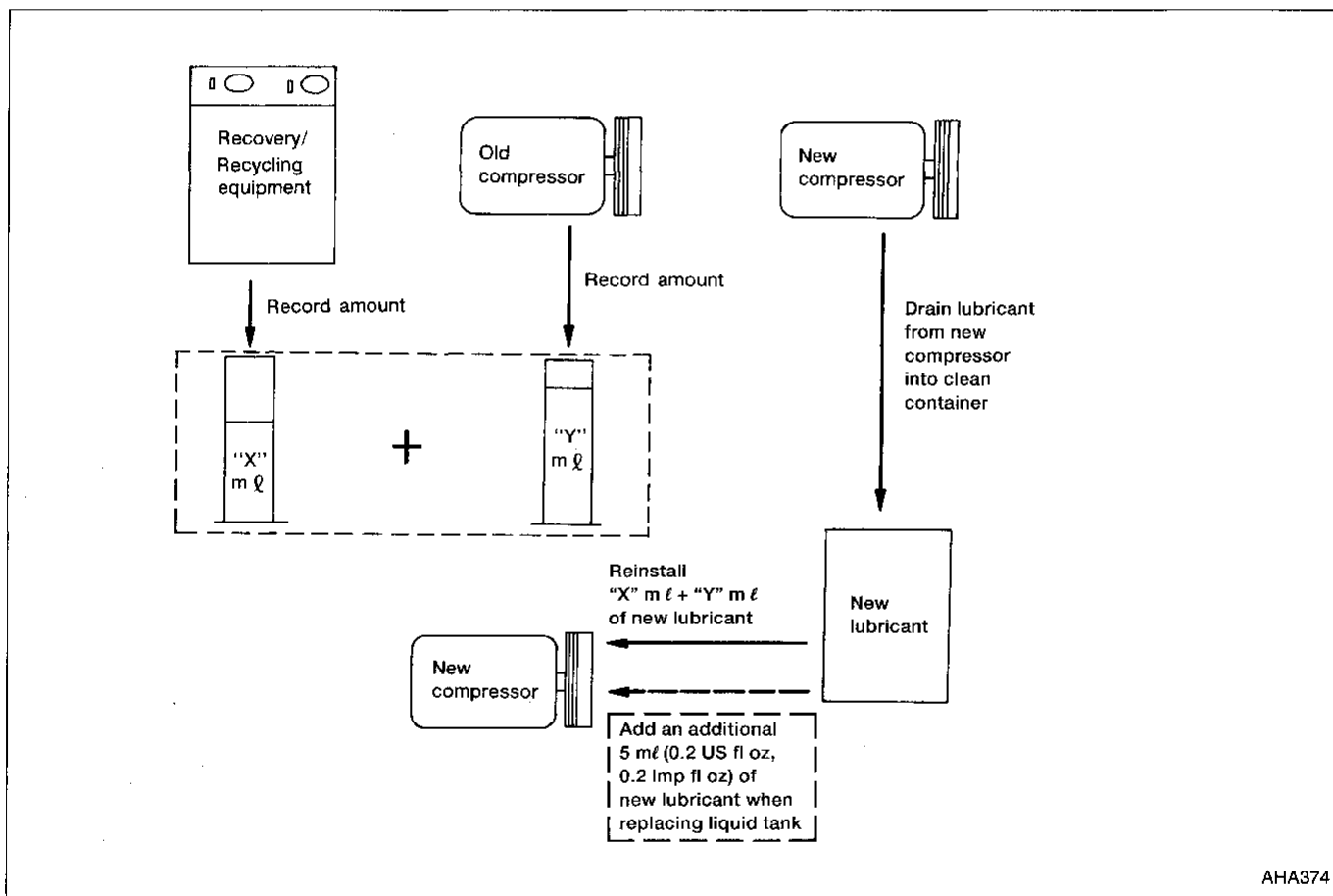
SERVICE PROCEDURES

Compressor Lubricant Quantity (Cont'd)

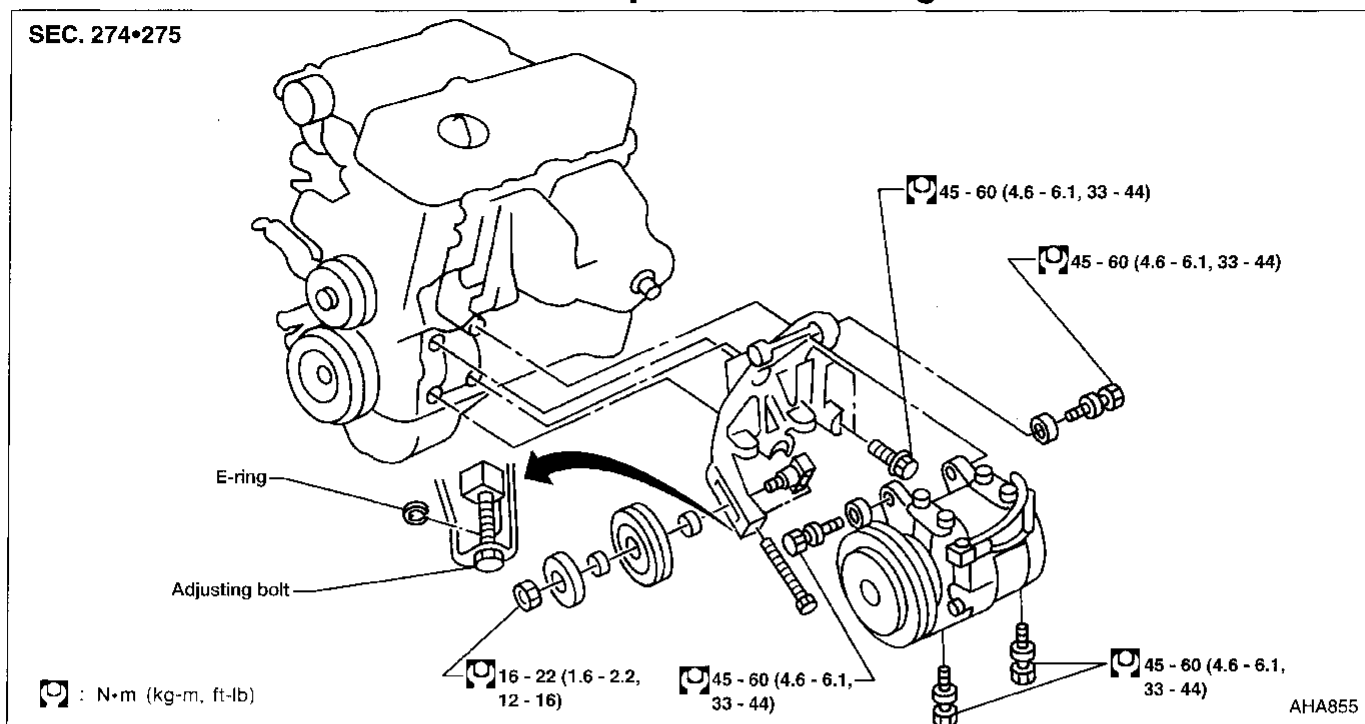
(A)

1. Discharge refrigerant into refrigerant recovery/recycling equipment. Measure lubricant discharged into the recovery/recycling equipment.
2. Drain the lubricant from the old (removed) compressor into a graduated container and record the amount of lubricant drained.
3. Drain the lubricant from the new compressor into a separate, clean container.
4. Measure an amount of new lubricant equal to amount drained from old compressor. Add this lubricant to new compressor through the suction port opening.
5. Measure an amount of new lubricant equal to the amount recovered during discharging. Add this lubricant to new compressor through the suction port opening.
6. 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



Compressor Mounting



Belt Tension

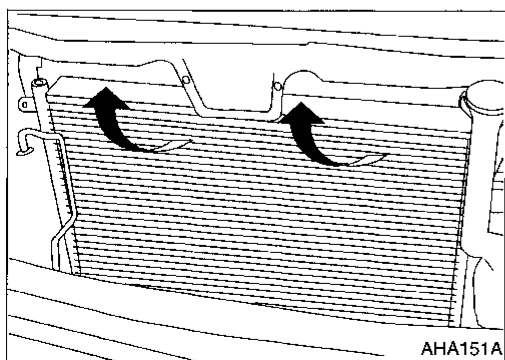
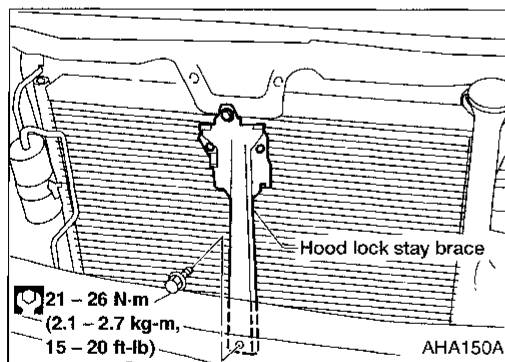
- Refer to MA section ("Checking Drive Belts", "ENGINE MAINTENANCE").

Fast Idle Control Device (FICD)

- Refer to EC section ("IACV-FICD Solenoid Valve", "TROUBLE DIAGNOSIS FOR NON-DETECTABLE ITEMS").

Condenser

REMOVAL



- Discharge refrigerant using the recovery/recycling equipment (ACR4).
- Remove side marker lamps.
- Remove front grille (4 fasteners).
- Remove harness clip from hood lock stay, if equipped (gently press out).
- Remove grille apron (5 nuts).
- Remove hood lock stay brace (4 bolts). Remove hood latch (3 bolts).
- Remove hose (high-pressure) clamp bracket from radiator core support.
- Disconnect high-pressure hose at condenser.
- Disconnect dual-pressure switch harness connector.
- Disconnect high-pressure tube (liquid tank to cooling unit) at liquid tank.
- Remove liquid tank and bracket.
- Remove lower core support seal (4 bolts).
- Loosen windshield washer tank bolts.
- Remove condenser mounting bolts (2 bolts).
- Remove condenser assembly.

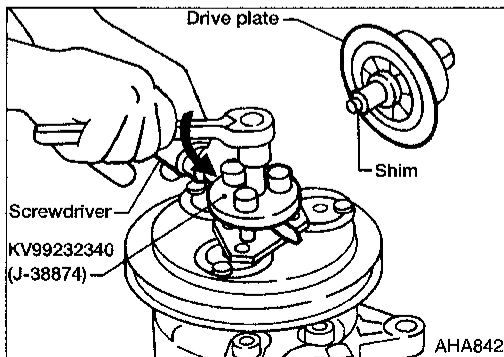
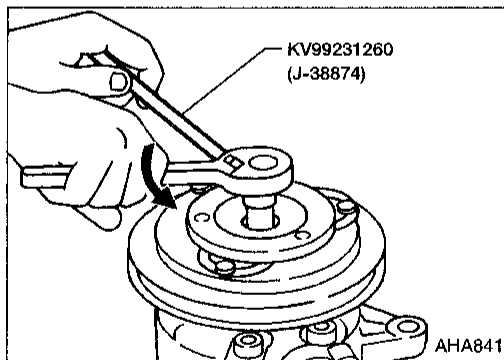
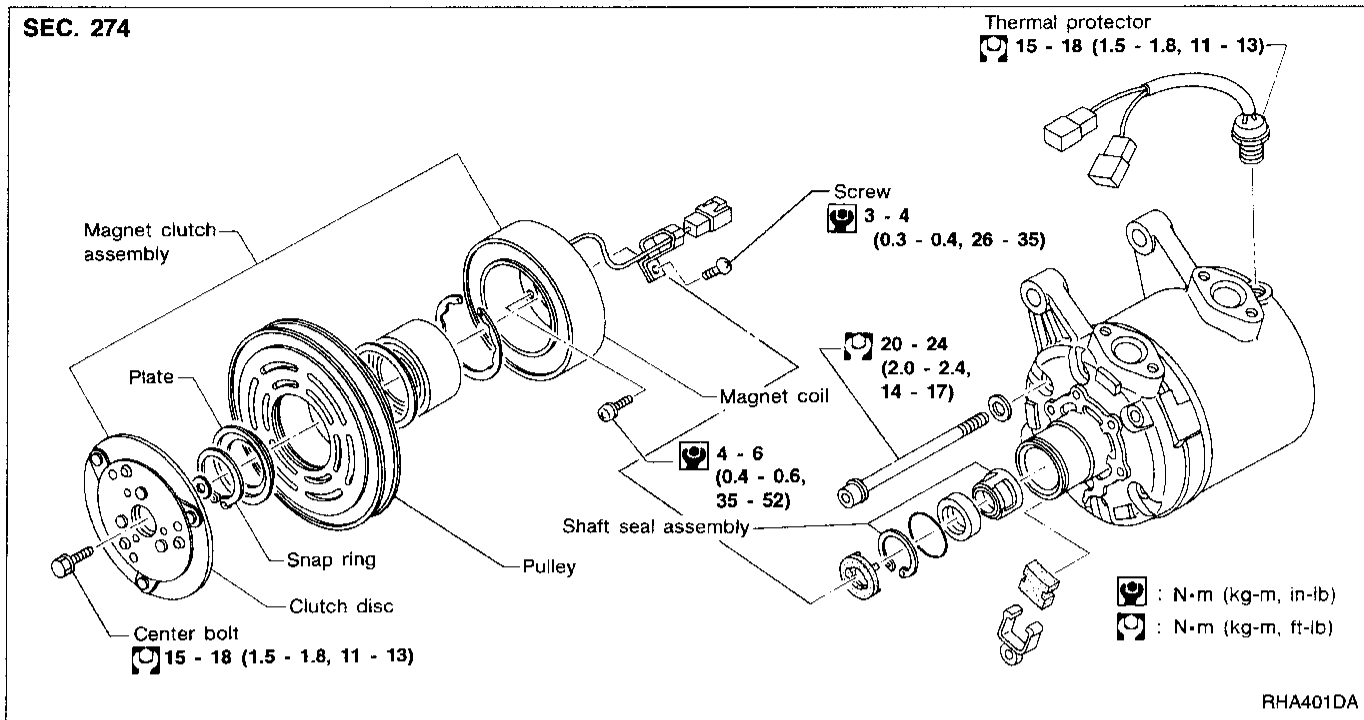
CAUTION:

Carefully lift condenser without damaging radiator (fin and tube).

GI
MA
EM
LC
EC
FE
CL
MT
AT
TF
PD
FA
RA
BR
ST
RS
BT
HA
EL
IDX

Compressor

SEC. 274



Compressor Clutch

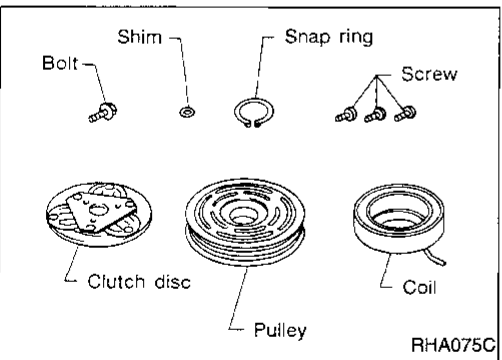
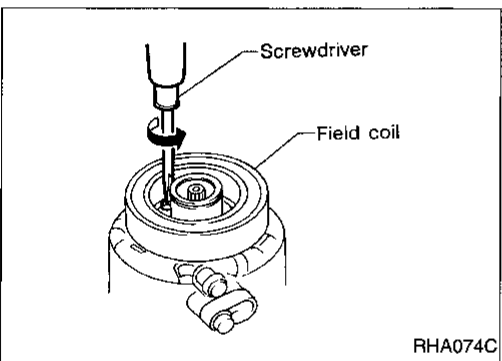
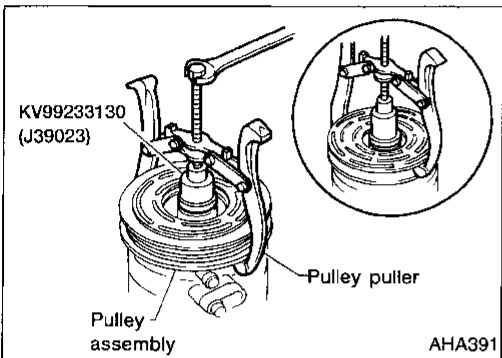
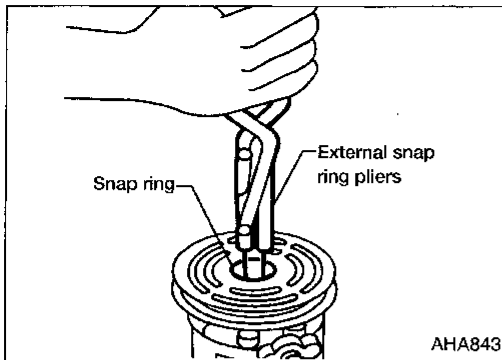
REMOVAL

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

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

SERVICE PROCEDURES

Compressor Clutch (Cont'd)



- Remove the snap ring using external snap ring pliers.

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

For Pressed Pulleys:

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

- Remove the field coil harness clip using a screwdriver.

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

INSPECTION

Clutch disc

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

Pulley

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

Coil

Check coil for loose connection or cracked insulation.

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

HA

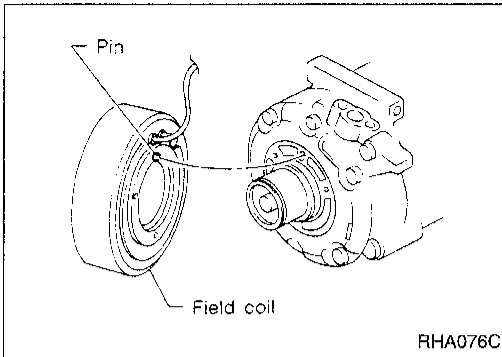
EL

IDX

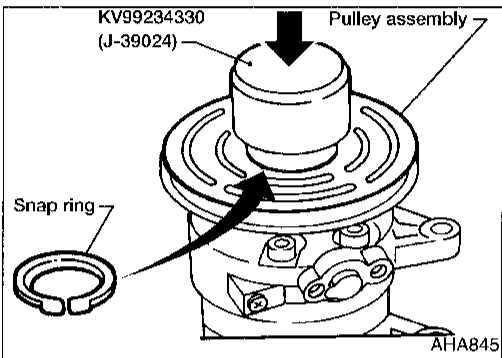
SERVICE PROCEDURES

Compressor Clutch (Cont'd)

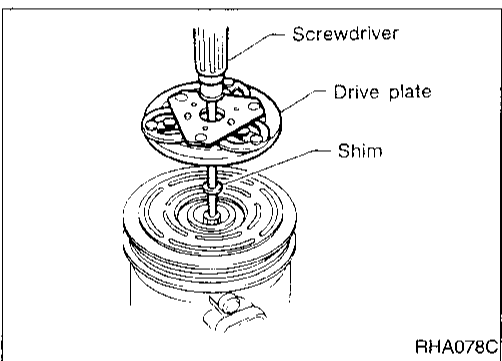
INSTALLATION



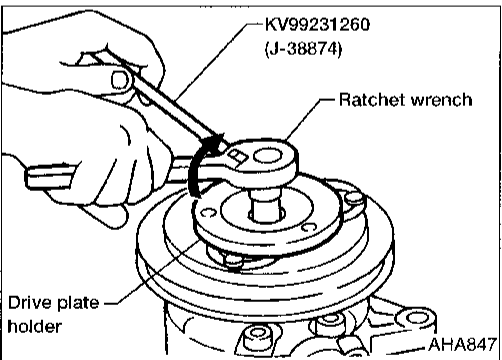
- Install the field coil.
- **Be sure to align the coil's pin with the hole in the compressor's front head.**
- Install the field coil harness clip using a screwdriver.



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



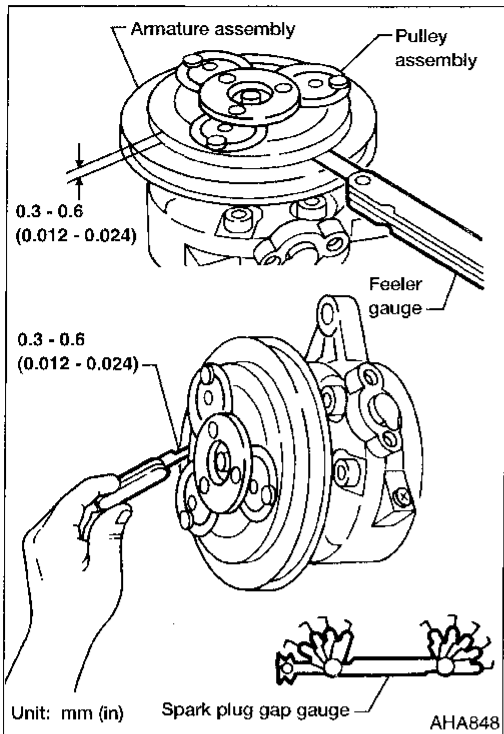
- Install the drive plate on the drive shaft, together with the original shim(s). Press the drive plate down by hand.



- 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.**

SERVICE PROCEDURES

Compressor Clutch (Cont'd)



- Check clearance all the way around the clutch disc.

Disc-to-pulley clearance:

0.3 - 0.6 mm (0.012 - 0.024 in)

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

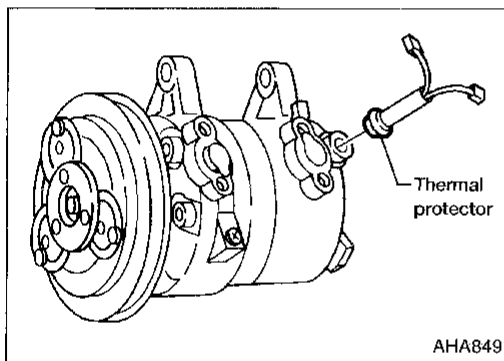
BREAK-IN OPERATION

When replacing compressor 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

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



GI

MA

EM

LG

EC

FE

CL

WT

AT

TF

PD

FA

RA

BR

ST

RS

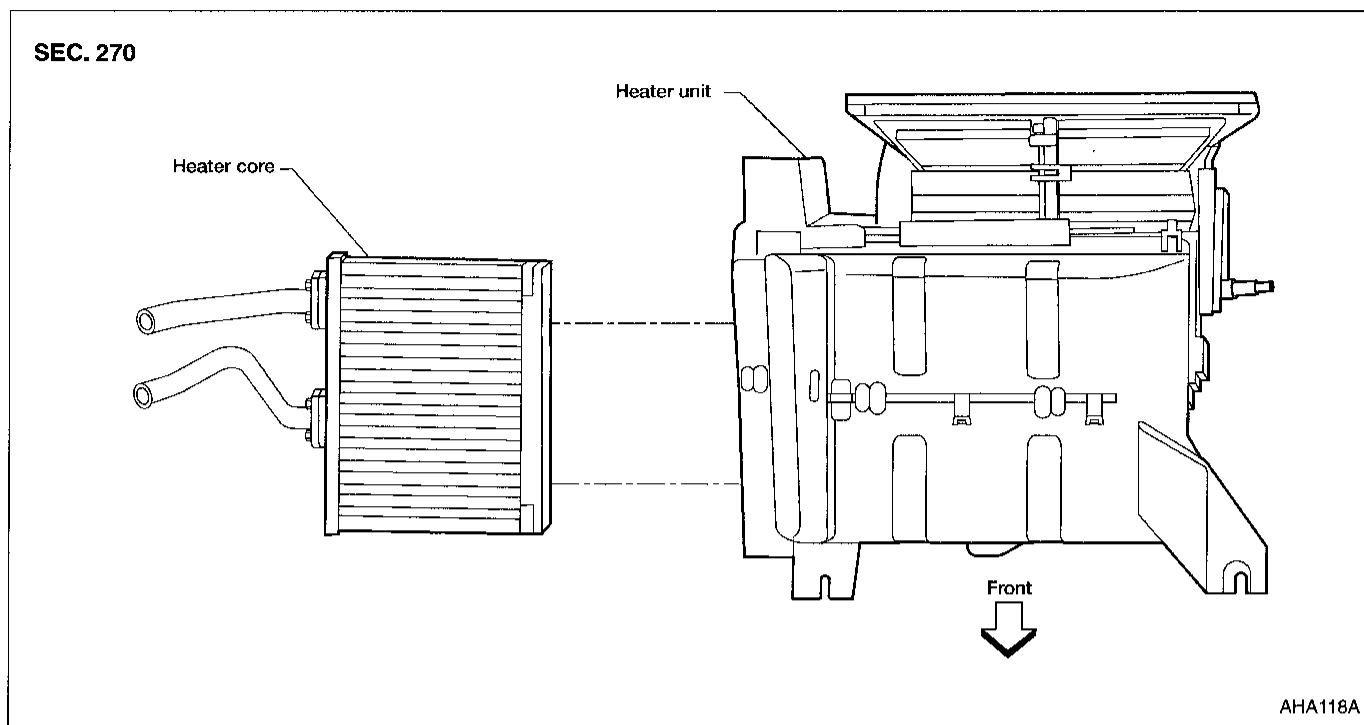
BT

HA

EL

IDX

Heater Unit (Heater Core)



REMOVAL

1. Drain the cooling system. Refer to MA section, ("Changing Engine Coolant").
2. Disconnect the two heater hoses from inside the engine compartment.
3. Remove the cooling unit. Refer to HA-61.
4. Remove the steering member assembly. Refer to BT section ("Instrument Panel").
5. Remove the heater unit.
6. Remove the heater core.

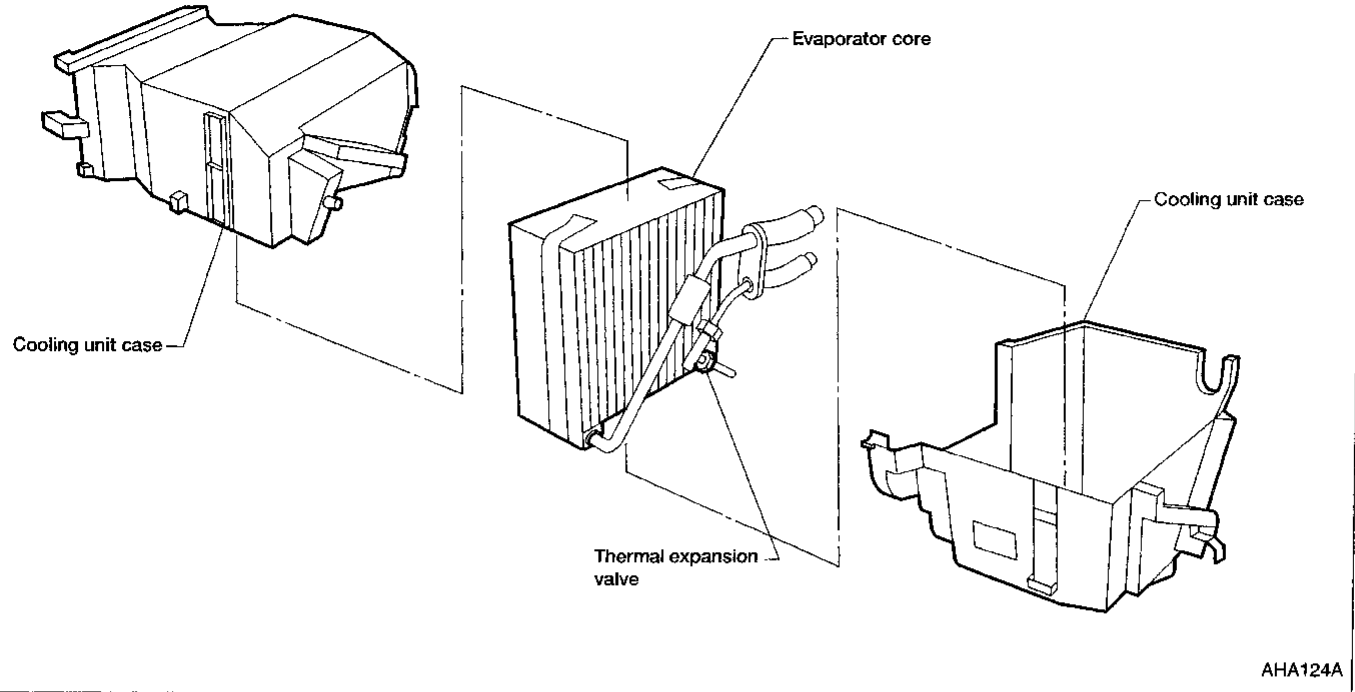
INSTALLATION

Installation is basically the reverse order of removal.

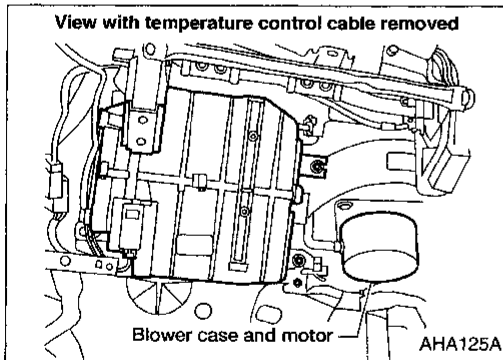
When filling radiator with coolant, refer to MA section ("Changing Engine Coolant").

Cooling Unit (A/C Evaporator)

SEC. 271



AHA124A



View with temperature control cable removed

Blower case and motor

AHA125A

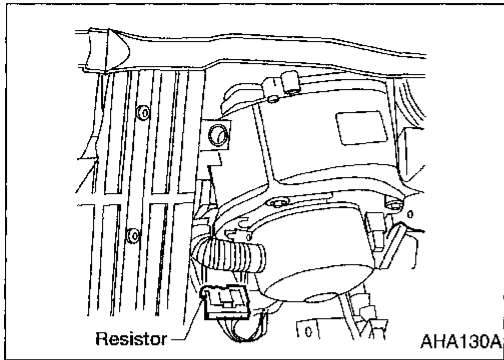
REMOVAL

1. Evacuate the A/C system. Refer to HA-51.
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 BT section ("Instrument Panel").
4. Disconnect the thermal amp. connector.
5. Remove the cooling unit.
6. Separate the cooling unit case, and remove the evaporator.

INSTALLATION

Installation is basically the reverse order of removal.
Recharge the A/C system. Refer to HA-51.

GI
 MA
 EM
 LC
 EC
 FE
 CL
 MT
 AT
 TF
 PD
 FA
 RA
 BR
 ST
 RS
 BT
 HA
 EL
 IDX



Blower Case and Motor REMOVAL

1. Remove the glove box and mating trim. Refer to BT section ("Instrument Panel").
2. Remove the cooling unit. Refer to HA-61.
3. Disconnect the fan motor resistor.
4. Disconnect the fan motor.
5. Remove the blower case and motor.
6. Remove the three bolts and remove the motor from the blower case.

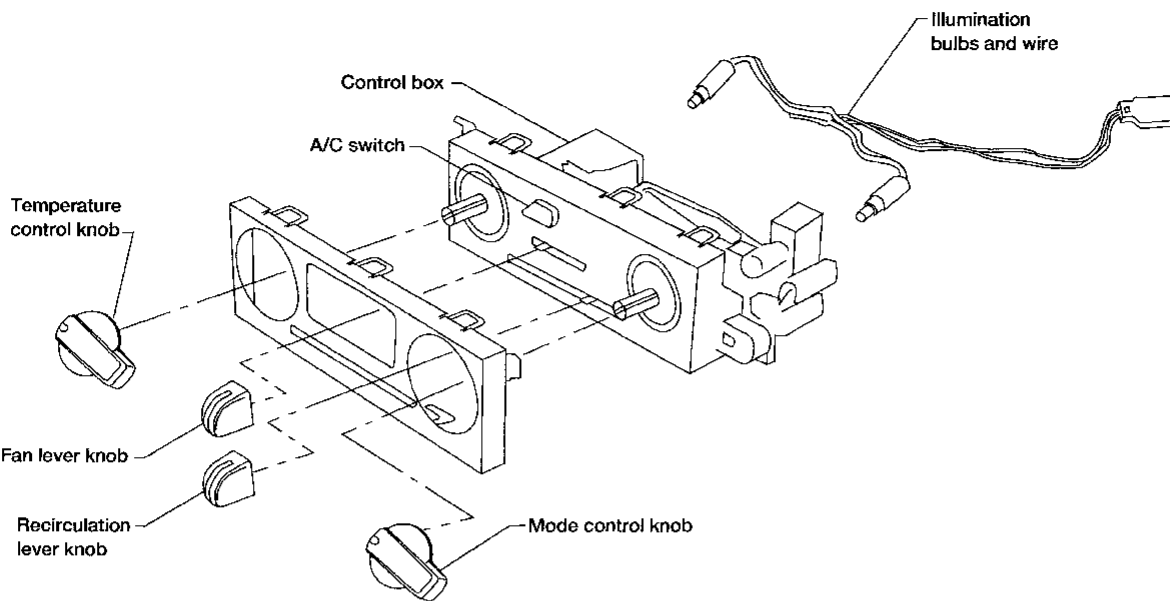
INSTALLATION

Installation is basically the reverse order of removal.

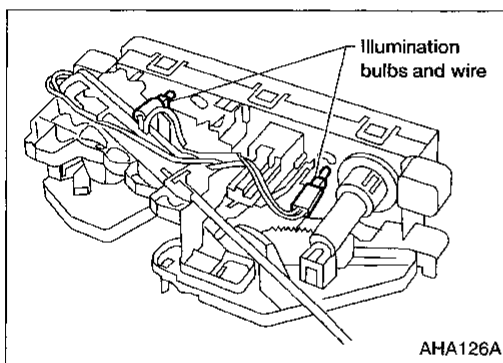
- **Recharge the A/C system. Refer to HA-51.**

Fan Lever and Illumination Bulbs

SEC. 272



AHA134A



AHA126A

REMOVAL

1. Remove A/C & Heat control. Refer to BT section ("Instrument Panel").
2. Loosen illumination bulbs and wire and pull out.

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

HA

EL

IDX

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

COMPRESSOR

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	Poly V type

LUBRICANT

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

REFRIGERANT

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

Inspection and Adjustment

ENGINE IDLING SPEED

When A/C is ON

- Refer to EC section ("Inspection and Adjustment", "SERVICE DATA AND SPECIFICATIONS").

BELT TENSION

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

COMPRESSOR CLUTCH

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