

HEATER & AIR CONDITIONER

SECTION HA

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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".

PRECAUTIONS AND PREPARATION

Supplemental Restraint System "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 on the instrument panel on the passenger side), a diagnosis sensor unit, warning lamp, wiring harness and spiral cable. Information necessary to service the system safely is included in the **BF section** of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.
- All SRS air bag electrical wiring harnesses and connectors are covered with yellow outer insulation. Do not use electrical test equipment on any circuit related to the SRS "Air bag".

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

WARNING:

- CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. These refrigerants must never be mixed, even in the smallest amounts. If the refrigerants are mixed, compressor failure is likely to occur.
- Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If lubricant other than that specified is used, compressor failure is likely to occur.
- The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:
 - a: When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.
 - b: When installing refrigerant components to a vehicle, do not remove the caps (unseal) until just before connecting the components. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.
 - c: Only use the specified lubricant from a sealed container. Immediately reseal containers after dispensing the lubricant. Lubricant in containers without proper sealing will become moisture saturated. Such lubricant should be disposed of properly.
 - d: Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. To remove R-134a from the A/C system, use certified service equipment meeting SAE J2210 (R-134a recycling equipment) or J2209 (R-134a recovery equipment) requirements. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.
 - e: Do not allow lubricant (Nissan A/C System Oil Type S) to come in contact with styrofoam parts. Damage may result.

General Refrigerant Precautions

WARNING:

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

PRECAUTIONS AND PREPARATION

Precautions for Refrigerant Connection

WARNING:

Make sure all refrigerant is discharged into the recycling equipment and the pressure in the system is less than atmospheric pressure. Then gradually loosen the discharge side hose fitting and remove it.

CAUTION:

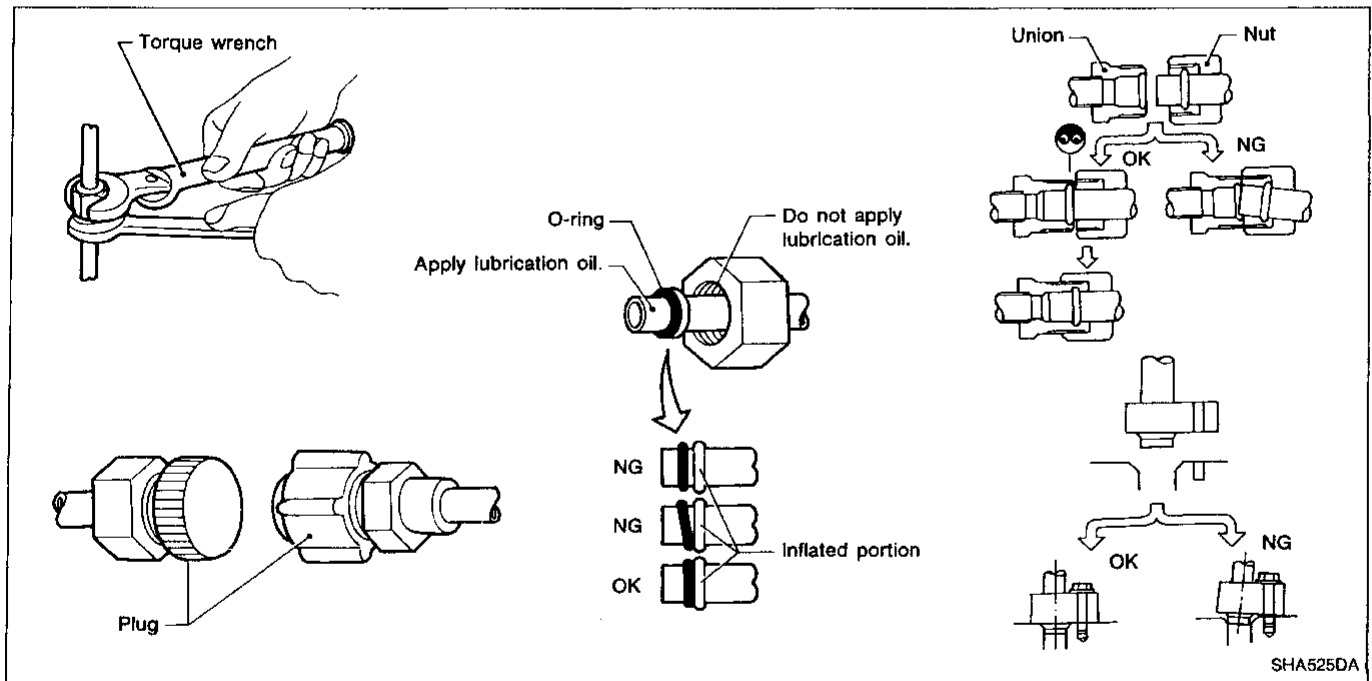
When replacing or cleaning refrigerant cycle components, observe the following.

- When the compressor is removed, store it in the same position as it is when mounted on the car. Failure to do so will cause lubricant to enter the low pressure chamber.
- When connecting tubes, always use a torque wrench and a back-up wrench.
- After disconnecting tubes, immediately plug all openings to prevent entry of dirt and moisture.
- When installing an air conditioner in the vehicle, connect the pipes as the final stage of the operation. Remove the seal caps of the pipes and other components just before connecting such pipes and components.
- Allow components stored in cool areas to warm to working area temperature before removing the seal caps. This is to prevent the condensation of moisture 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.

Lubricant name: Nissan A/C System Oil Type S

Part number: KLH00-PAGS0

- 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 from connections. When the gas leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.

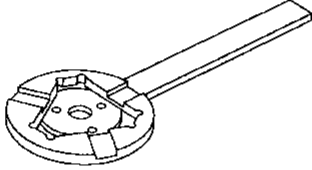
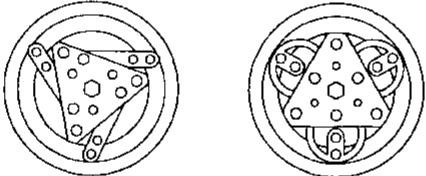
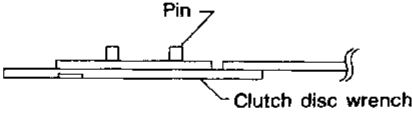
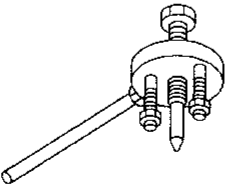
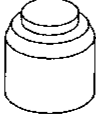


PRECAUTIONS AND PREPARATION

Precautions for Servicing Compressor

- Attach a blind plug to the suction port (low pressure) and discharge port (high pressure) of the compressor. This will prevent lubricant from leaking and dust from getting inside.
- When the compressor is removed, store it in the same position as it is when mounted on the car.
- When replacing or repairing compressor, remove lubricant from the compressor and check the lubricant quantity extracted.
- Remove lubricant from new compressor so that the lubricant quantity is equal to that of removed compressor. See HA-65.
- Do not allow dirt or lubricant to attach on the friction surfaces between clutch and pulley. If the surface is contaminated, with lubricant, wipe it off by using a clean waste cloth moistened with thinner.
- After compressor service operation, turn the compressor shaft by hand more than five turns in both directions. This will equalize lubricant distribution inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for one hour.
- When replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation.

Special Service Tools

Tool number (Kent-Moore No.) Tool name	Description
KV99106100 (J-41260) Clutch disc wrench	<p data-bbox="979 842 1211 867">Removing center bolt</p>  <p data-bbox="410 1010 464 1031">NT232</p>  <p data-bbox="410 1230 699 1367">When replacing the magnet clutch in the above compressor, use a clutch disc wrench with the pin side on the clutch disc to remove it.</p> <p data-bbox="716 1230 976 1367">When replacing the magnet clutch in the above compressor, use a clutch disc wrench with the flat side on the clutch disc to remove it.</p>  <p data-bbox="651 1377 699 1398">Pin</p> <p data-bbox="716 1461 902 1482">Clutch disc wrench</p> <p data-bbox="410 1514 464 1535">NT233</p>
KV99232340 (J-38874) or KV992T0001 Clutch disc puller	<p data-bbox="979 1556 1211 1581">Removing clutch disc</p>  <p data-bbox="410 1759 464 1780">NT234</p>
KV99106200 (J-41261) Pulley installer	<p data-bbox="979 1799 1146 1824">Installing pulley</p>  <p data-bbox="410 1961 464 1982">NT235</p>

PRECAUTIONS AND PREPARATION

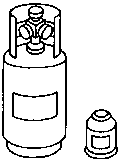
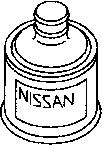
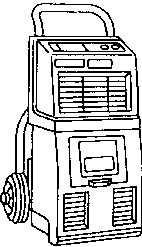
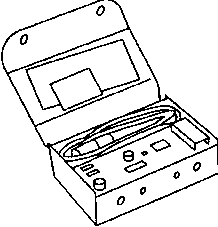
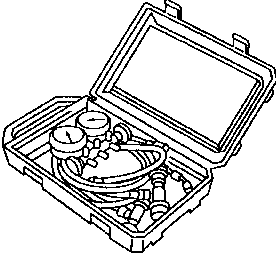
HFC-134a (R-134a) Service Tools and Equipment

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

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

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

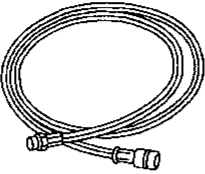
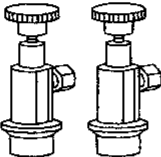

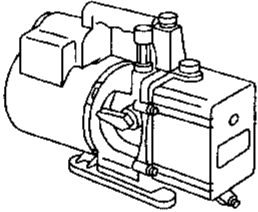
Adapters that convert one size fitting to another must never be used: refrigerant/lubricant contamination will occur and compressor failure will result.

Tool number (Kent-Moore No.) Tool name	Description	Note
HFC-134a (R-134a) refrigerant	 NT196	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size ● large container 1/2"-16 ACME
KLH00-PAGS0 (—) Nissan A/C System Oil Type S	 NT197	Type: Poly alkylene glycol oil (PAG), type S Application: HFC-134a (R-134a) swash plate (piston) compressors (Nissan only) Lubricity: 40 ml (1.4 US fl oz, 1.4 Imp fl oz)
(J-39500-NI) Recovery/Recycling equipment (ACR4)	 NT195	Function: Refrigerant Recovery and Recycling and Recharging
(J-39400) Electrical leak detector	 NT198	Power supply: ● DC 12 V (Cigarette lighter)
(J-39183) Manifold gauge set (with hoses and couplers)	 NT199	Identification: ● The gauge face indicates R-134a. Fitting size: Thread size ● 1/2"-16 ACME

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PRECAUTIONS AND PREPARATION

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

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

PRECAUTIONS AND PREPARATION

Precautions for Service Equipment

RECOVERY/RECYCLING EQUIPMENT

Be certain to follow the manufacturers instructions for machine operation and machine maintenance. Never introduce any refrigerant other than that specified into the machine.

ELECTRONIC LEAK DETECTOR

Be certain to follow the manufactures instructions for tester operation and tester maintenance.

VACUUM PUMP

The lubricant contained inside the vacuum pump is not compatible with the specified lubricant for HFC-134a (R-134a) A/C systems. The vent side of the vacuum pump is exposed to atmospheric pressure. So the vacuum pump lubricant may migrate out of the pump into the service hose. This is possible when the pump is switched off after evacuation (vacuuming) and hose is connected to it.

To prevent this migration, use a manual valve situated near the hose-to-pump connection, as follows.

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

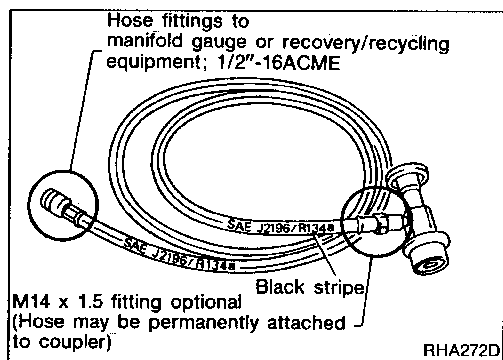
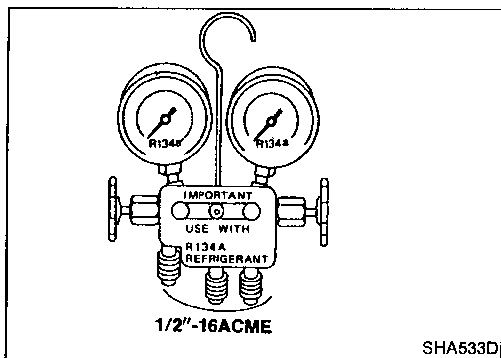
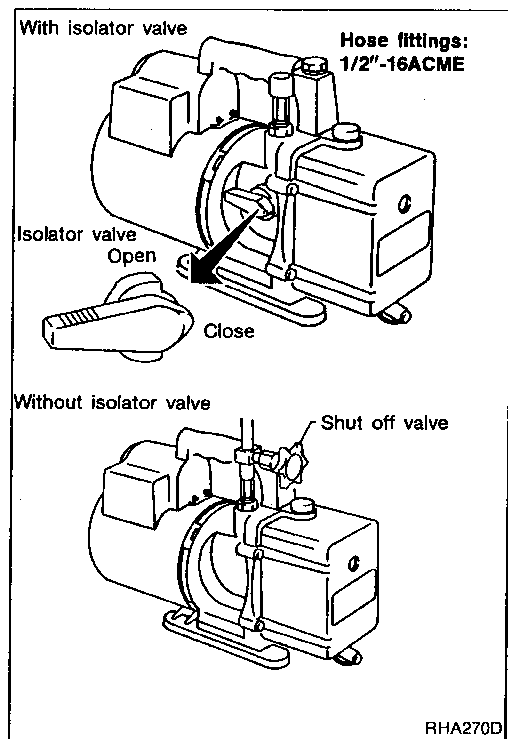
Some one-way valves open when vacuum is applied and close under a no vacuum condition. Such valves may restrict the pump's ability to pull a deep vacuum and are not recommended.

MANIFOLD GAUGE SET

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

SERVICE HOSES

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

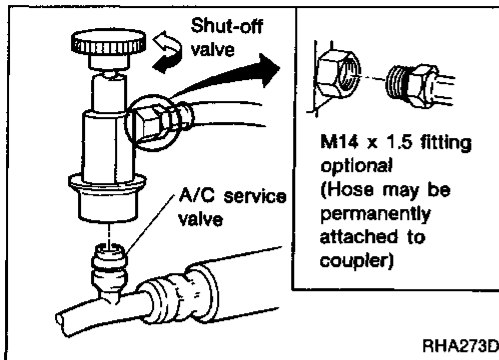


PRECAUTIONS AND PREPARATION

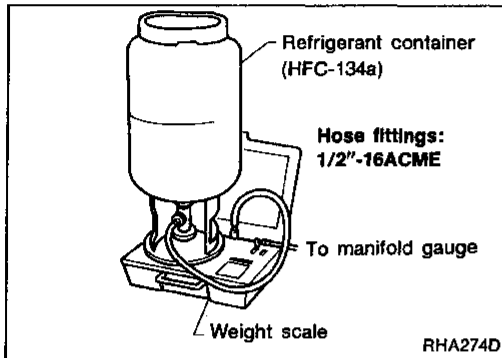
Precautions for Service Equipment (Cont'd)

SERVICE COUPLERS

Never attempt to connect HFC-134a (R-134a) service couplers to an CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not connect to the CFC-12 (R-12) system. Even so, CFC-12 (R-12) refrigerant and lubrication oil can be discharged into the HFC-134a (R-134a) coupler, causing contamination.



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 and no other refrigerant other than HFC-134a (R-134a) (along with specified lubricant) has not been used with the scale.

CHARGING CYLINDER

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

DESCRIPTION

Refrigeration Cycle

REFRIGERANT FLOW

The refrigerant flows in the standard pattern. It flows from compressor through condenser, liquid tank, evaporator and back to 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.

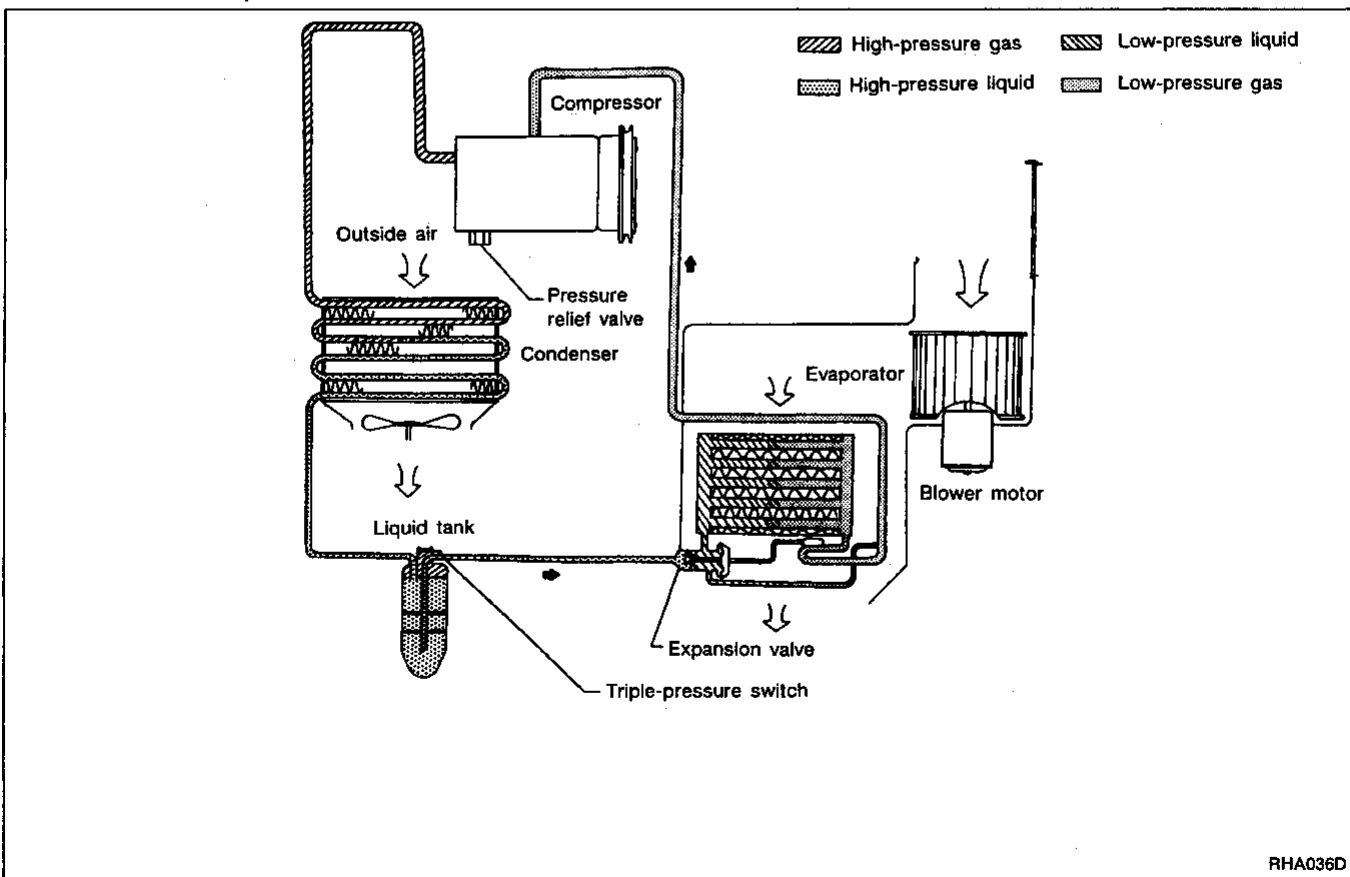
REFRIGERANT SYSTEM PROTECTION

Triple-pressure switch

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

Pressure relief valve

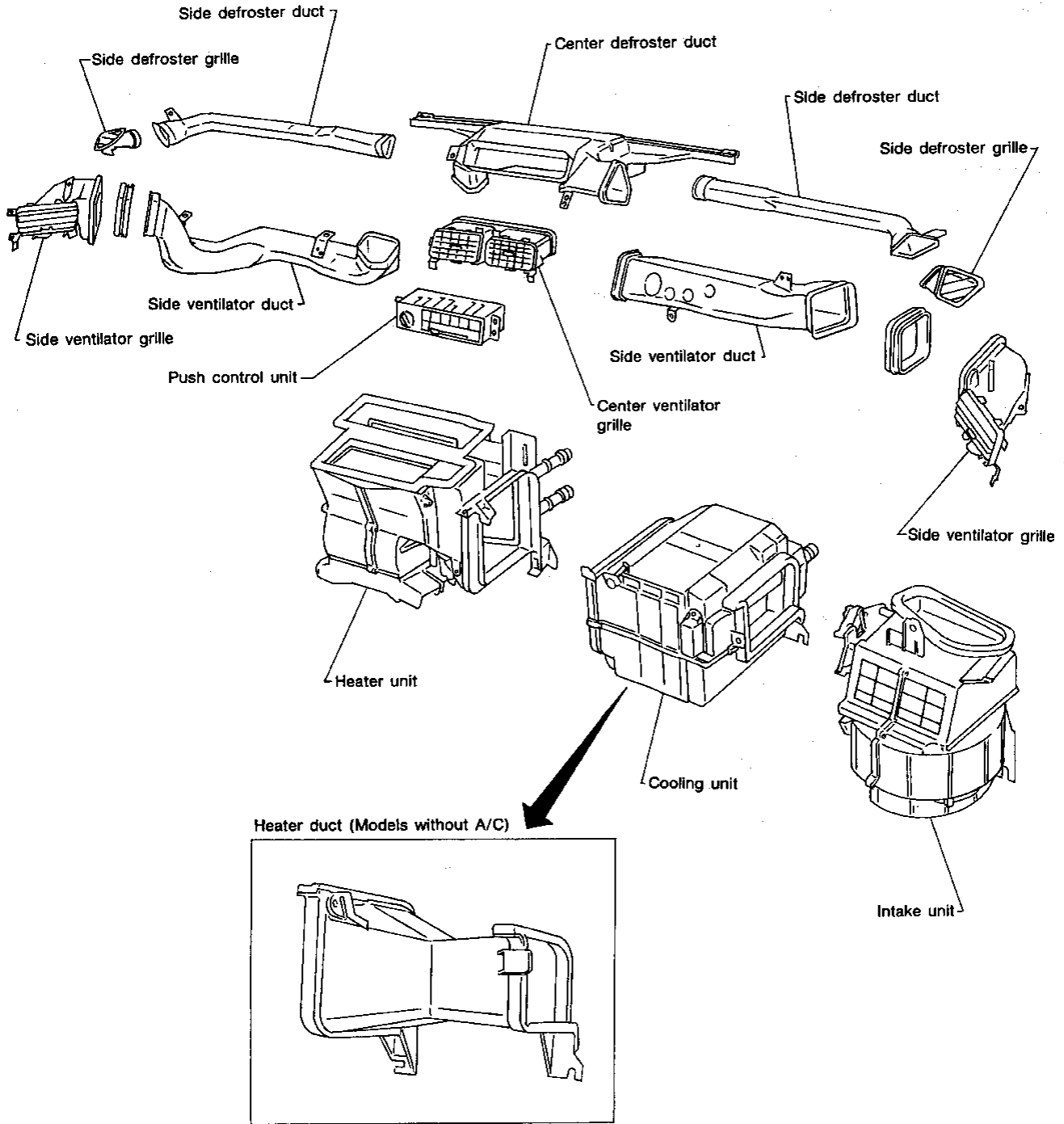
The refrigerant system is also protected by a pressure relief valve. The valve is located on the bottom of the compressor. When refrigerant pressure in the system increases abnormally [over 3,727 kPa (38 kg/cm², 540 psi)], the relief valve's release port opens automatically. The valve then releases refrigerant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



DESCRIPTION

Component Layout

SEC. 270-271-272-273-685

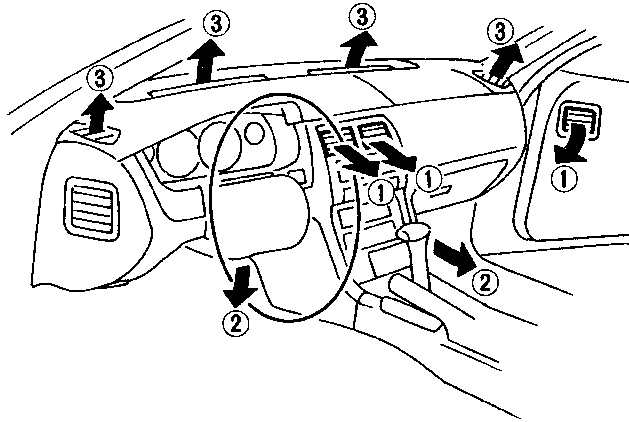


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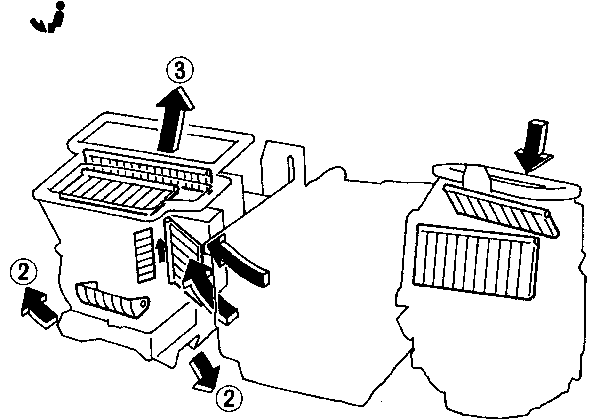
DESCRIPTION

Discharge Air Flow

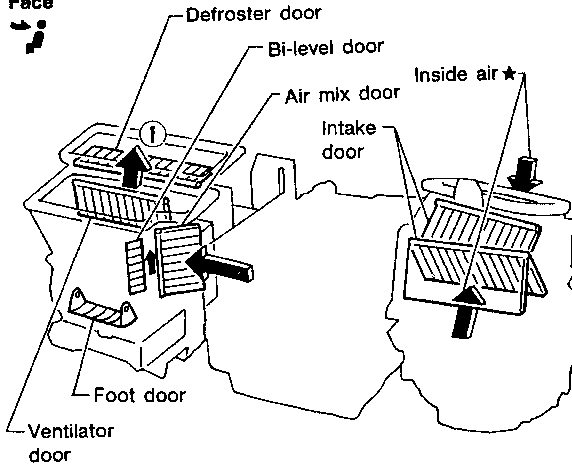
Air outlets



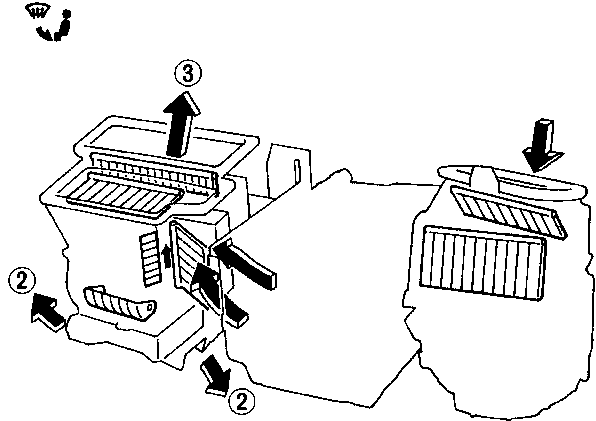
Foot



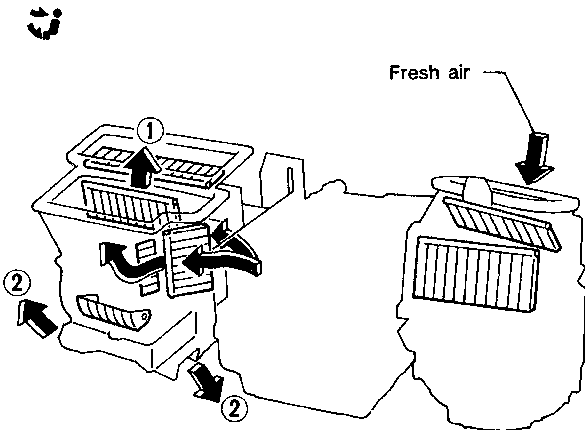
Face



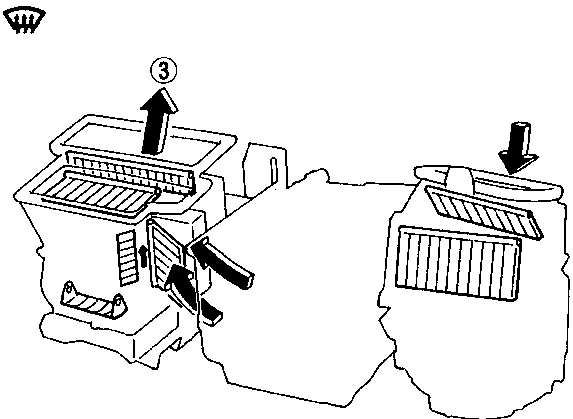
Foot and defroster



Bi-level



Defroster



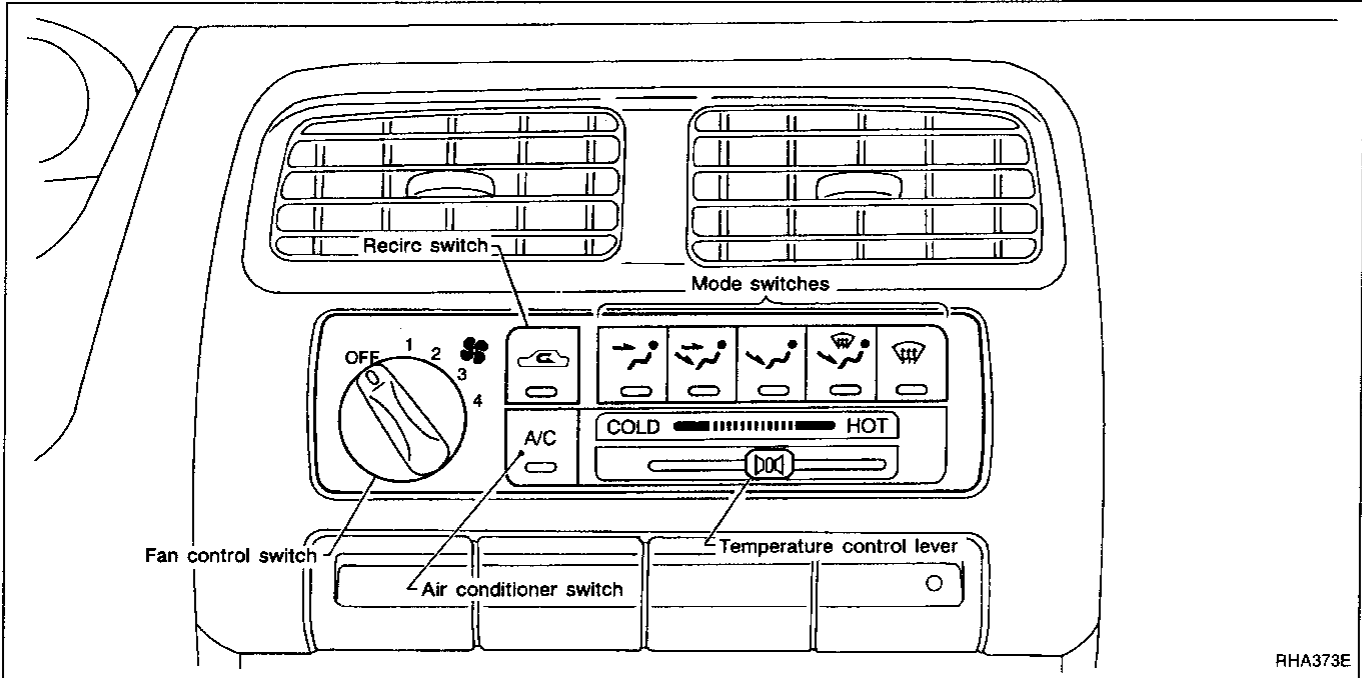
- ① : To face
- ② : To foot
- ③ : To defroster
- ★ : When RECIRC switch is ON

For air flow %, refer to "Operational Check",
"TROUBLE DIAGNOSES".

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DESCRIPTION

Control Operation



FAN CONTROL SWITCH

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

MODE SWITCHES

These switches control the outlet air flow.

In "DEF" or "F/D" mode, the intake door is set to "FRESH". The compressor turns on in the "DEF" mode.

TEMPERATURE CONTROL LEVER

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

RECIRC SWITCH

OFF position:

Outside air is drawn into the passenger compartment.

ON position:

Interior air is recirculated inside the vehicle.

RECIRC is canceled when DEF or F/D is selected, RECIRC resumes when another mode is chosen.

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.

DESCRIPTION

V-6 Variable Displacement Compressor

GENERAL INFORMATION

1. The V-6 variable compressor differs from previous units. The vent temperatures of the V-6 variable compressor do not drop too far below 5°C (41°F) when:
 - evaporator intake air temperature is less than 20°C (68°F)
 - engine is running at speeds less than 1,500 rpm.This is because the V-6 compressor provides a means of "capacity" control.
2. The V-6 variable compressor provides refrigerant control under varying conditions. When ambient temperatures are low, it may not produce high refrigerant pressure discharge (compared to previous units).
3. A "clanking" sound may occasionally be heard during refrigerant charge. The sound indicates that the tilt angle of the swash plate has changed and is not a problem.
4. For air conditioning systems with the V-6 compressor, the clutch remains engaged unless: the system main switch, fan switch or ignition switch is turned OFF. When ambient (outside) temperatures are low or when the amount of refrigerant is insufficient, the clutch is disengaged to protect the compressor.
5. A constant range of suction pressure is maintained when engine speed is greater than a certain value. It normally ranges from 147 to 177 kPa (1.5 to 1.8 kg/cm², 21 to 26 psi) under varying conditions.
In previous compressors, however, suction pressure was reduced with increases in engine speed.

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DESCRIPTION

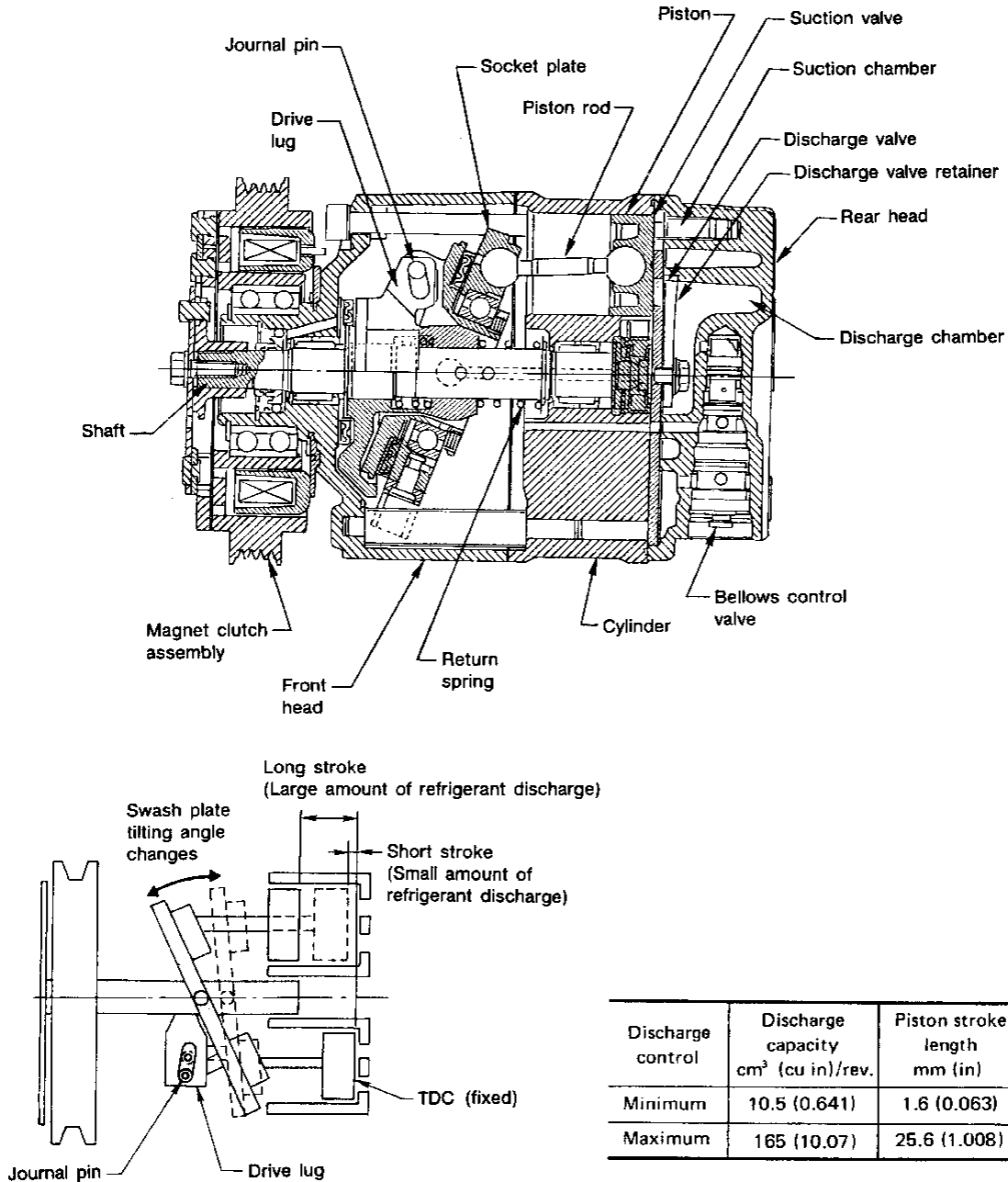
V-6 Variable Displacement Compressor (Cont'd)

DESCRIPTION

General

The variable compressor is basically a swash plate type that changes piston stroke in response to the required cooling capacity.

The tilt of the swash plate allows the piston's stroke to change so that refrigerant discharge can be continuously changed from 10.5 to 165 cm³ (0.641 to 10.07 cu in).



Discharge control	Discharge capacity cm ³ (cu in)/rev.	Piston stroke length mm (in)
Minimum	10.5 (0.641)	1.6 (0.063)
Maximum	165 (10.07)	25.6 (1.008)

RHA969DA

DESCRIPTION

V-6 Variable Displacement Compressor (Cont'd)

Operation

1. Operation control valve

Operation control valve is located in the suction port (low-pressure) side, and opens or closes in response to changes in refrigerant suction pressure.

Operation of the valve controls the internal pressure of the crankcase.

The angle of the swash plate is controlled between the crankcase's internal pressure and the piston cylinder pressure.

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2. Maximum cooling

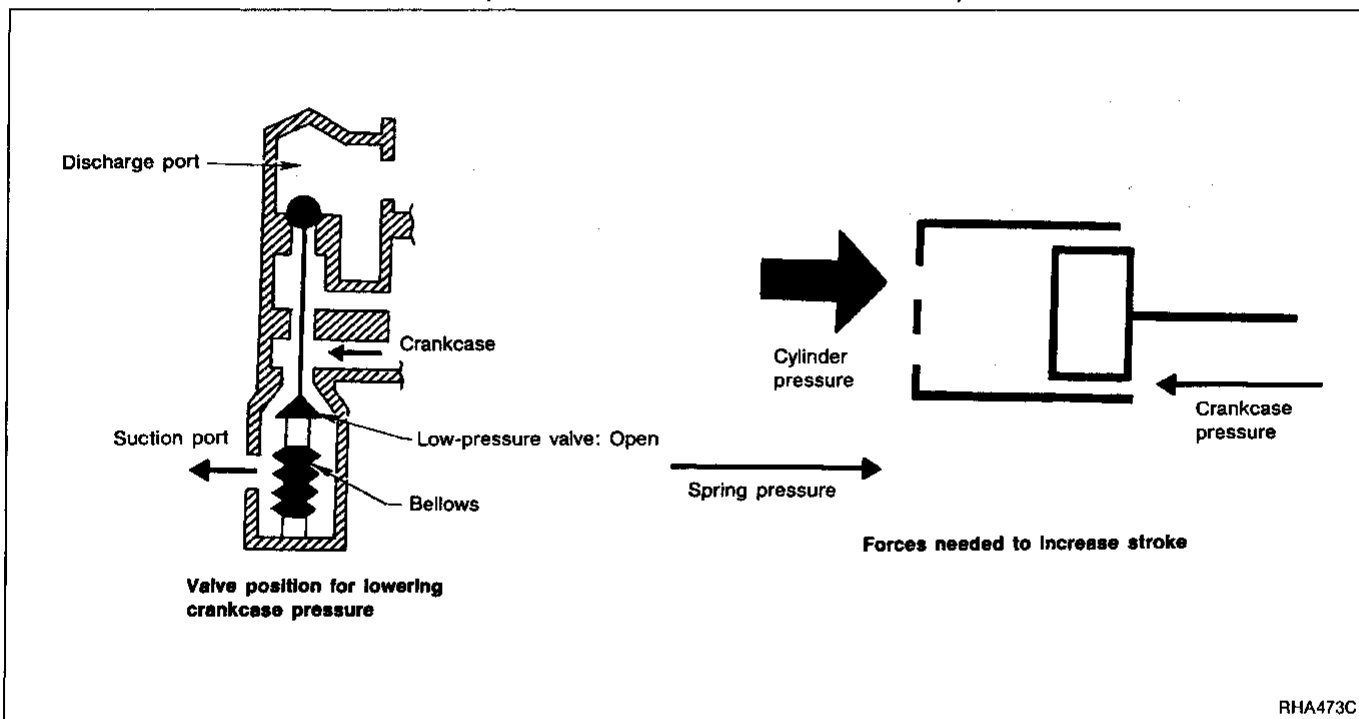
Refrigerant pressure on the low-pressure side increases with an increase in heat loads.

When this occurs, the control valve's bellows compress to open the low-pressure side valve and close the high-pressure side valve.

This causes the following pressure changes:

- the crankcase's internal pressure to equal the pressure on the low-pressure side;
- the cylinder's internal pressure to be greater than the crankcase's internal pressure.

Under this condition, the swash plate is set to the maximum stroke position.



DESCRIPTION

V-6 Variable Displacement Compressor (Cont'd)

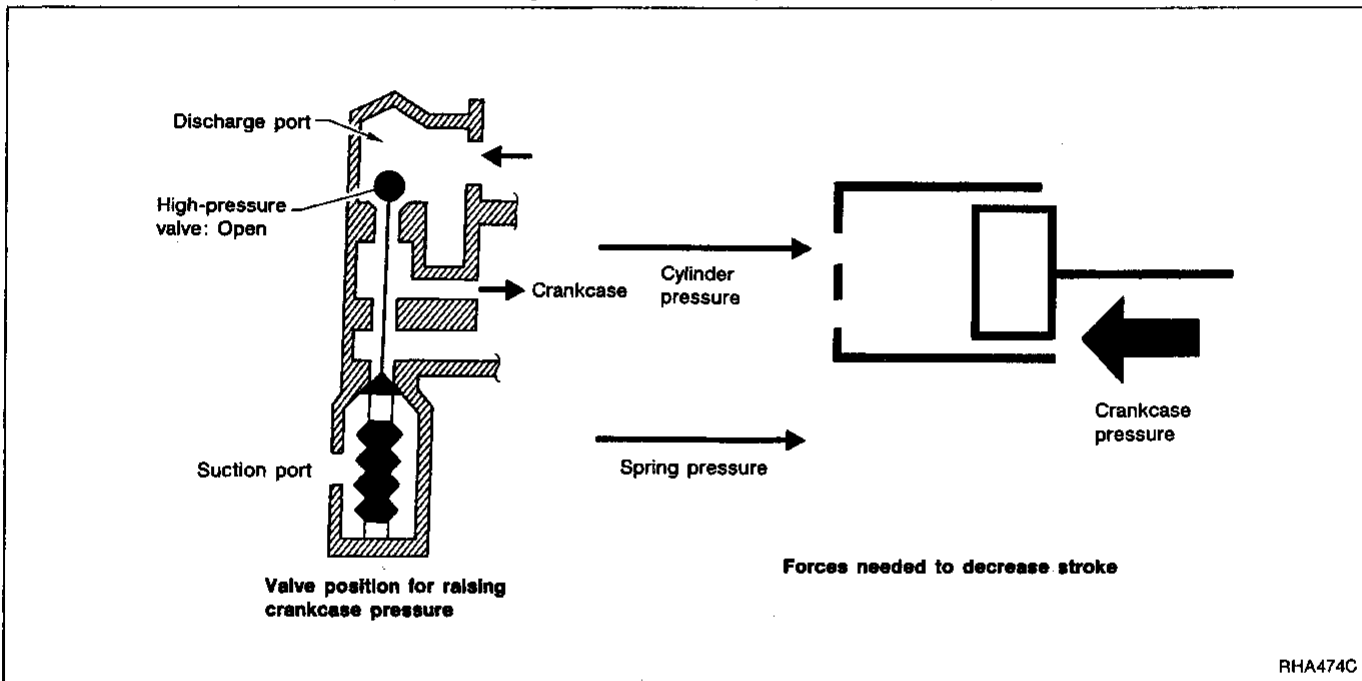
3. Capacity control

- Refrigerant pressure on suction side is low during high speed driving or when ambient or interior temperature is low.
- The bellows expands when refrigerant pressure on the suction pressure side drops below approximately 177 kPa (1.8 kg/cm², 26 psi).

Since suction pressure is low, it makes the suction port close and the discharge port open. Thus, crankcase pressure becomes high as high pressure enters the crankcase.

- The force acts around the journal pin near the swash plate, and is generated by the pressure difference before and behind the piston.

The drive lug and journal pin are located where the piston generates the highest pressure. Piston pressure is between suction pressure P_s and discharge pressure P_d , which is near suction pressure P_s . If crankcase pressure P_c rises due to capacity control, the force around the journal pin makes the swash plate angle decrease and also the piston stroke decrease. In other words, crankcase pressure increase triggers pressure difference between the piston and the crankcase. The pressure difference changes the angle of the swash plate.



DESCRIPTION

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TROUBLE DIAGNOSES

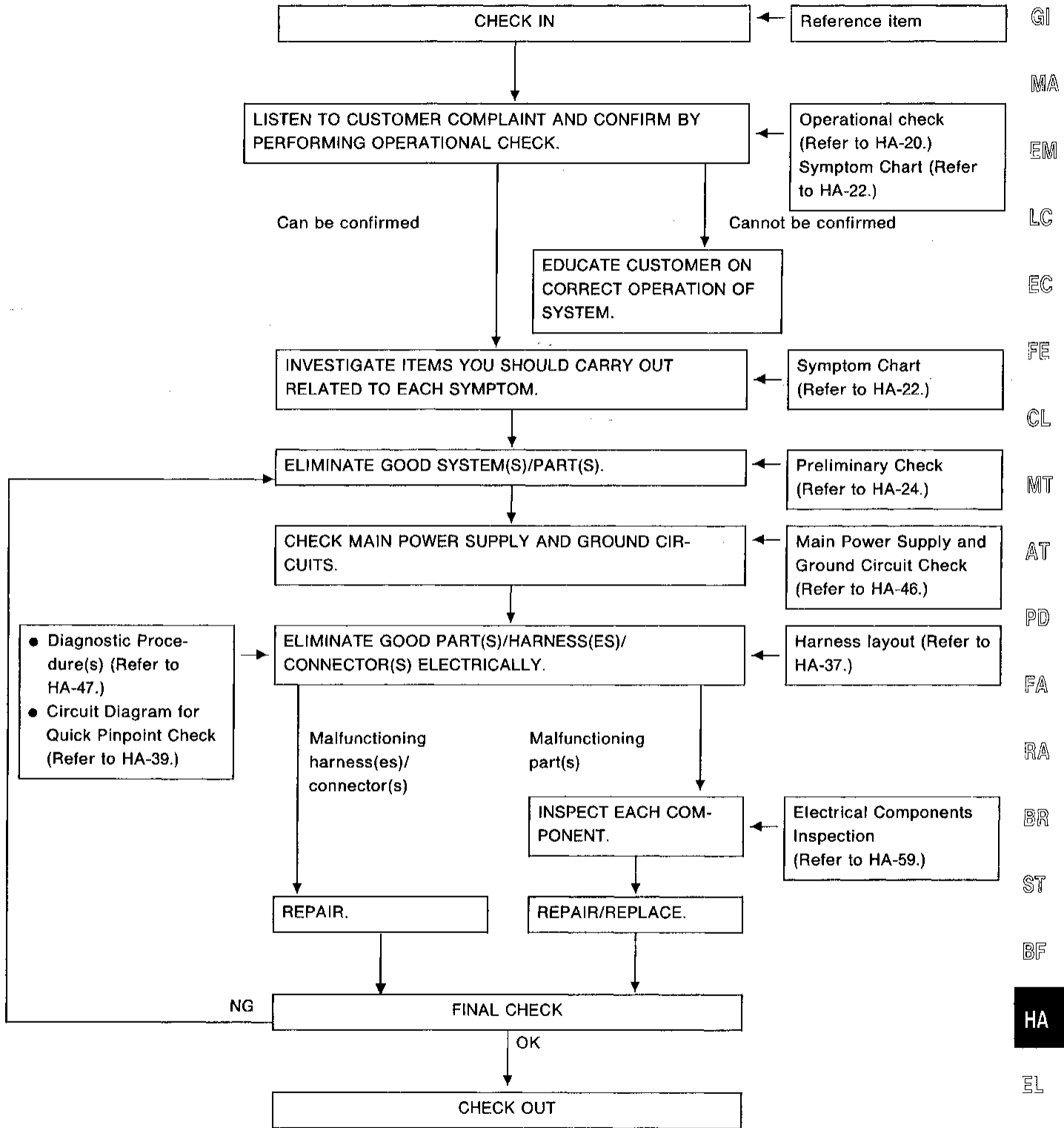
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TROUBLE DIAGNOSES

How to Perform Trouble Diagnoses for Quick and Accurate Repair

WORK FLOW



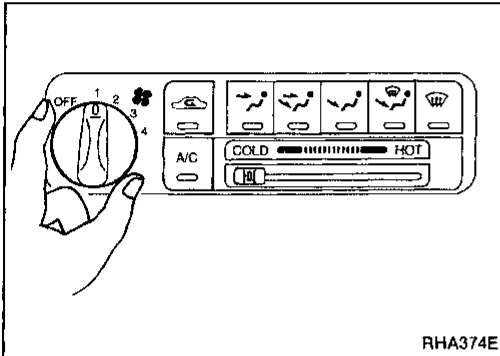
TROUBLE DIAGNOSES

Operational Check

The purpose of the operational check is to confirm that the system is as it should be. The systems which will be checked are the blower, mode (discharge air), intake air, temperature decrease, temperature increase and A/C switch.

CONDITIONS:

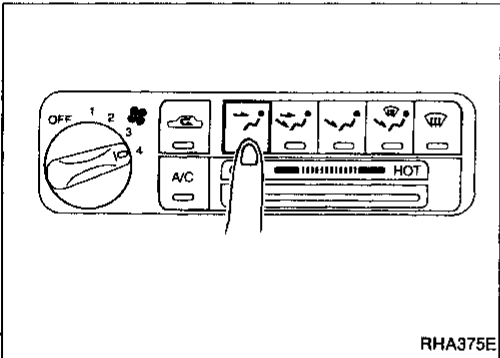
- Engine running and at normal operating temperature.



PROCEDURE:

1. Check blower

- 1) Turn fan switch to 1-speed.
Blower should operate on low speed.
- 2) Then turn fan switch to 2-speed.
- 3) Continue checking blower speed until all speeds are checked.
- 4) Leave blower on speed 4.



2. Check discharge air.

- 1) Press each mode switch.

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

Refer to "Discharge Air Flow", "DESCRIPTION" (HA-11).

NOTE:

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

Confirm that the intake door position is at FRESH when the F/D button is pressed.

Intake door position is checked in the next step.

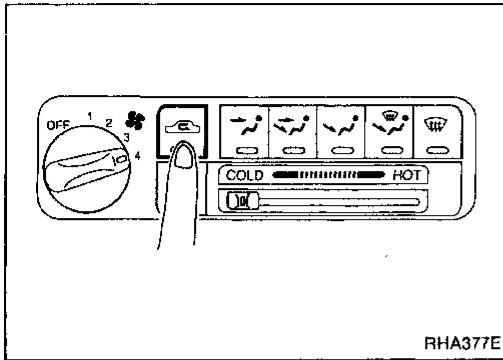
Discharge air flow

Switch mode/ indicator	Air outlet/distribution		
	Face	Foot	Defroster
	100%	—	—
	60%	40%	—
	—	80%	20%
	—	63%	37%
	—	—	100%


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TROUBLE DIAGNOSES

Operational Check (Cont'd)



3. Check recirc

- 1) Press REC  switch
Recirc indicator should illuminate.
- 2) Listen for intake door position change (you should hear blower sound change slightly).

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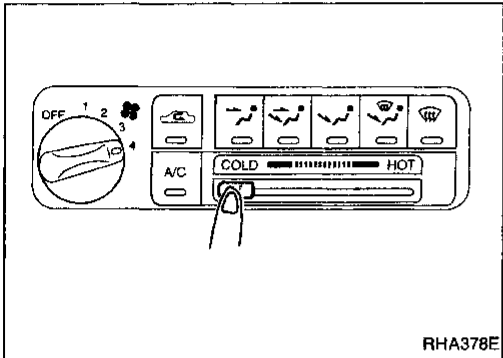
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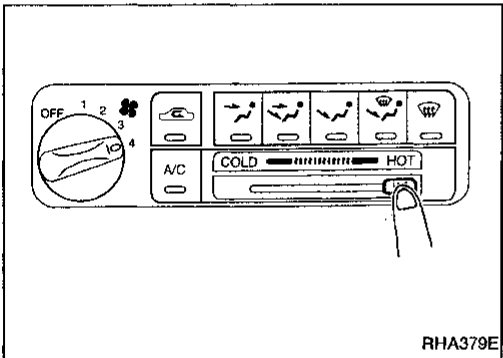
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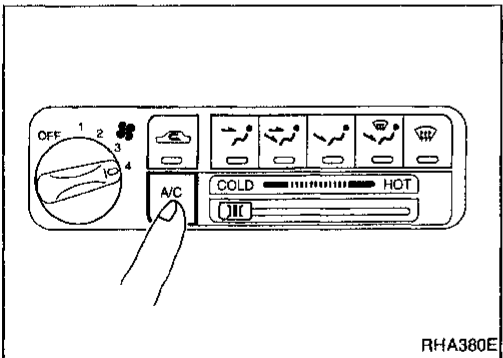
4. Check temperature decrease

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



5. Check temperature increase

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



6. Check air conditioning switch

Move the fan control switch 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

Symptom Chart

DIAGNOSTIC TABLE

PROCEDURE	Preliminary Check						Diagnostic Procedure						Main Power Supply and Ground Circuit Check			
	HA-24	HA-25	HA-26	HA-27	HA-28	HA-29	HA-47	HA-49	HA-51	HA-52	HA-54	HA-55	HA-46	HA-46	HA-46	HA-46
REFERENCE PAGE	HA-24	HA-25	HA-26	HA-27	HA-28	HA-29	HA-47	HA-49	HA-51	HA-52	HA-54	HA-55	HA-46	HA-46	HA-46	HA-46
SYMPTOM	Preliminary check 1	Preliminary check 2	Preliminary check 3	Preliminary check 4	Preliminary check 5	Preliminary check 6	Diagnostic procedure 1	Diagnostic procedure 2	Diagnostic procedure 3	Diagnostic procedure 4	Diagnostic procedure 5	Diagnostic procedure 6	15A Fuses (#19, #20)	7.5A Fuse (#21)	7.5A Fuse (#33 or #48)	Push control unit
A/C does not blow cold air.		①					○			○			○	○		
Insufficient heating.						①	○					○				
Blower motor does not rotate.		①					②						○			
Air outlet does not change.				①				②						○		○
Intake door does not change in VENT, B/L or FOOT mode.									①					○		○
Intake door is not set at "FRESH" in DEF or F/D mode.	①								○					○		○
Air mix door does not change.		①								②						
Fresh vent door does not change.											①					
Magnet clutch does not engage when A/C switch and fan switch are ON.		①										②		○	○	
Magnet clutch does not engage in DEF mode.		①	②									○		○	○	
Noise					①											

①, ②: The number means checking order.

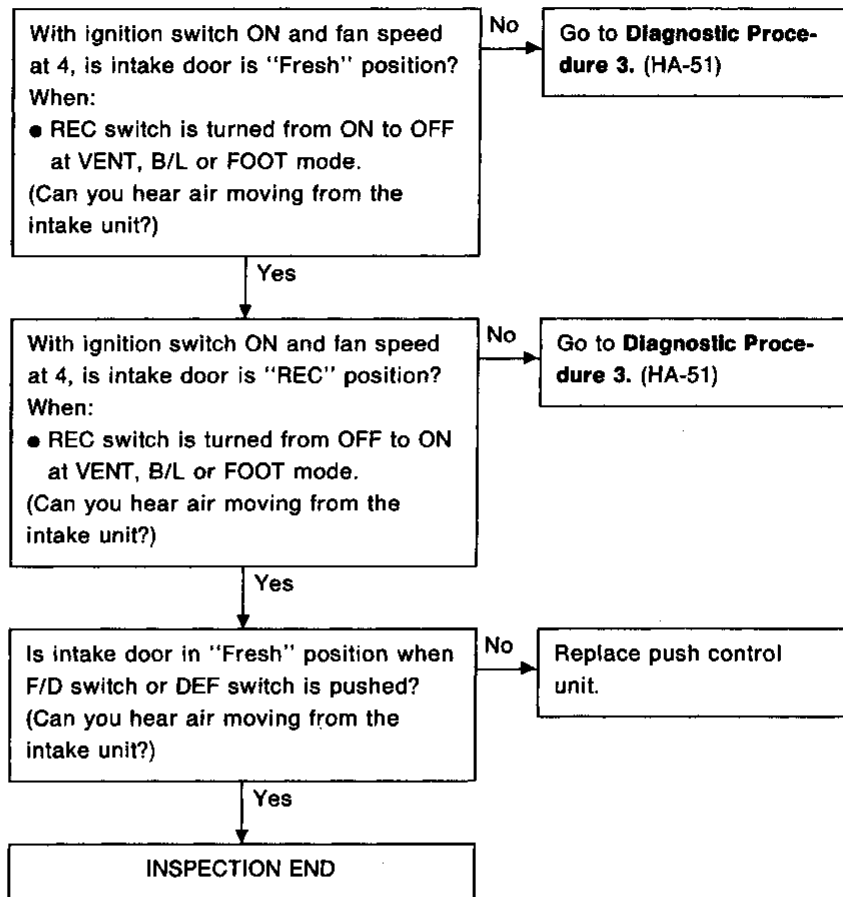
○: Checking order depends on malfunction in each flow chart.

TROUBLE DIAGNOSES

Preliminary Check

PRELIMINARY CHECK 1

Intake door is not set at "FRESH" in DEF or F/D mode.

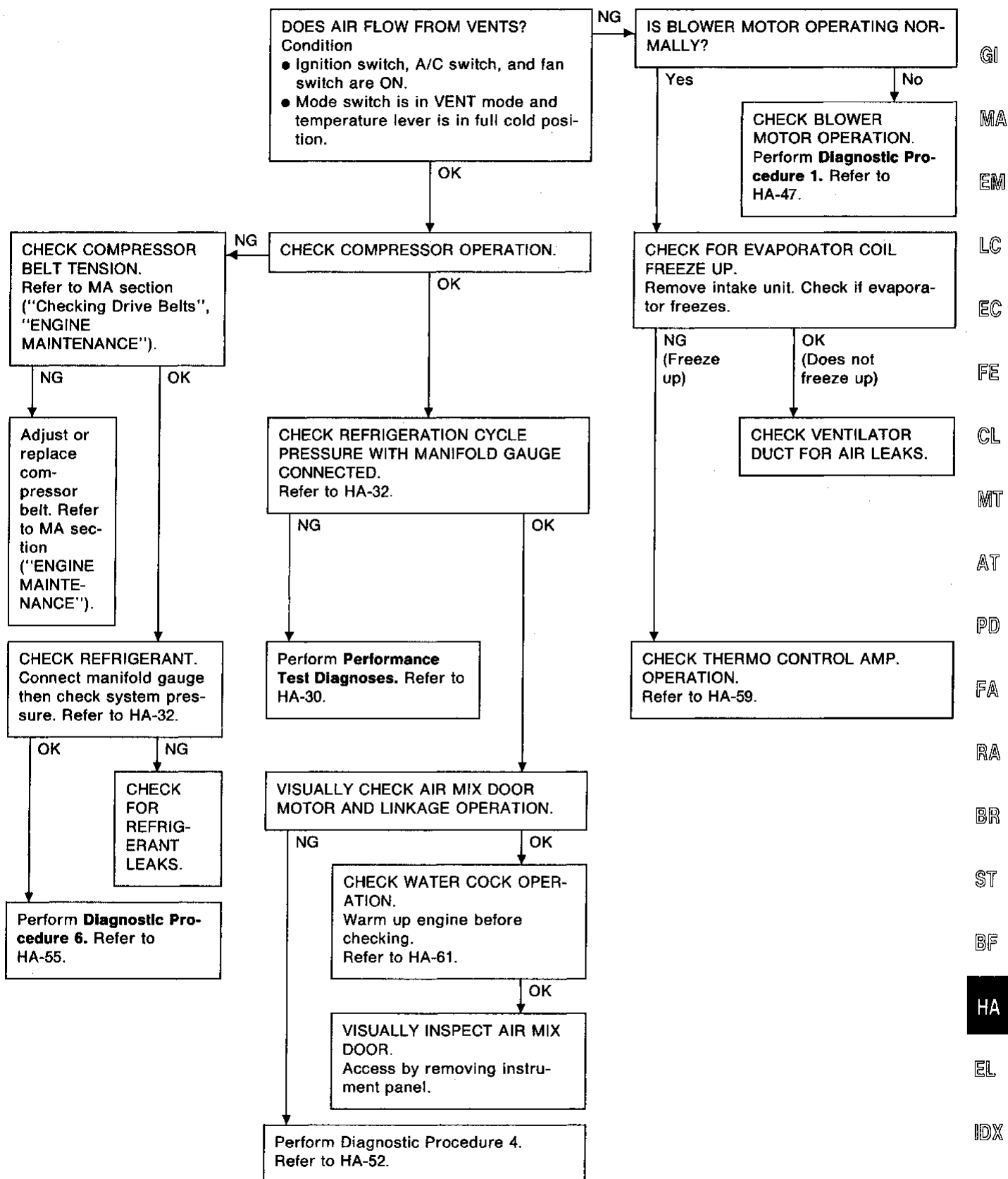


TROUBLE DIAGNOSES

Preliminary Check (Cont'd)

PRELIMINARY CHECK 2

A/C does not blow cold air.



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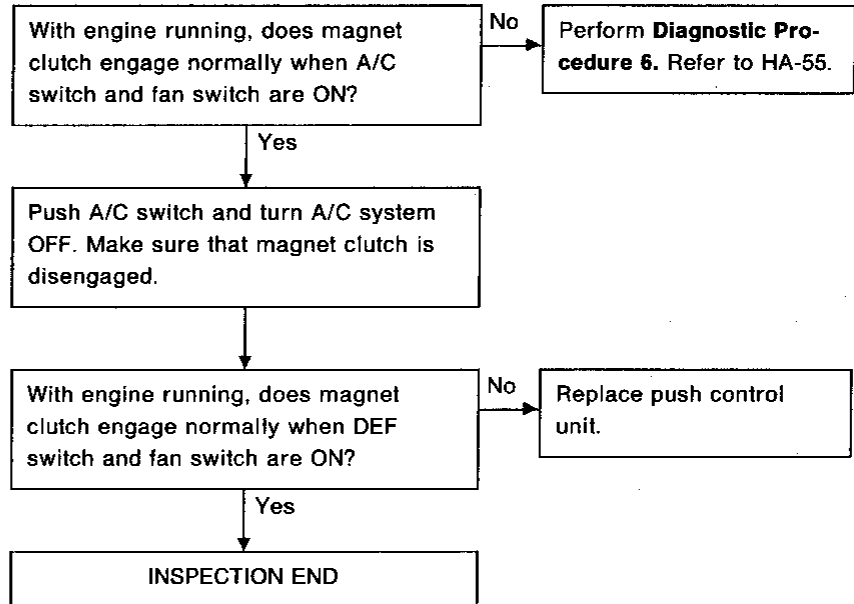
TROUBLE DIAGNOSES

Preliminary Check (Cont'd)

PRELIMINARY CHECK 3

Magnet clutch does not engage in DEF mode.

- Perform PRELIMINARY CHECK 2 before referring to the following flow chart.



TROUBLE DIAGNOSES

Preliminary Check (Cont'd)






PRELIMINARY CHECK 4

Air outlet does not change.

TURN IGNITION SWITCH ON. DOES AIR COME OUT NORMALLY FROM EACH DUCT WHEN EACH MODE SWITCH IS PUSHED?

No

Perform **Diagnostic Procedure 2**. Refer to HA-49.

Switch mode/ Indicator	Air outlet/distribution		
	Face	Foot	Defroster
	100%	—	—
	60%	40%	—
	—	80%	20%
	—	63%	37%
	—	—	100%

Yes

INSPECTION END

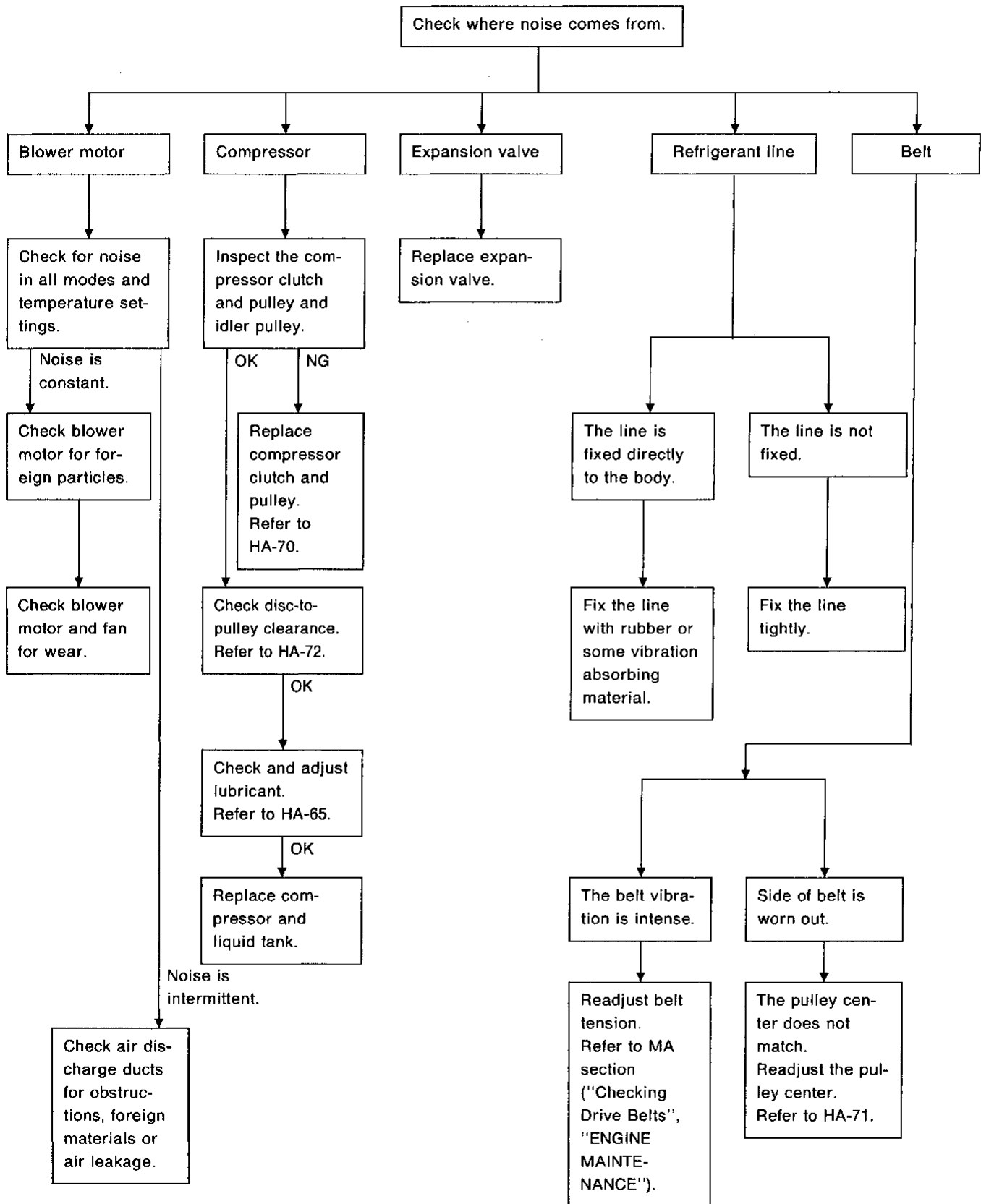
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TROUBLE DIAGNOSES

Preliminary Check (Cont'd)

PRELIMINARY CHECK 5

Noise

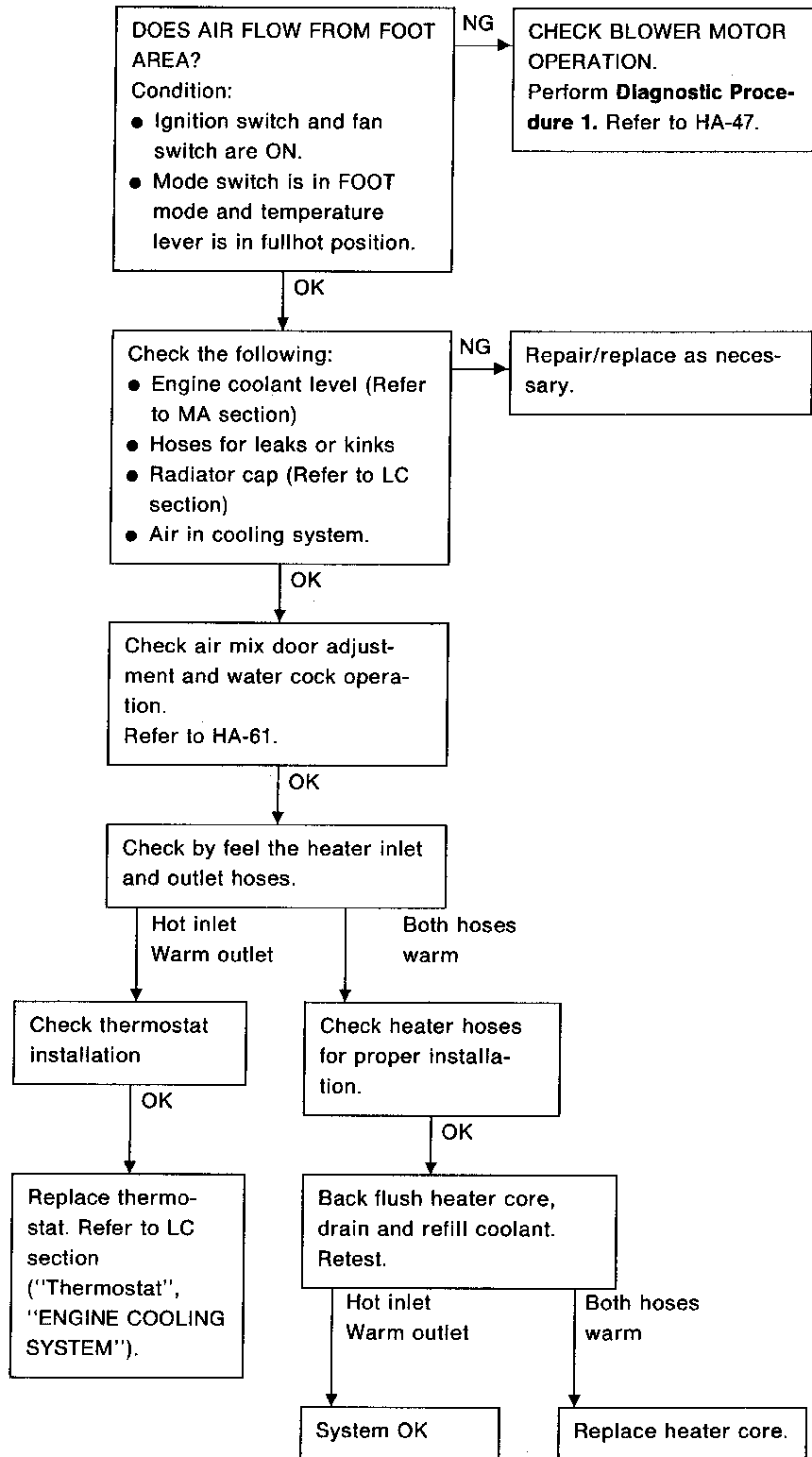


TROUBLE DIAGNOSES

Preliminary Check (Cont'd)

PRELIMINARY CHECK 6

Insufficient heating



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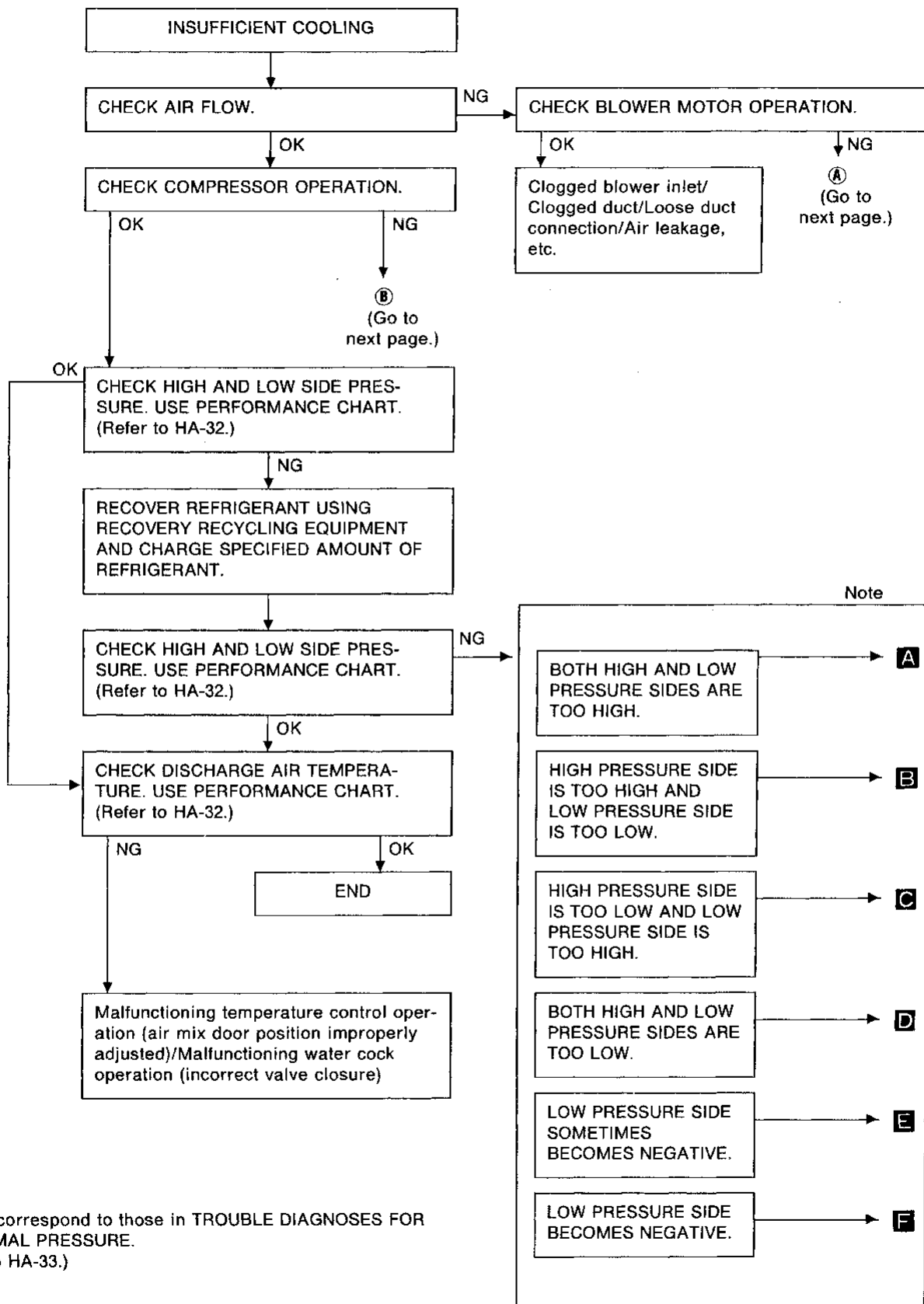
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TROUBLE DIAGNOSES

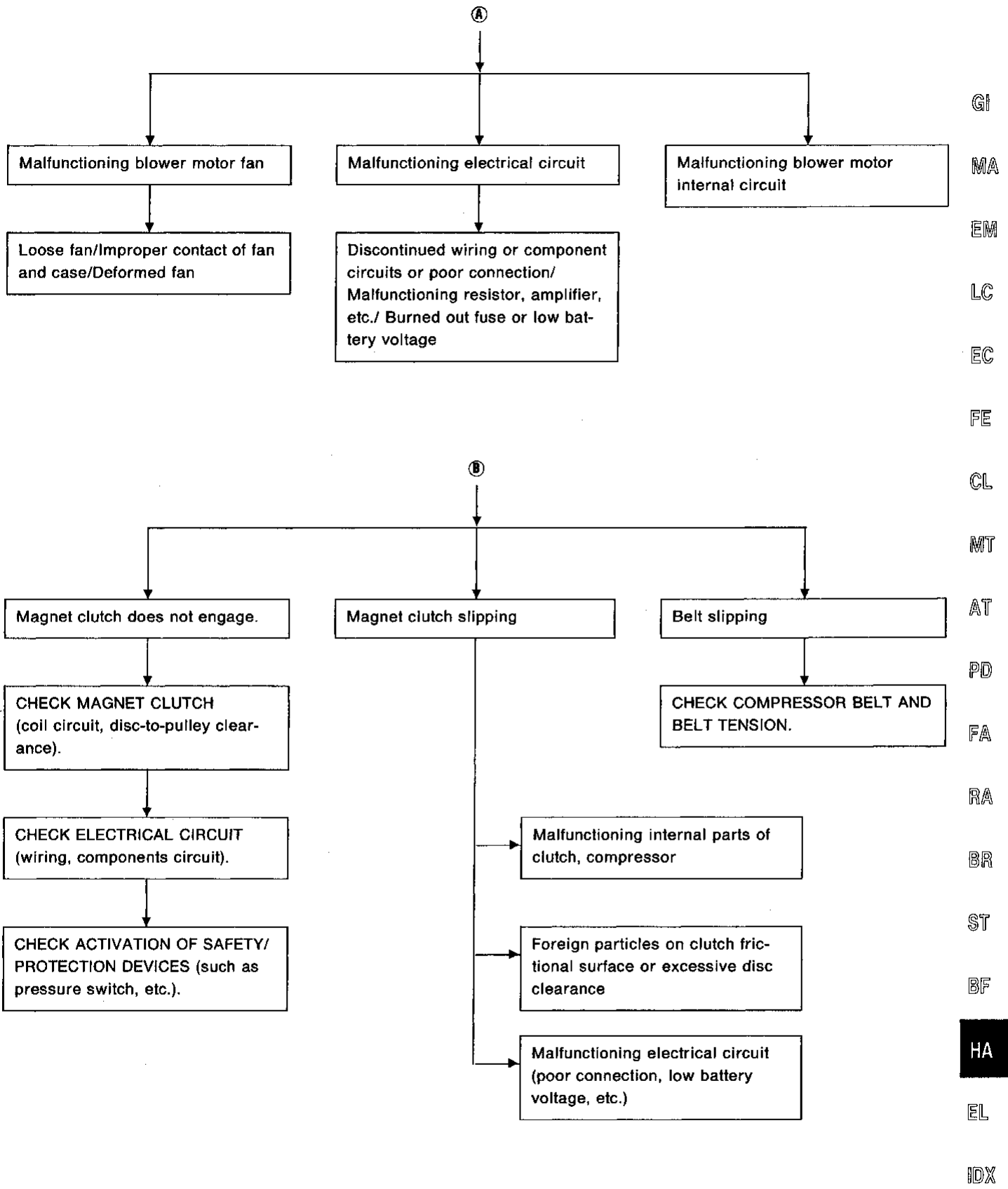
Performance Test Diagnoses INSUFFICIENT COOLING



Note: **A-F** correspond to those in TROUBLE DIAGNOSES FOR ABNORMAL PRESSURE. (Refer to HA-33.)

TROUBLE DIAGNOSES

Performance Test Diagnoses (Cont'd)



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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 (Front driver side only)

Hood: Open

TEMP. setting: Max. COLD

Discharge Air: Face Vent

RECIRC switch: (Recirculation) ON

FAN speed: 4-speed

A/C switch: ON

Engine speed: 1,000 rpm

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

TEST READING

Recirculating-to-discharge air temperature table

Inside air at blower assembly inlet for RECIRC*		Discharge air temperature at center ventilator °C (°F)
Relative humidity %	Air temperature °C (°F)	
50 - 60	20 (68)	3.7 - 6.3 (39 - 43)
	25 (77)	8.3 - 11.5 (47 - 53)
	30 (86)	13.0 - 16.6 (55 - 62)
	35 (95)	17.6 - 21.8 (64 - 71)
	40 (104)	22.2 - 27.0 (72 - 81)
60 - 70	20 (68)	6.3 - 9.2 (43 - 49)
	25 (77)	11.5 - 14.9 (53 - 59)
	30 (86)	16.6 - 20.5 (62 - 69)
	35 (95)	21.8 - 26.1 (71 - 79)
	40 (104)	27.0 - 31.8 (81 - 89)

* Thermometer should be placed at intake unit under RH side of instrument panel.

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)	736 - 892 (7.5 - 9.1, 107 - 129)	147 - 226 (1.5 - 2.3, 21 - 33)
	25 (77)	922 - 1,118 (9.4 - 11.4, 134 - 162)	147 - 226 (1.5 - 2.3, 21 - 33)
	30 (86)	1,157 - 1,393 (11.8 - 14.2, 168 - 202)	147 - 226 (1.5 - 2.3, 21 - 33)
	35 (95)	1,393 - 1,687 (14.2 - 17.2, 202 - 245)	157 - 265 (1.6 - 2.7, 23 - 38)
	40 (104)	1,638 - 2,001 (16.7 - 20.4, 237 - 290)	196 - 324 (2.0 - 3.3, 28 - 47)

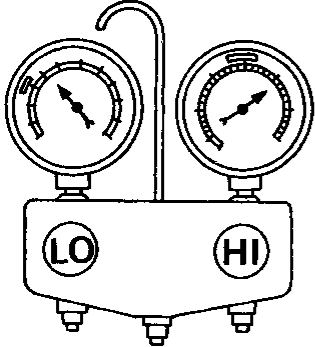
If pressure is not within range, refer to HA-33, "Trouble Diagnoses for Abnormal Pressure".

TROUBLE DIAGNOSES

Trouble Diagnoses for Abnormal Pressure

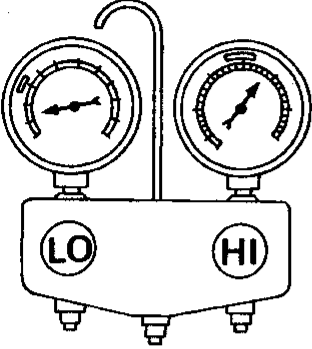
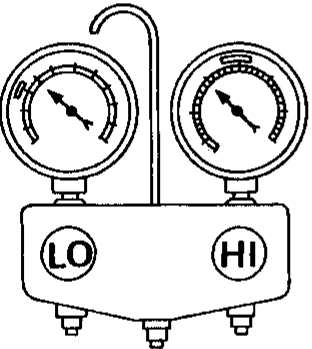
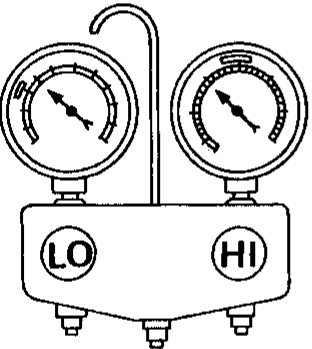
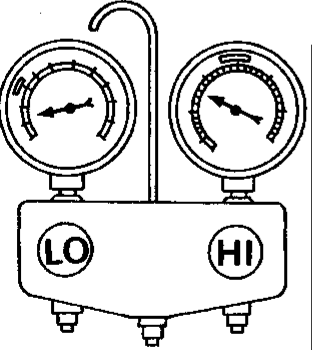
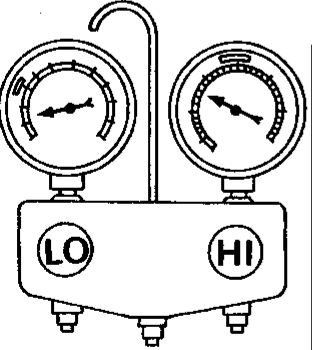
Whenever system's high and/or low side pressure is abnormal, diagnose using a manifold gauge. The marker on top of the gauge scale (see illustrations below) indicates the standard (normal) pressure range for each side. Since the standard (normal) pressure, however, differs from vehicle to vehicle, refer to HA-32 ("Ambient air temperature-to-compressor pressure table").

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Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Both high and low-pressure sides are too high. A  AC359A	<ul style="list-style-type: none"> Pressure is reduced soon after water is splashed on condenser. 	Excessive refrigerant charge in refrigeration cycle	Reduce refrigerant until specified pressure is obtained.
	Air suction by cooling fan is insufficient.	Insufficient condenser cooling performance ↓ ① Condenser fins are clogged. ② Improper fan rotation of cooling fan	<ul style="list-style-type: none"> Clean condenser. Check and repair cooling fan as necessary.
	<ul style="list-style-type: none"> Low-pressure pipe is not cold. When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm², 28 psi). It then decreases gradually thereafter. 	Poor heat exchange in condenser (After compressor operation stops, high pressure decreases too slowly.) ↓ Air in refrigeration cycle	Evacuate repeatedly and recharge system.
	Engine tends to overheat.	Engine cooling systems malfunction.	Check and repair each engine cooling system.
	<ul style="list-style-type: none"> Areas near low-pressure pipe connection and service valves are considerably cold compared with areas near expansion valve outlet or evaporator. 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. ↓ ① Improper thermal valve installation ② Improper expansion valve adjustment	Replace expansion valve.

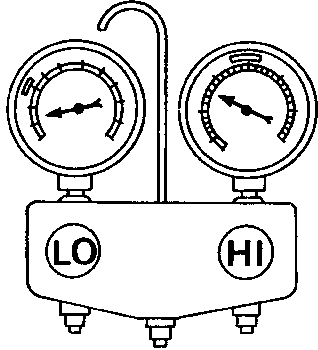
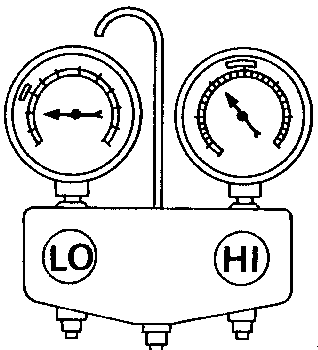
TROUBLE DIAGNOSES

Trouble Diagnoses for Abnormal Pressure (Cont'd)

Gauge Indication	Refrigerant cycle	Probable cause	Corrective action
<p>High-pressure side is too high and low-pressure side is too low.</p> <p>B</p>  <p style="text-align: center;">AC360A</p>	<p>Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot.</p>	<p>High-pressure tube or parts located between compressor and condenser are clogged or crushed.</p>	<ul style="list-style-type: none"> ● Check and repair or replace malfunctioning parts. ● Check lubricant for contamination.
<p>High-pressure side is too low and low-pressure side is too high.</p> <p>C</p>  <p style="text-align: center;">AC356A</p>	<p>High and low-pressure sides become equal soon after compressor operation stops.</p>	<p>Compressor pressure operation is improper.</p> <p style="text-align: center;">↓</p> <p>Damaged inside compressor packings</p>	<p>Replace compressor.</p>
 <p style="text-align: center;">AC356A</p>	<p>No temperature difference between high and low-pressure sides</p>	<p>Compressor discharge capacity does not change. (Compressor stroke is set at maximum.)</p>	<p>Replace compressor.</p>
<p>Both high- and low-pressure sides are too low.</p> <p>D</p>  <p style="text-align: center;">AC353A</p>	<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. ● 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 	<p>Liquid tank inside is clogged a little.</p>	<ul style="list-style-type: none"> ● Replace liquid tank. ● Check lubricant for contamination.
 <p style="text-align: center;">AC353A</p>	<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 	<p>High-pressure pipe located between liquid tank and expansion valve is clogged.</p>	<ul style="list-style-type: none"> ● Check and repair malfunctioning parts. ● Check lubricant for contamination.

TROUBLE DIAGNOSES

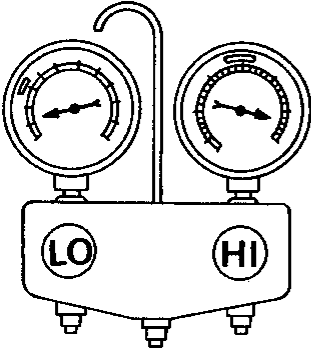
Trouble Diagnoses for Abnormal Pressure (Cont'd)

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Both high- and low-pressure sides are too low.</p> <p>D</p>  <p style="text-align: center;">AC353A</p>	<p>There is a big temperature difference between expansion valve inlet and outlet while the valve itself is frosted.</p>	<p>Expansion valve closes a little compared with the specification.</p> <p style="text-align: center;">↓</p> <p>① Improper expansion valve adjustment ② Malfunctioning thermal valve ③ Outlet and inlet may be clogged.</p>	<ul style="list-style-type: none"> ● Remove foreign particles by using compressed air. ● Check lubricant for contamination.
	<p>Areas near low-pressure pipe connection and service valve are extremely cold as compared with areas near expansion valve outlet and evaporator.</p>	<p>Low-pressure pipe is clogged or crushed.</p>	<ul style="list-style-type: none"> ● Check and repair malfunctioning parts. ● Check lubricant for contamination.
<p>Air flow volume is not enough or is too low.</p>	<p>Evaporator is frozen.</p> <p style="text-align: center;">↓</p> <p>Compressor discharge capacity does not change. (Compressor stroke is set at maximum length.)</p>	<p>Replace compressor.</p>	
	<p>Low-pressure side sometimes becomes negative.</p> <p>E</p>  <p style="text-align: center;">AC354A</p>	<ul style="list-style-type: none"> ● Air conditioning system does not function and does not cyclically cool the compartment air. ● The system constantly functions for a certain period of time after compressor is stopped and restarted. 	<p>Refrigerant does not discharge cyclically.</p> <p style="text-align: center;">↓</p> <p>Moisture is frozen at expansion valve outlet and inlet.</p> <p style="text-align: center;">↓</p> <p>Water is mixed with refrigerant.</p>

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TROUBLE DIAGNOSES

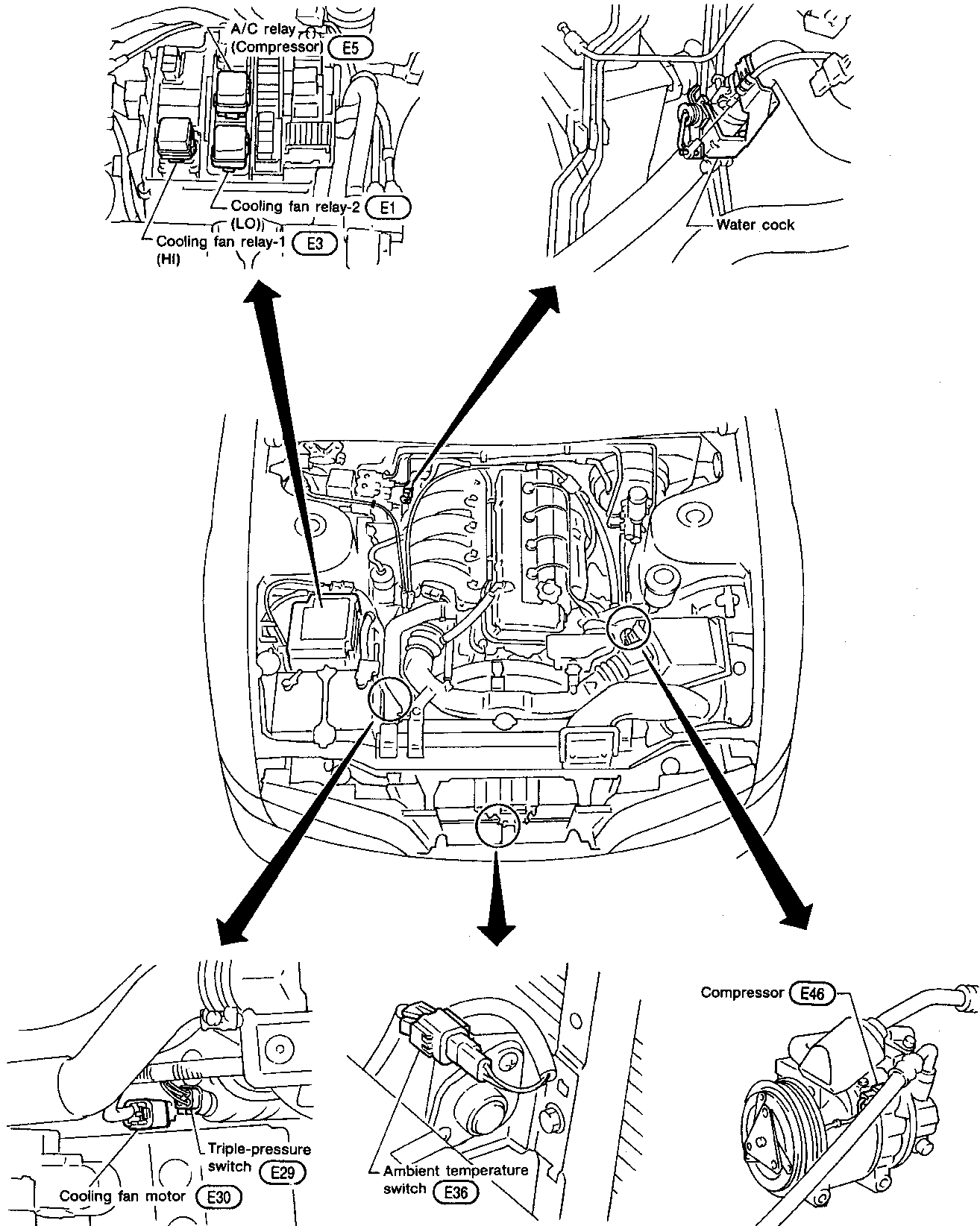
Trouble Diagnoses for Abnormal Pressure (Cont'd)

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Low-pressure side becomes negative.</p> <p>F</p>  <p style="text-align: right;">AC362A</p>	<p>Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.</p>	<p>High-pressure side is closed and refrigerant does not flow.</p> <p style="text-align: center;">↓</p> <p>Expansion valve or liquid tank is frosted.</p>	<p>Leave the system at rest. 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 the problem is due to water, 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.

TROUBLE DIAGNOSES

Harness Layout

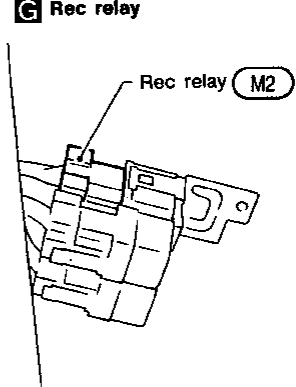
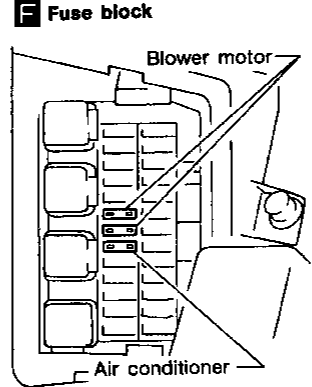
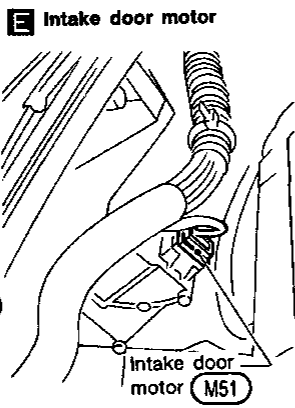
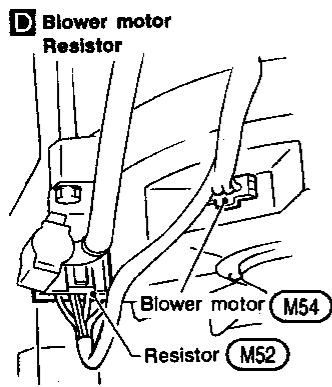
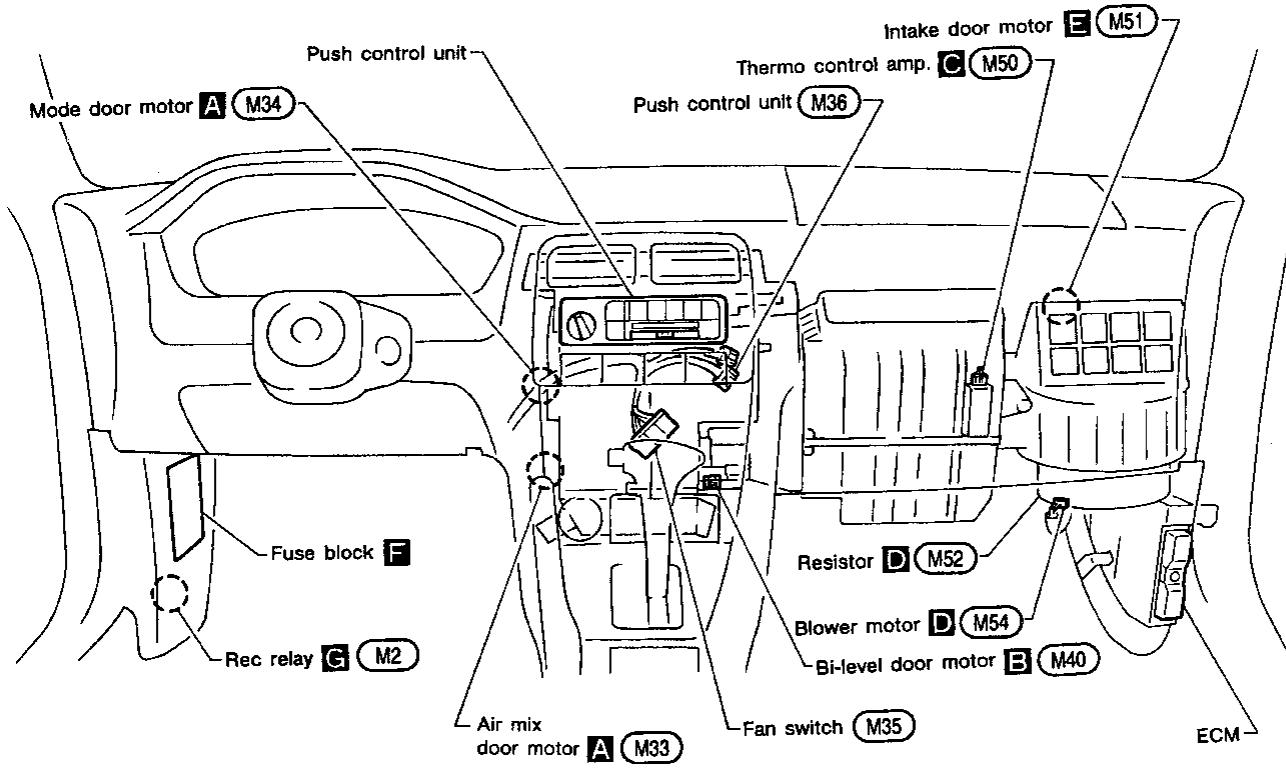
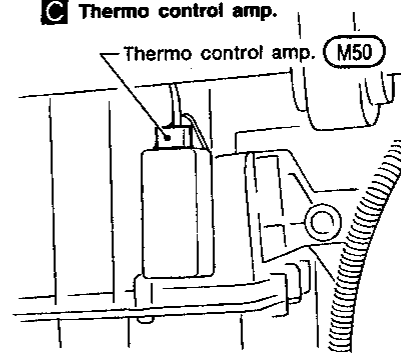
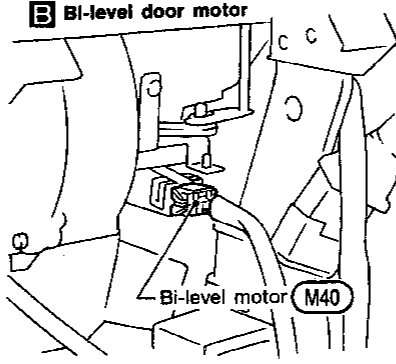
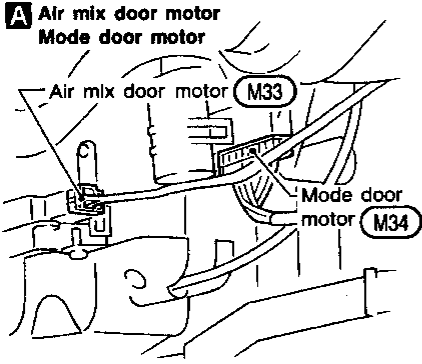
Engine compartment



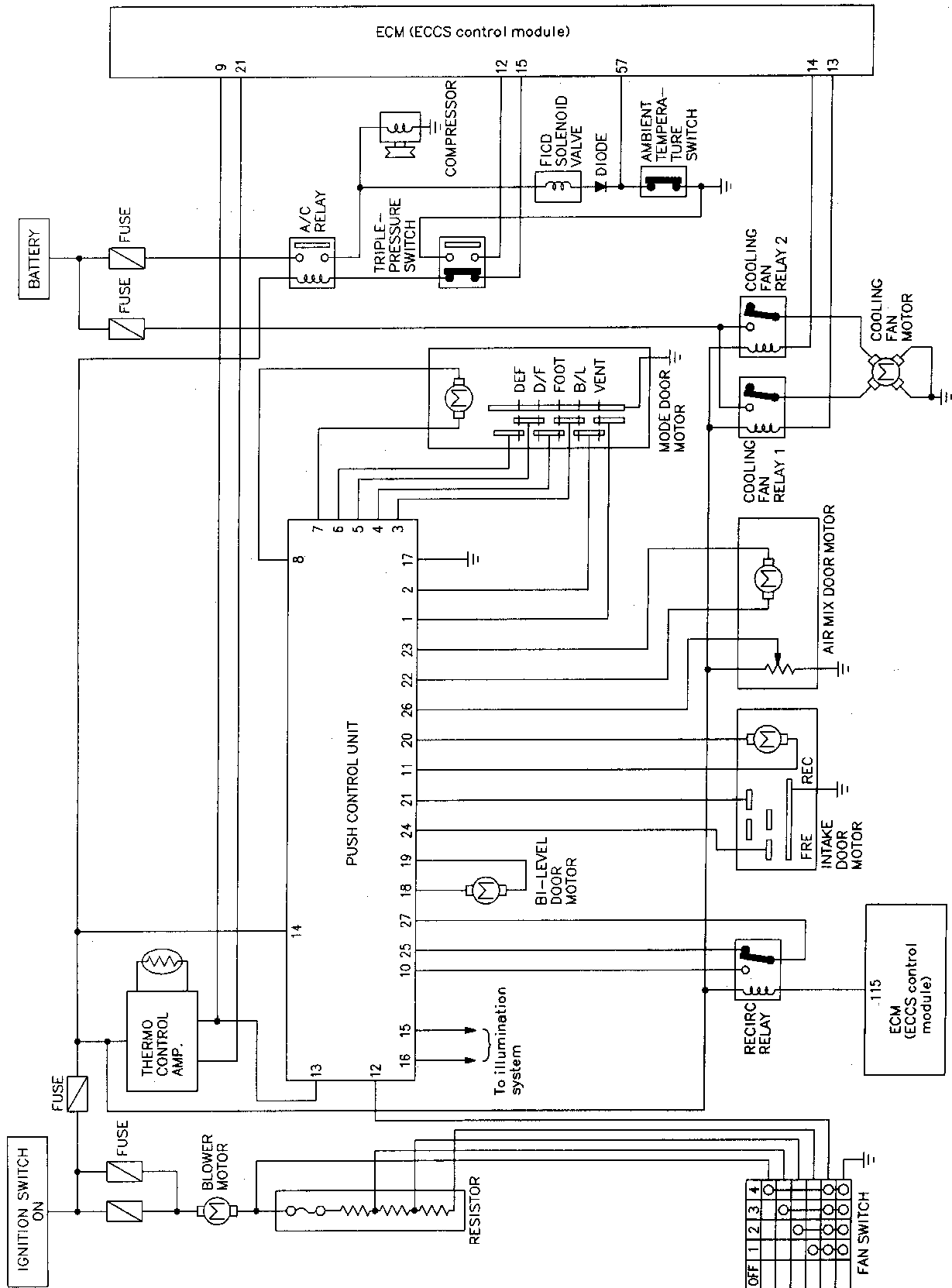
TROUBLE DIAGNOSES

Harness Layout (Cont'd)

Passenger compartment



Circuit Diagram for Quick Pinpoint Check

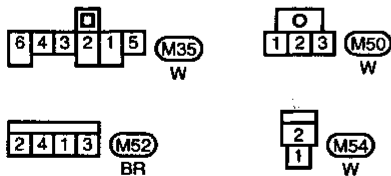
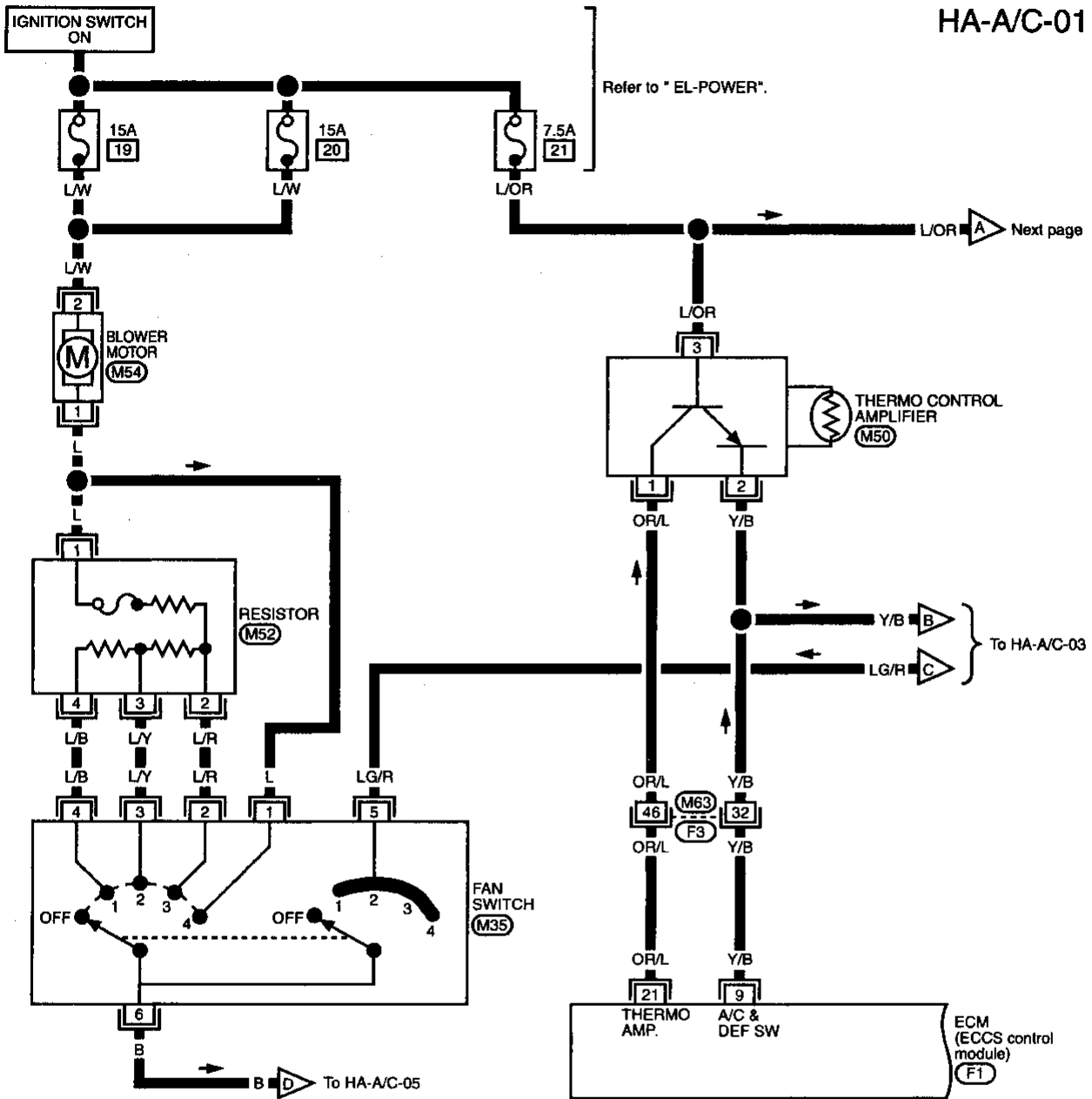


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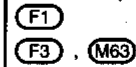
TROUBLE DIAGNOSES

Wiring Diagram — A/C —

HA-A/C-01

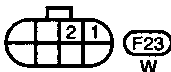
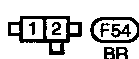
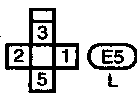
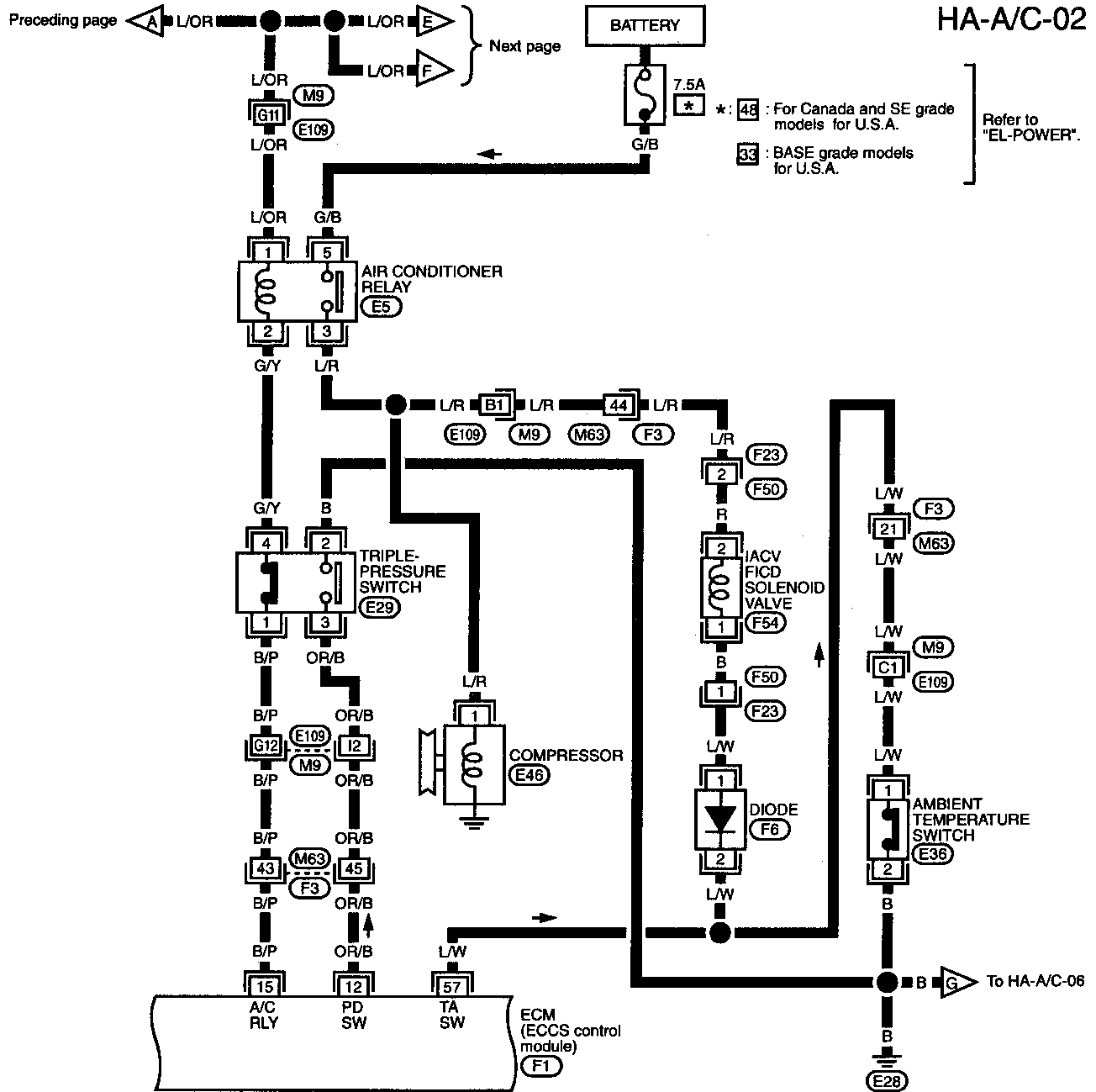


Refer to last page (Foldout page).



TROUBLE DIAGNOSES

Wiring Diagram — A/C — (Cont'd)



Refer to last page (Foldout page).

M9, E109

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F3, M63

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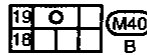
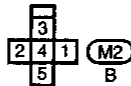
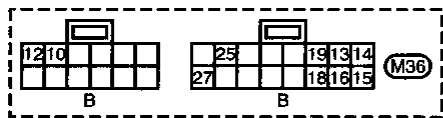
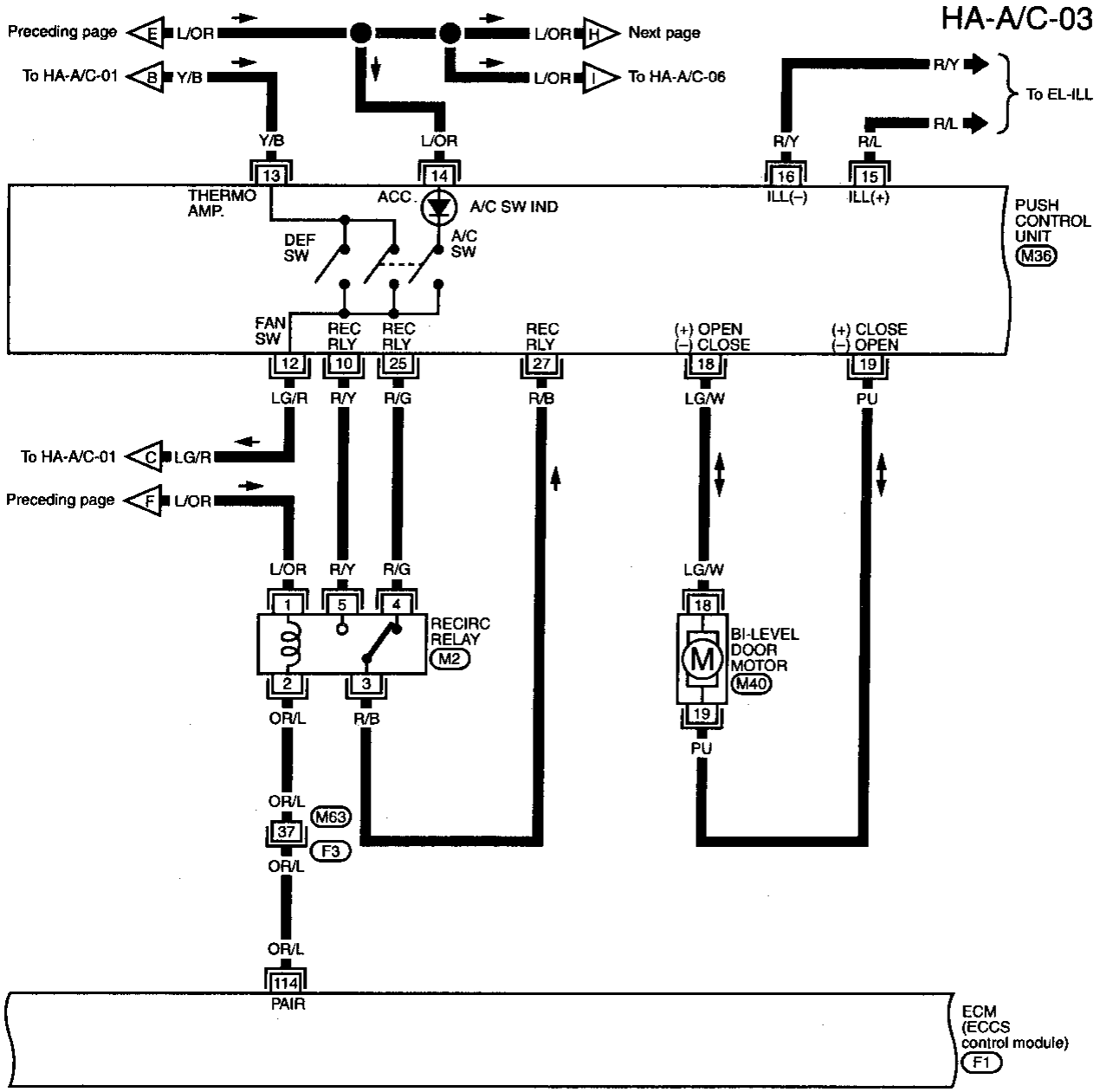
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TROUBLE DIAGNOSES

Wiring Diagram — A/C — (Cont'd)



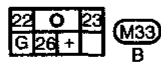
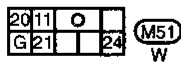
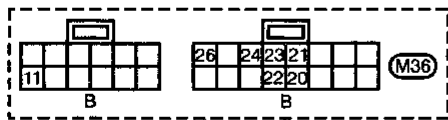
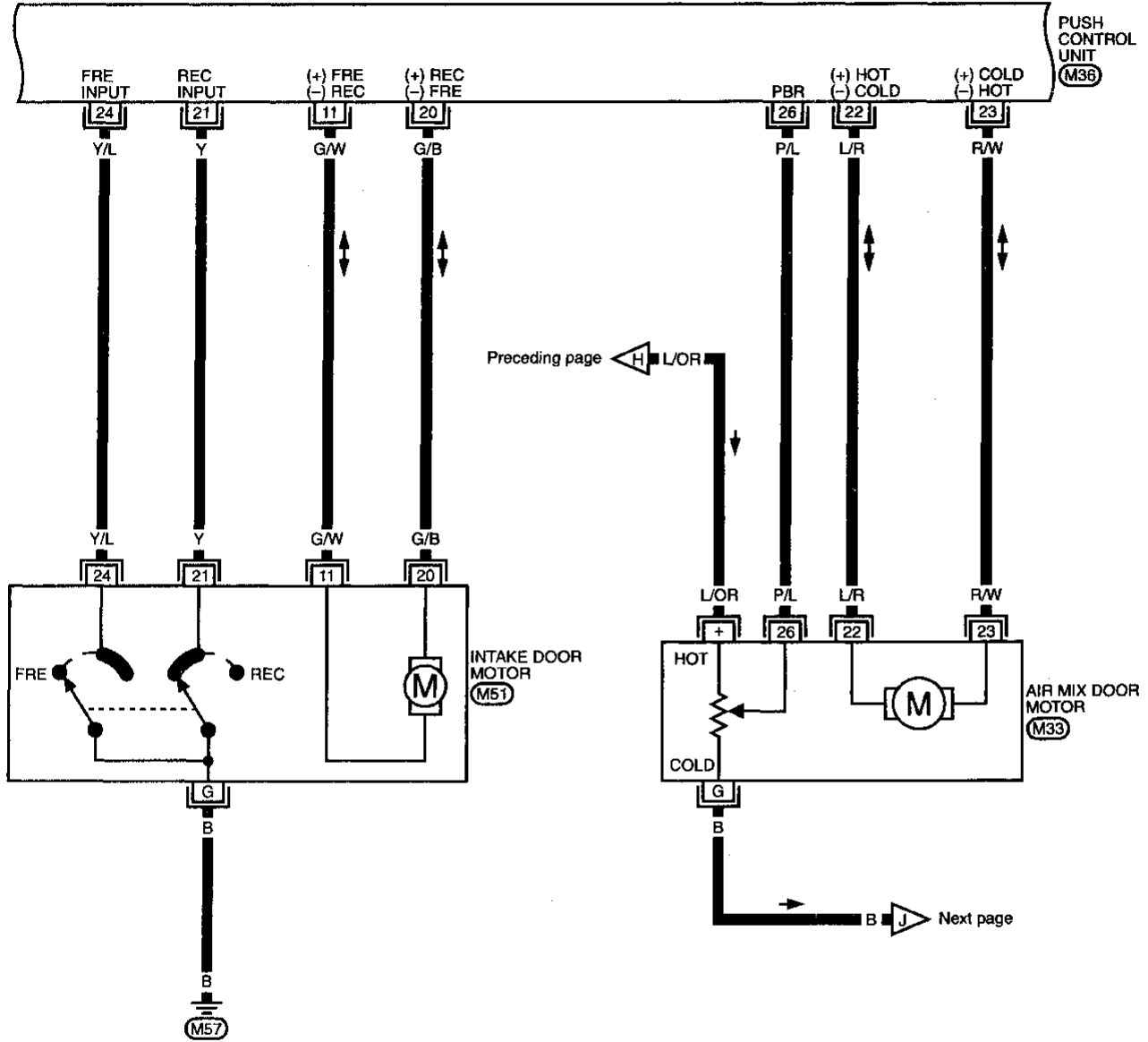
Refer to last page (Foldout page).

- (F1)
- (F3)
- (M63)

TROUBLE DIAGNOSES

Wiring Diagram — A/C — (Cont'd)

HA-A/C-04

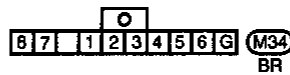
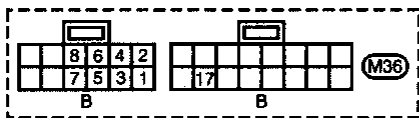
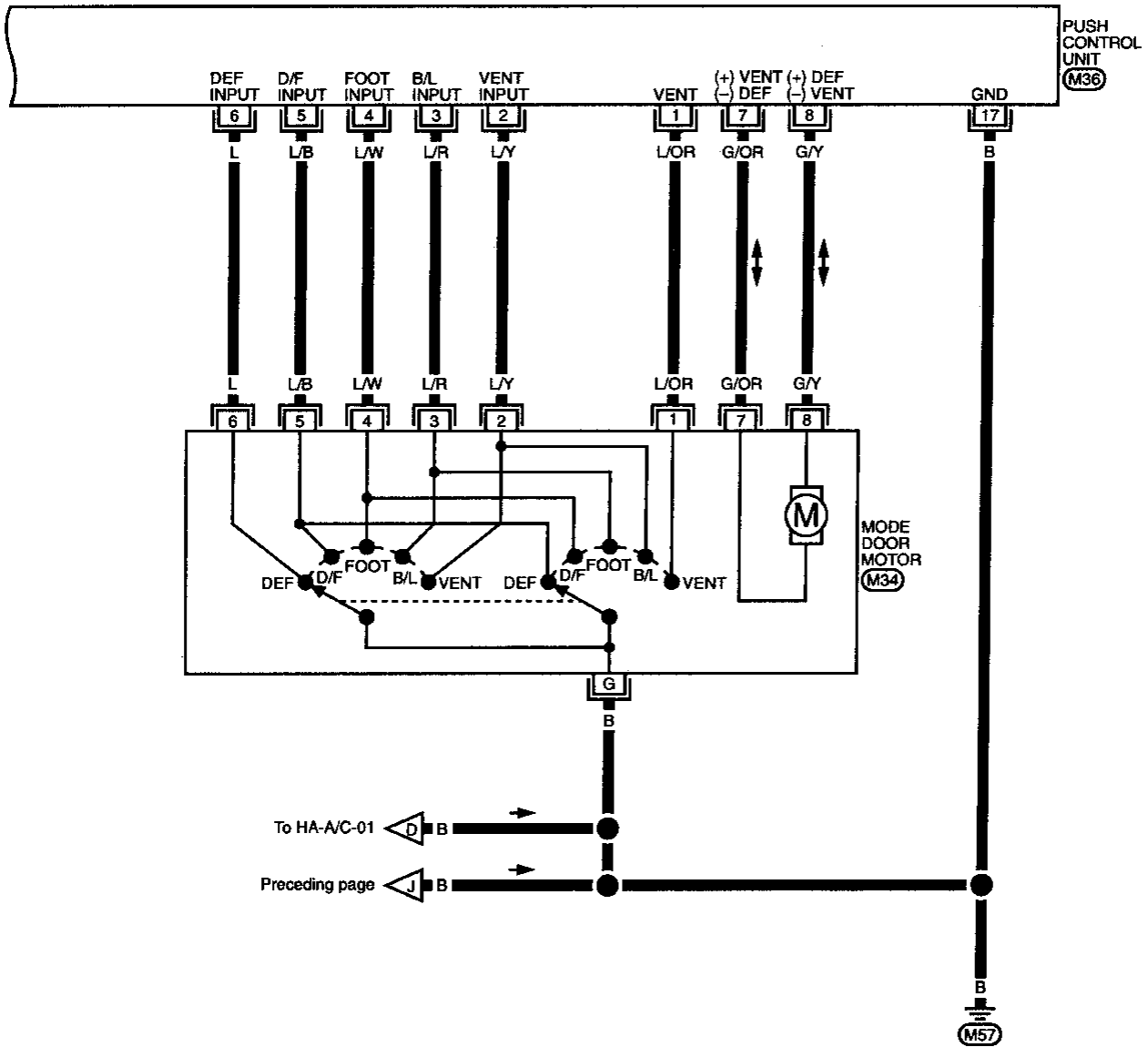


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TROUBLE DIAGNOSES

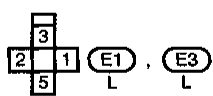
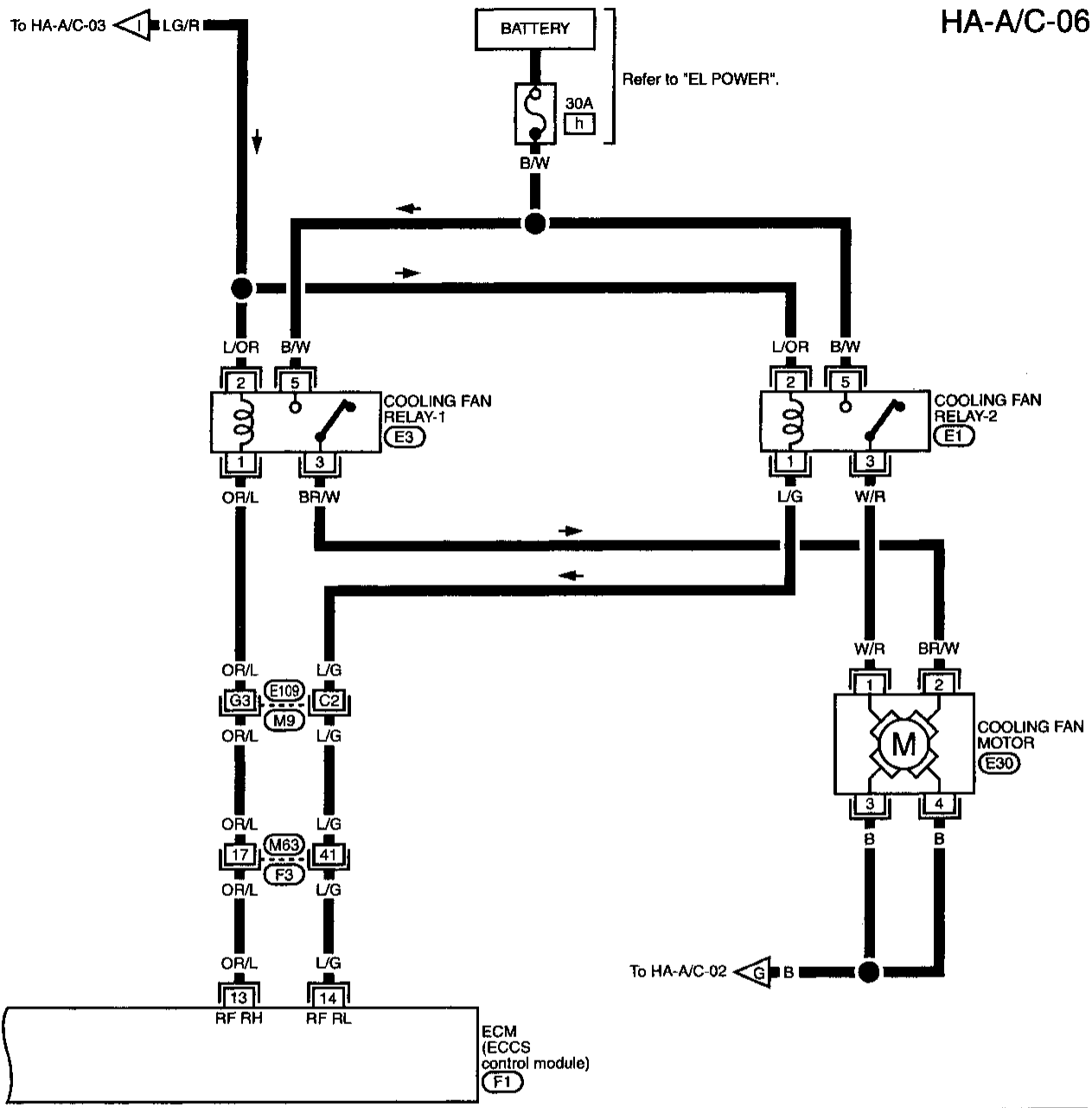
Wiring Diagram — A/C — (Cont'd)

HA-A/C-05



TROUBLE DIAGNOSES

Wiring Diagram — A/C — (Cont'd)



Refer to last page (Foldout page).

- (M9) (E109)
- (F1)
- (F3) (M63)

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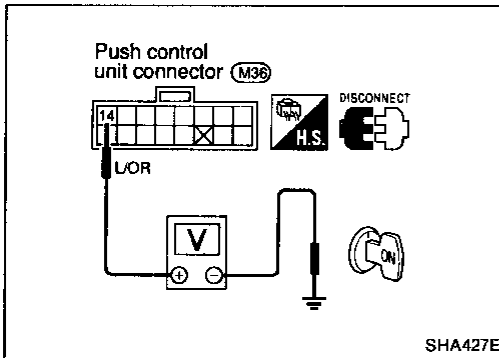
TROUBLE DIAGNOSES

Main Power Supply and Ground Circuit Check

POWER SUPPLY CIRCUIT CHECK

Check power supply circuit for air conditioning system.

Refer to EL section ("Wiring Diagram", "POWER SUPPLY ROUTING").

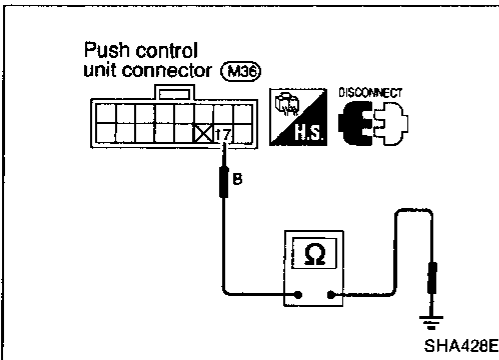


PUSH CONTROL UNIT CHECK

Check power supply circuit for push control unit with ignition switch at ON.

1. Disconnect push control unit harness connector.
2. Connect voltmeter from harness side.
3. Measure voltage across terminal No. ⑭ and body ground.

Voltmeter terminal		Voltage
⊕	⊖	
⑭	Body ground	Approx. 12V



Check body ground circuit for push control unit.

1. Disconnect push control unit harness connector.
2. Connect ohmmeter from harness side.
3. Check for continuity between terminal No. ⑰ and body ground.

Ohmmeter terminal		Continuity
⊕	⊖	
⑰	Body ground	Yes

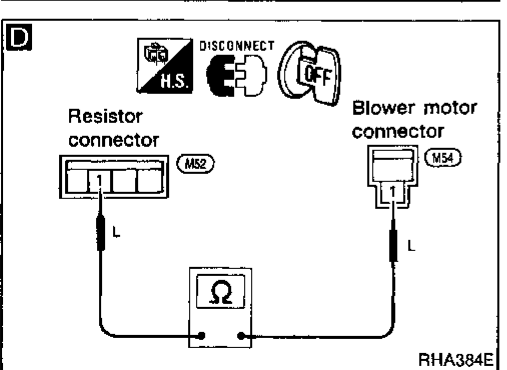
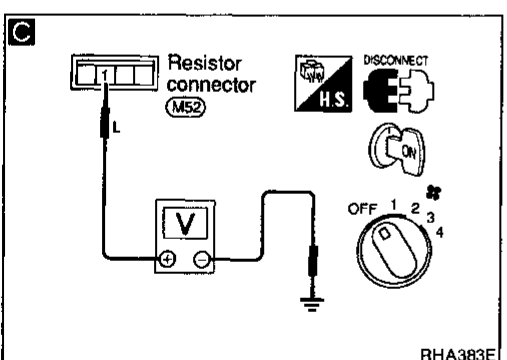
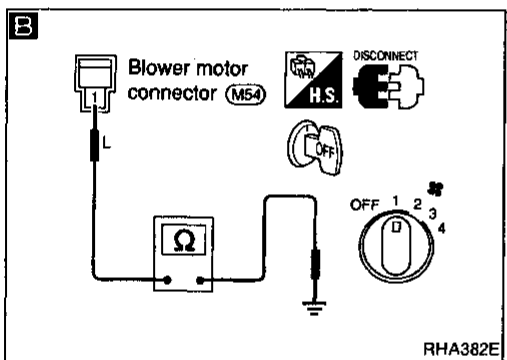
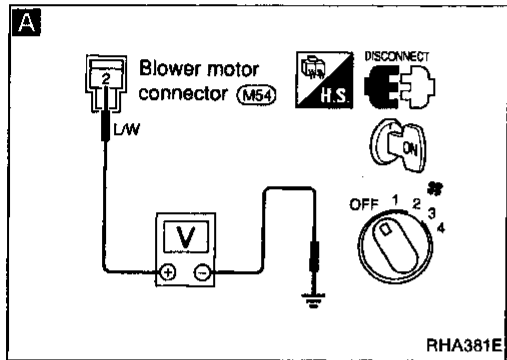
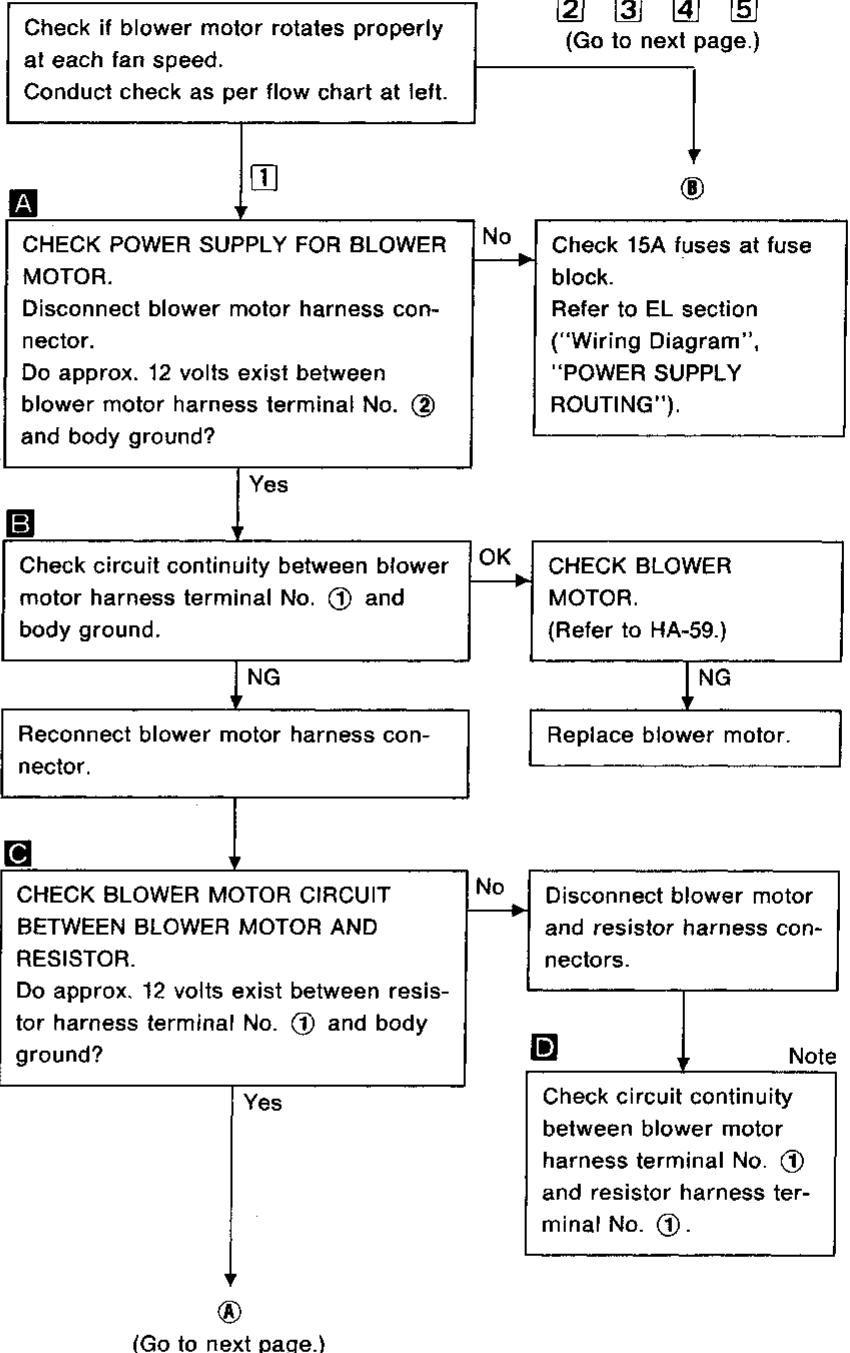
TROUBLE DIAGNOSES

	INCIDENT	Flow chart No.
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

Diagnostic Procedure 1

SYMPTOM: Blower motor does not rotate.

- Perform **PRELIMINARY CHECK 2** before referring to the following flow chart.

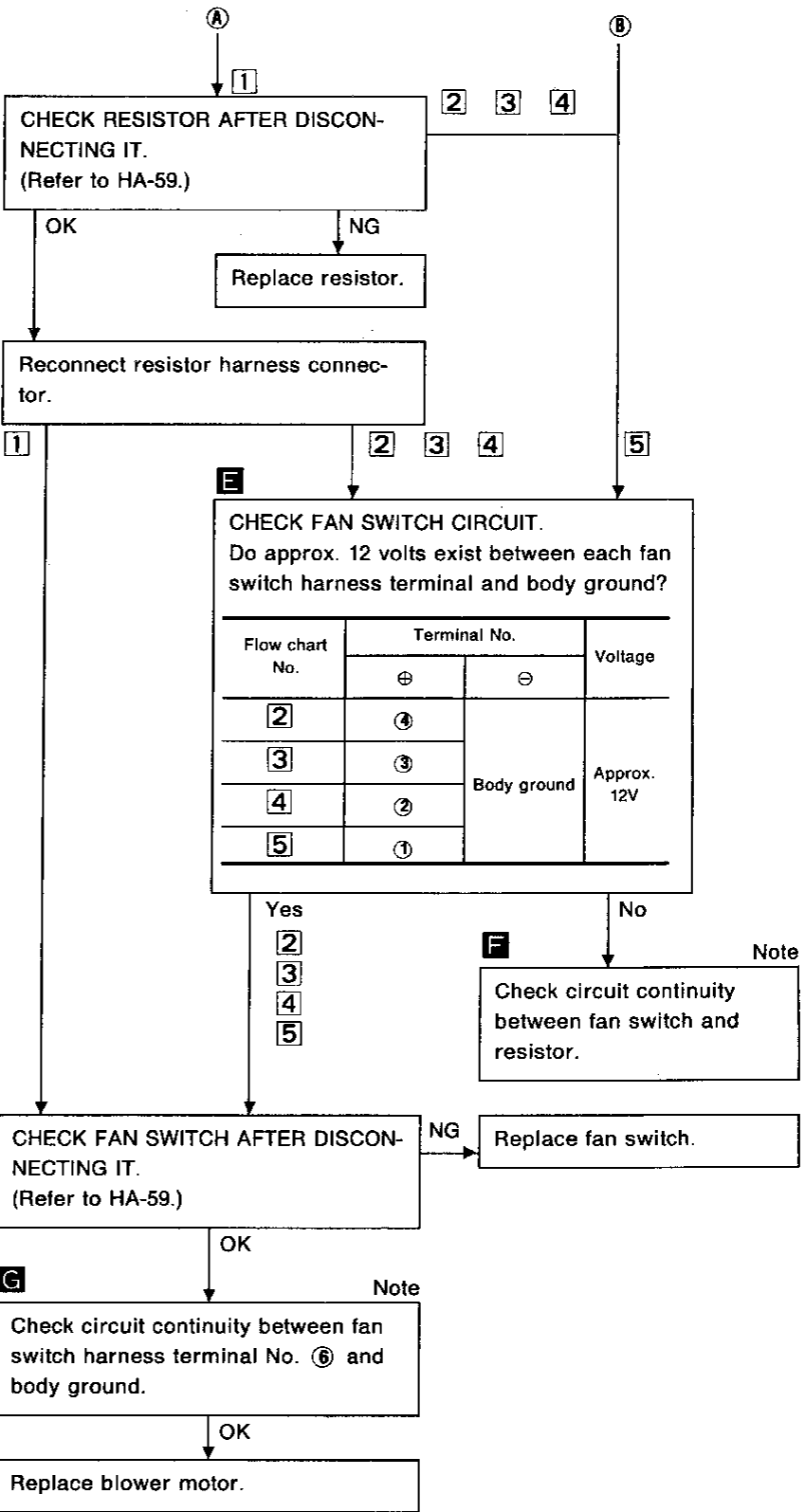
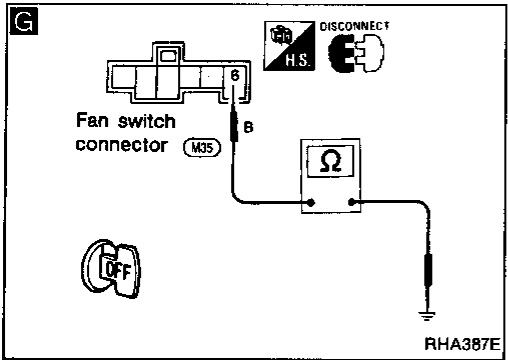
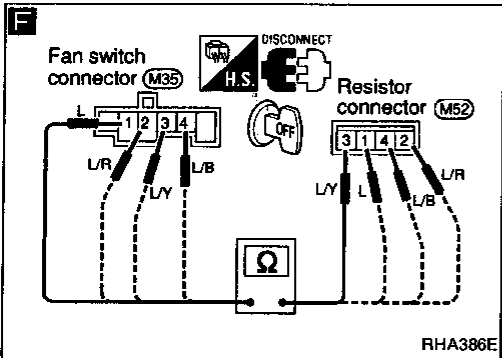
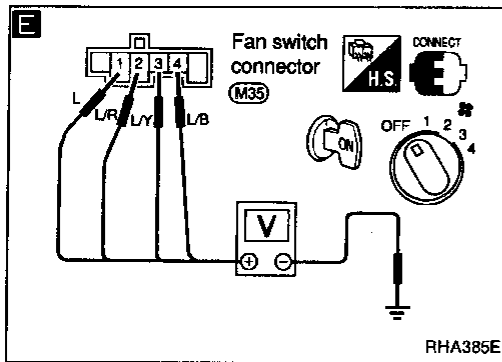


Note:
If the result is NG after checking circuit continuity, repair harness or connector.

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TROUBLE DIAGNOSES

Diagnostic Procedure 1 (Cont'd)



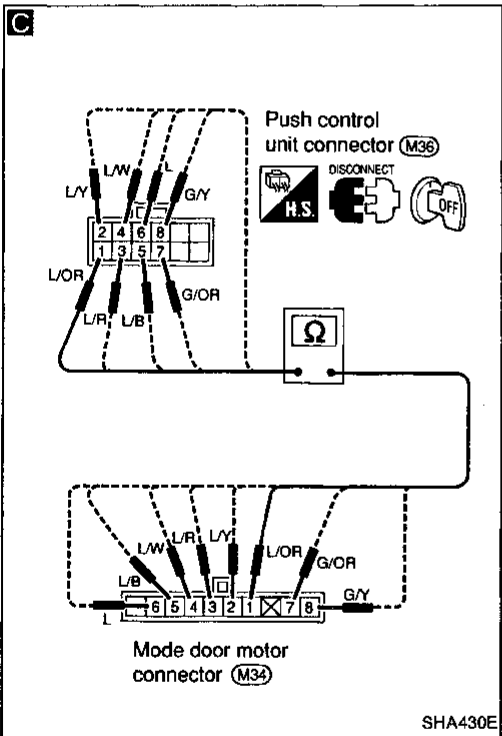
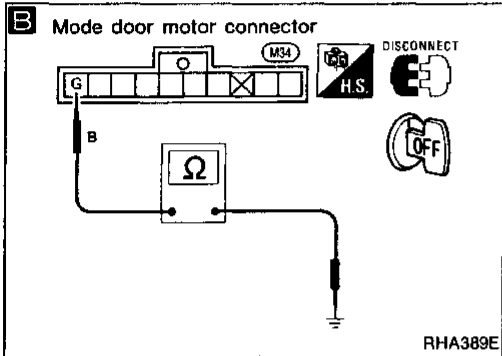
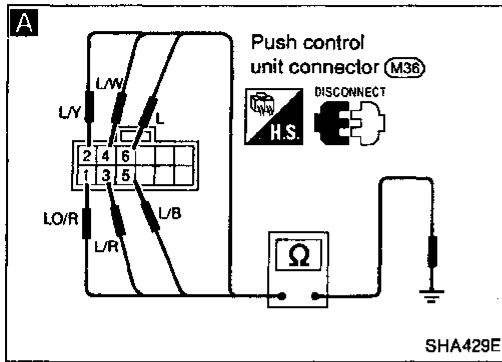
Note:

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

Diagnostic Procedure 2

SYMPTOM: Air outlet does not change.

- Perform **PRELIMINARY CHECK 4, Main Power Supply and Ground Circuit Check** before referring to flow chart below.



A
CHECK MODE DOOR MOTOR POSITION SWITCH.

1. Turn VENT switch ON with ignition switch at ON position.
2. Turn ignition switch OFF.
Disconnect push control unit connector.
3. Check for continuity between terminal ① or ② of push control unit harness connector and body ground.
4. Using above procedures, check for continuity in any other mode, as indicated in chart.

Mode switch	Terminal No.		Continuity
	⊕	⊖	
VENT	① or ②	Body ground	Yes
B/L	② or ③		
FOOT	③ or ④		
F/D	④ or ⑤		
DEF	⑤ or ⑥		

OK

CHECK SIDE LINK.
Refer to Control Linkage Adjustment.
(HA-61)

NG → Disconnect mode door motor harness connector.

B Note
CHECK BODY GROUND CIRCUIT FOR MODE DOOR MOTOR.
Does continuity exist between mode door motor harness terminal No. ⑥ and body ground?

Yes →

C Note

Check circuit continuity between each terminal on push control unit and on mode door motor.

Terminal No.		Continuity
⊕	⊖	
Push control unit	Mode door motor	Yes
①	①	
②	②	
③	③	
④	④	
⑤	⑤	
⑥	⑥	
⑦	⑦	
⑧	⑧	

OK →

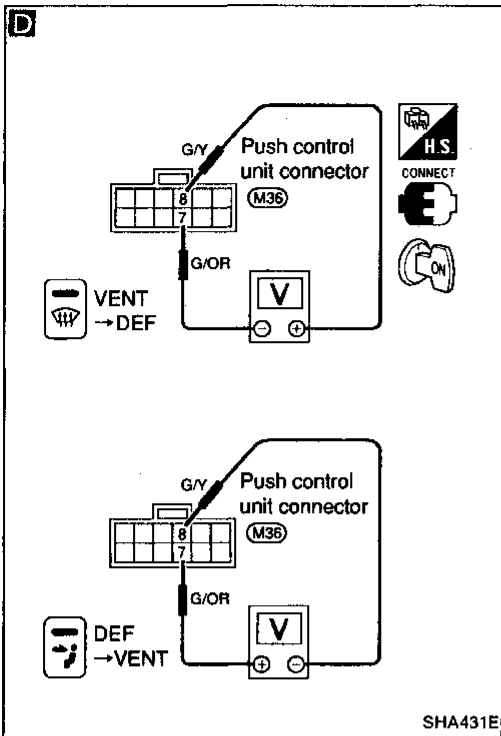
A

(Go to next page.)

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

TROUBLE DIAGNOSES

Diagnostic Procedure 2 (Cont'd)



A

Reconnect push control unit and mode door motor harness connectors.

D

CHECK FOR OUTPUT OF PUSH CONTROL UNIT.

Change the mode from VENT to DEF, and from DEF to VENT. Do approx. 12 volts exist between push control unit harness terminals ⑦ and ⑧ in both cases?

No → Replace push control unit.

Terminal No.		Mode switch operation	Voltage
⑦	⑧		
Each side	Each side	Stop	0V
⊖	⊕	VENT → DEF	Approx. 12V
⊕	⊖	DEF → VENT	

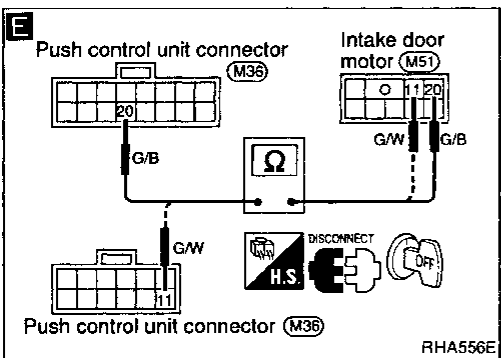
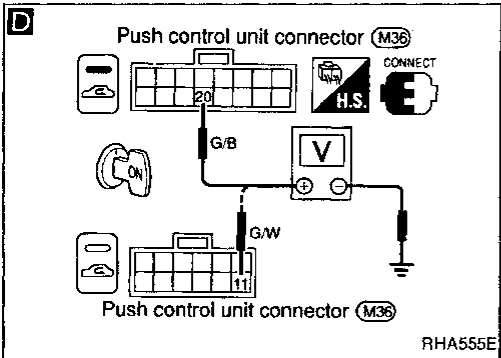
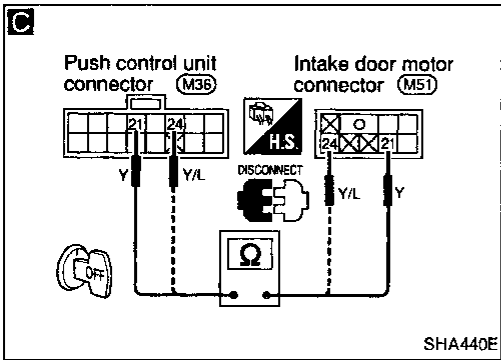
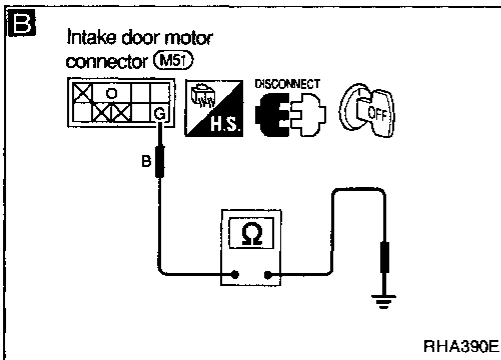
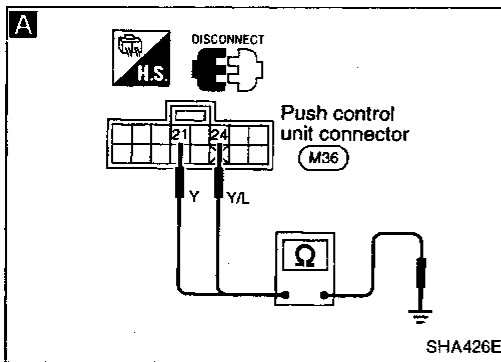
Yes

Replace mode door motor.

Diagnostic Procedure 3

SYMPTOM: Intake door does not change in VENT, B/L or FOOT mode.

- Perform **PRELIMINARY CHECK 1, Main Power Supply and Ground Circuit Check** before referring to flow chart below.

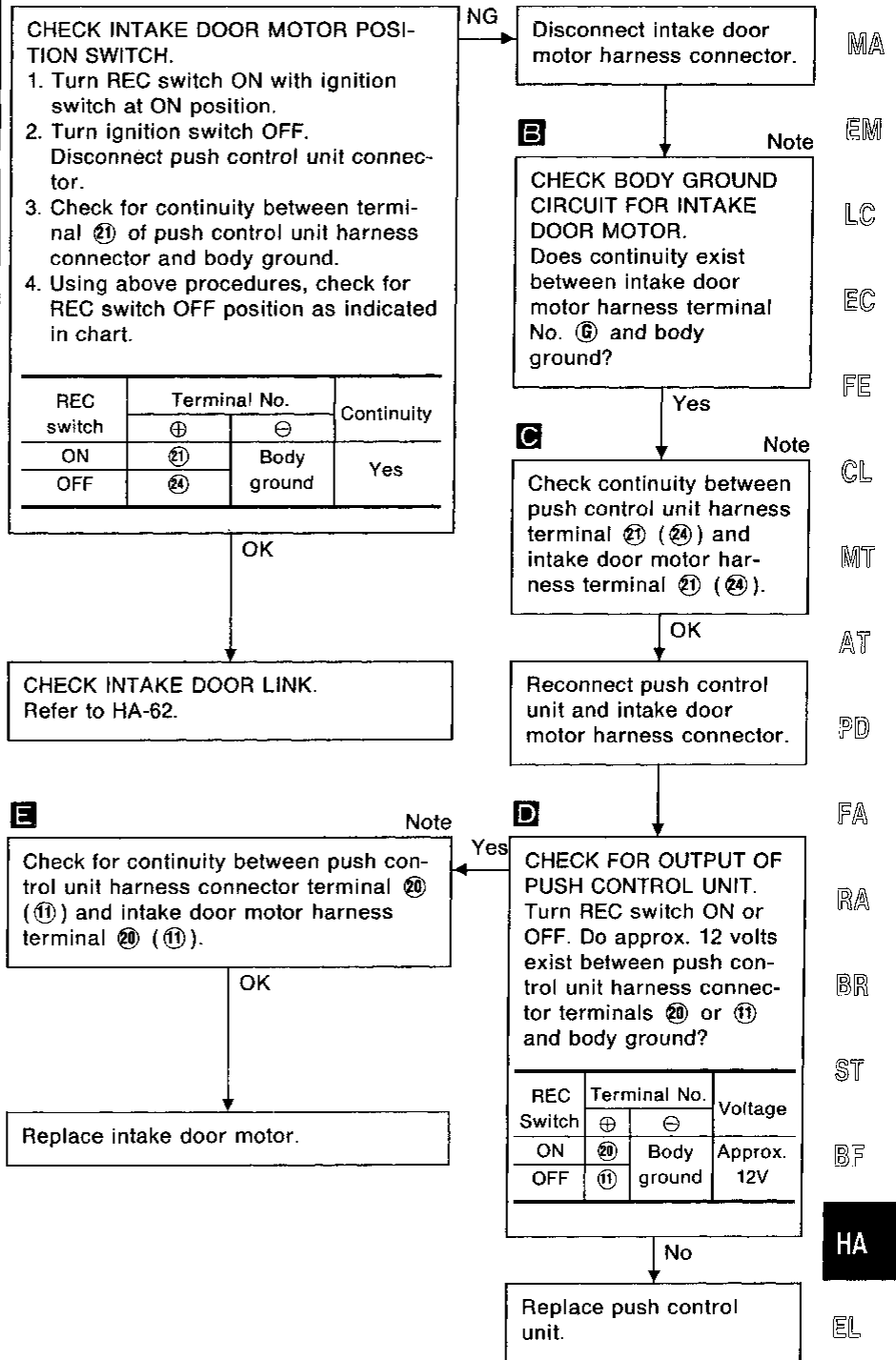


A

CHECK INTAKE DOOR MOTOR POSITION SWITCH.

1. Turn REC switch ON with ignition switch at ON position.
2. Turn ignition switch OFF. Disconnect push control unit connector.
3. Check for continuity between terminal ⑫ of push control unit harness connector and body ground.
4. Using above procedures, check for REC switch OFF position as indicated in chart.

REC switch	Terminal No.		Continuity
	⊕	⊖	
ON	⑫	Body ground	Yes
OFF	⑬	Body ground	Yes



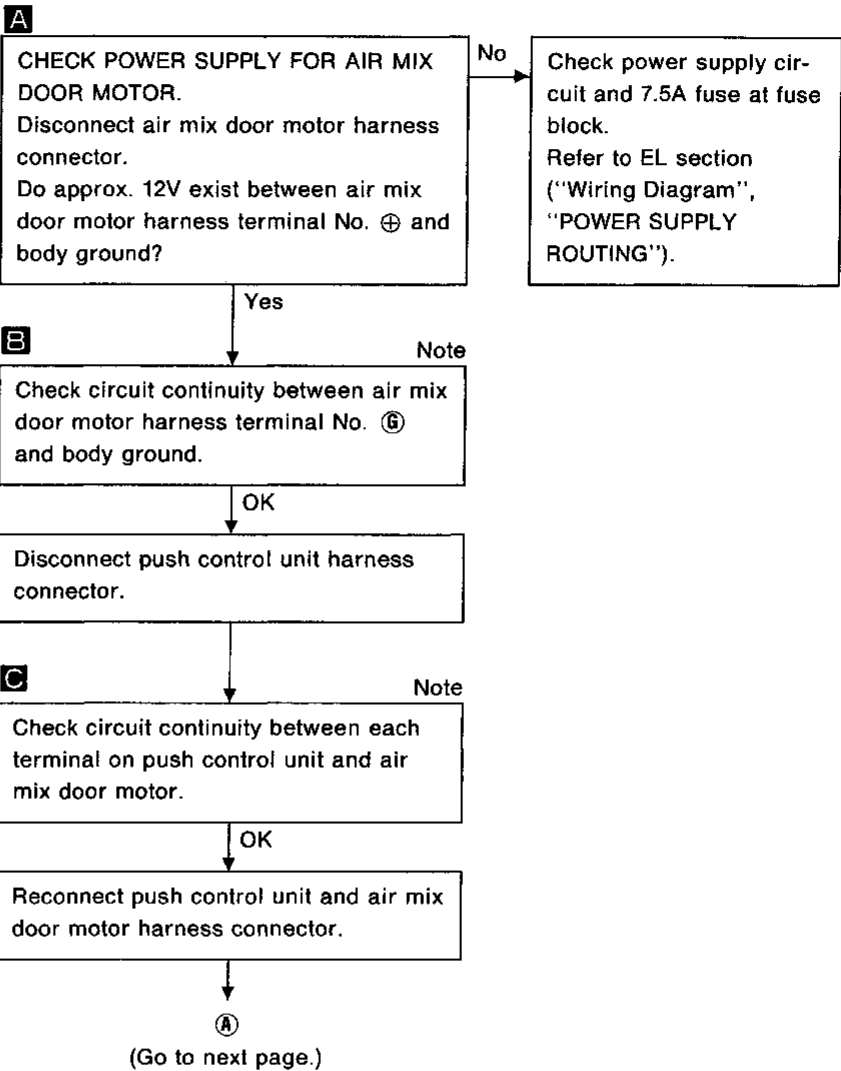
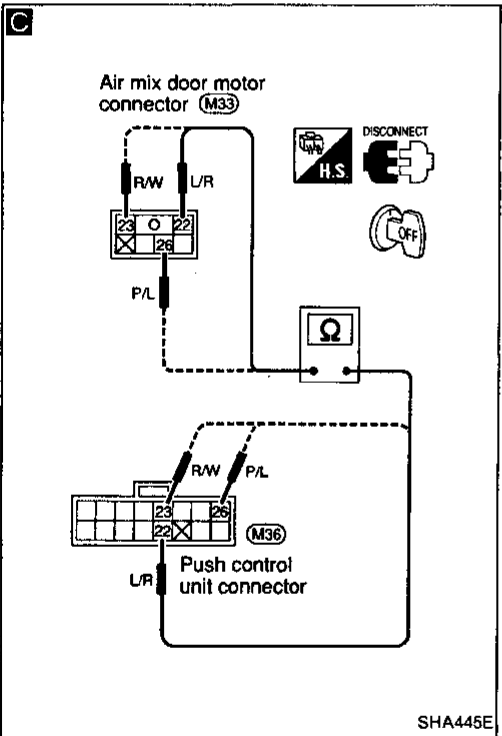
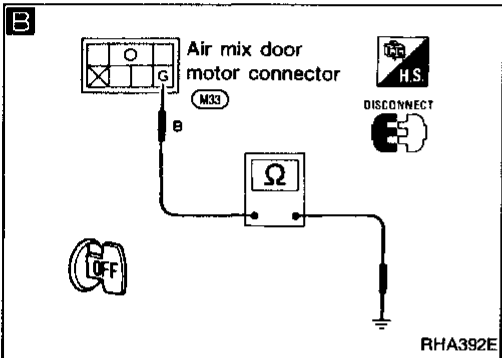
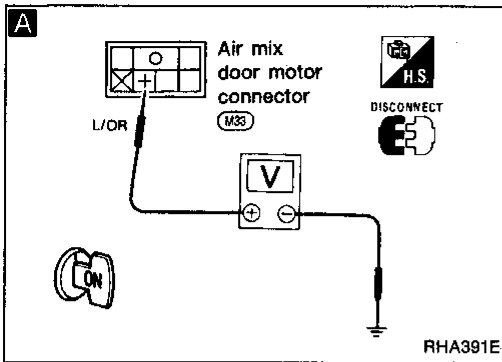
Note:
If the result is NG after checking circuit continuity, repair harness or connector.

TROUBLE DIAGNOSES

Diagnostic Procedure 4

SYMPTOM: Air mix door does not change.

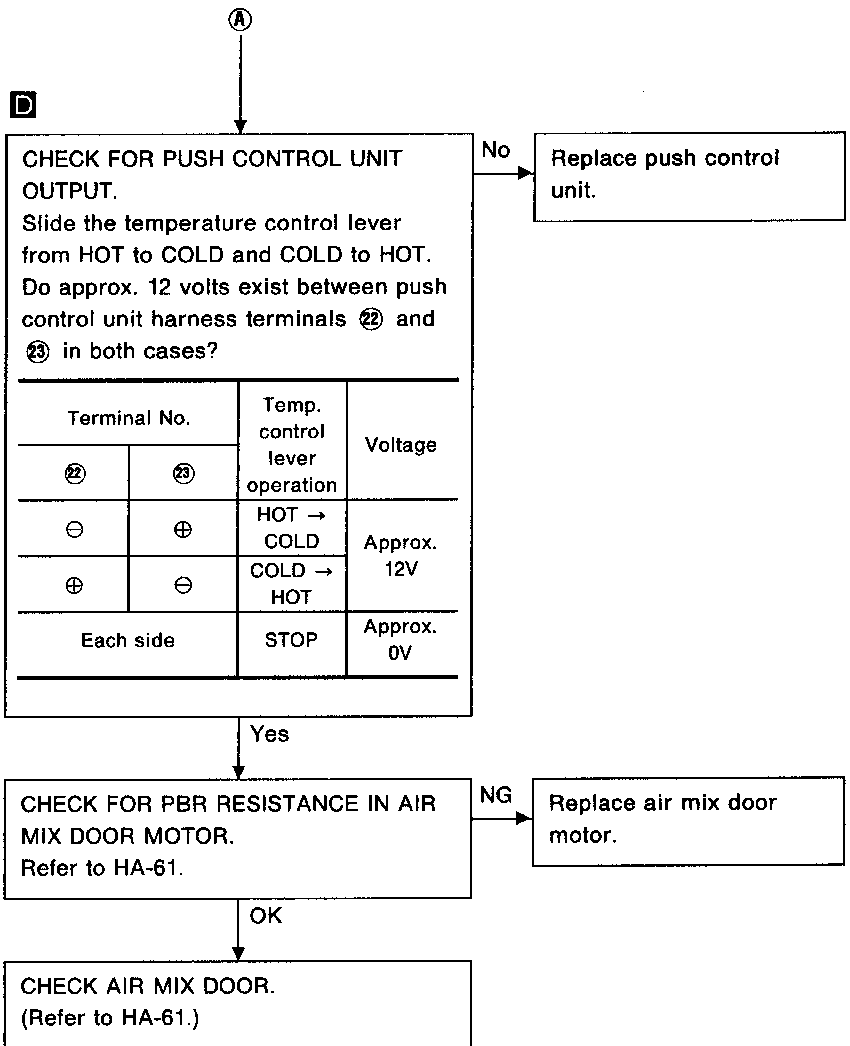
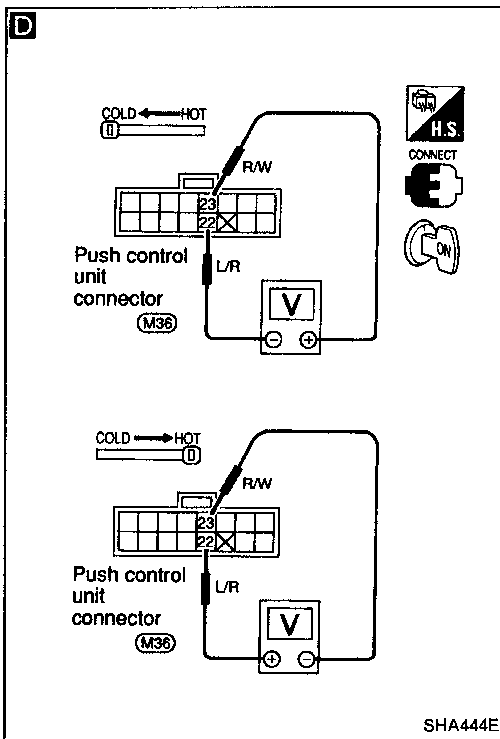
Perform Main Power Supply and Ground Circuit Check before referring to the following chart.



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

TROUBLE DIAGNOSES

Diagnostic Procedure 4 (Cont'd)



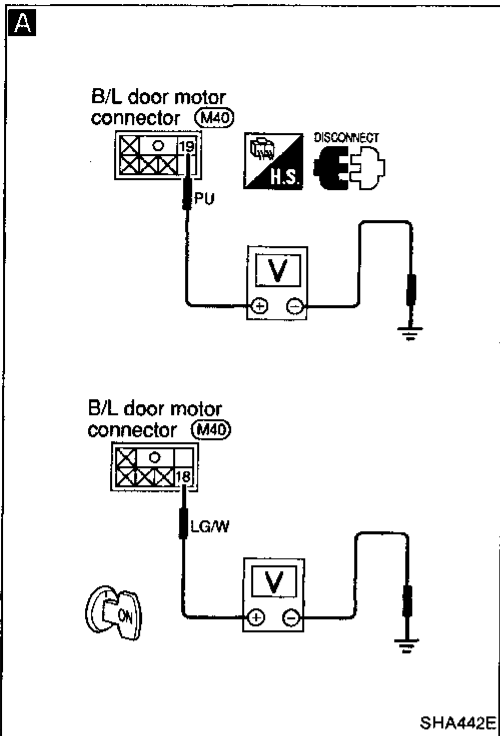
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TROUBLE DIAGNOSES

Diagnostic Procedure 5

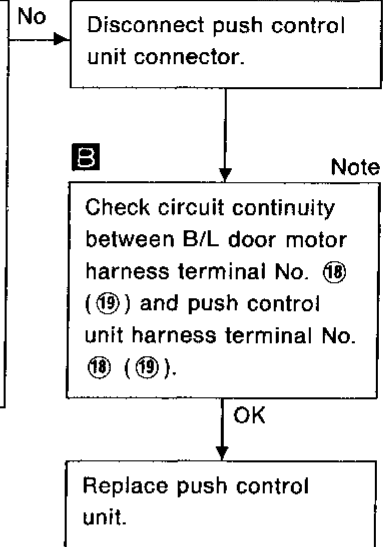
SYMPTOM: Bi-level (B/L) door does not operate.

- Perform Main Power Supply and Ground Circuit Check before referring to the following chart.



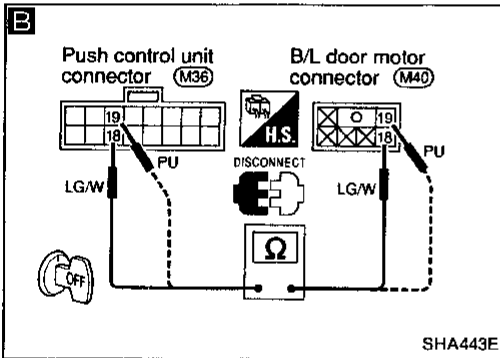
A

CHECK POWER SUPPLY FOR B/L DOOR MOTOR.
Disconnect B/L door motor harness connector.
Do approx. 12 volts exist between B/L door motor harness terminal No. ⑰ and body ground when B/L SWITCH is pressed ON?
Do approx. 12 volts exist between B/L door motor harness terminal No. ⑱ and body ground when B/L SWITCH is pressed OFF?

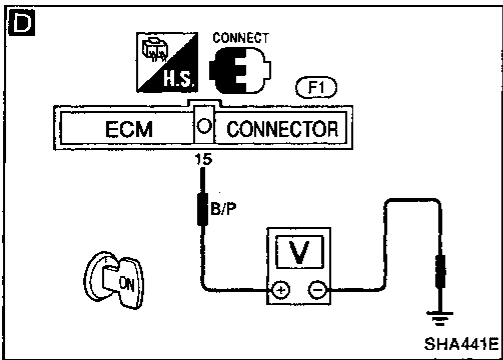
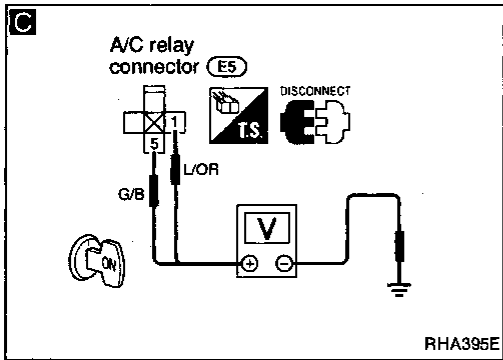
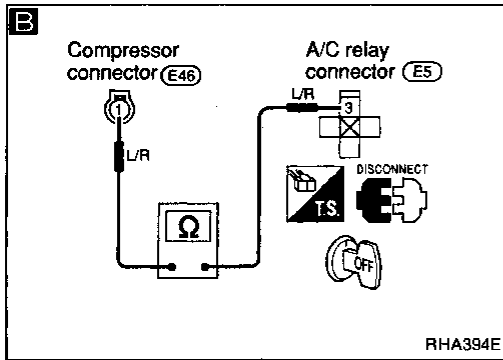
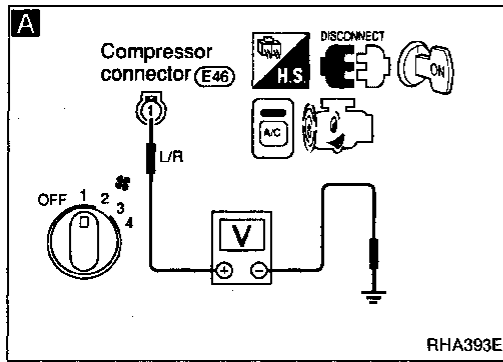


Yes

Replace B/L door motor.



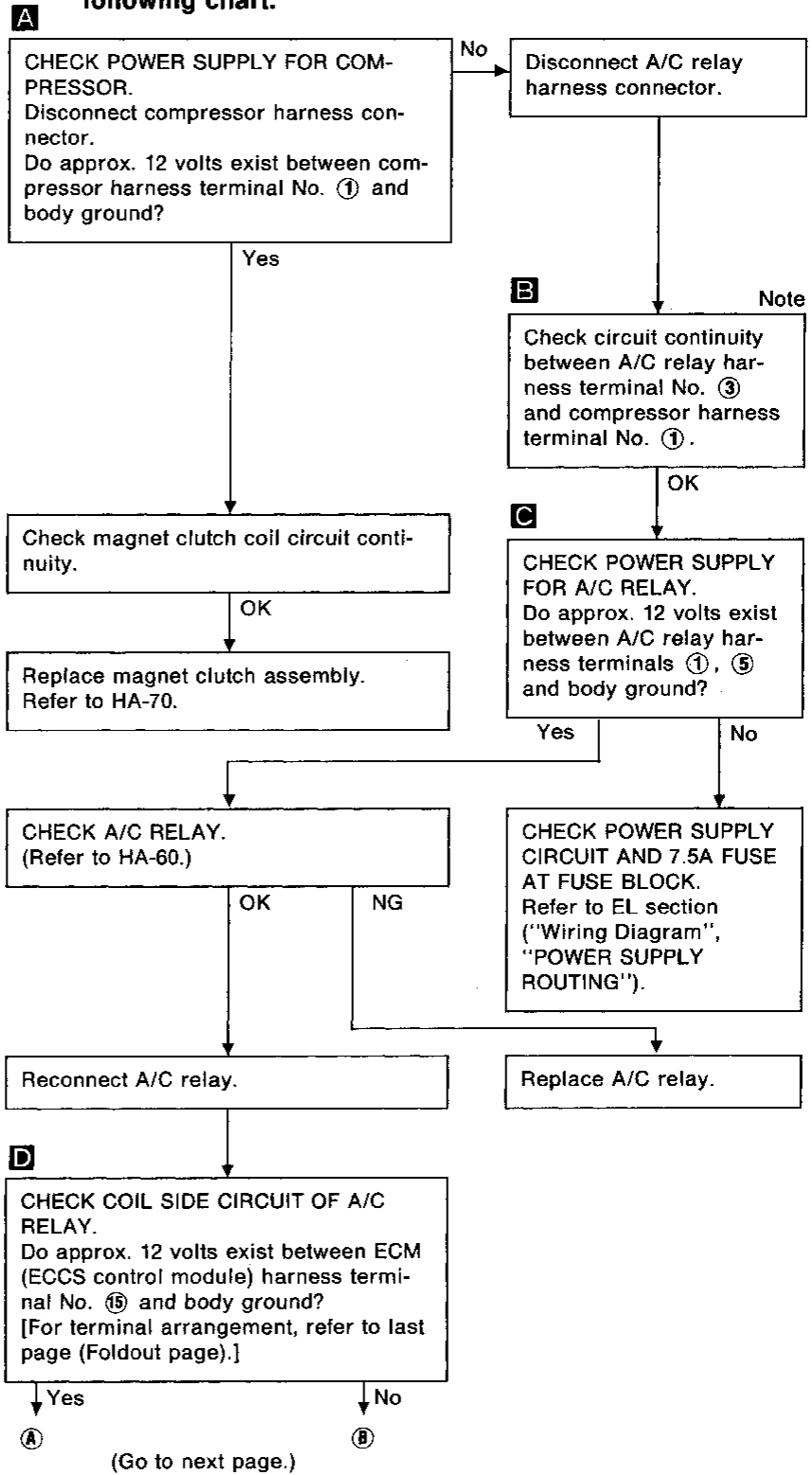
Note:
If the result is NG after checking circuit continuity, repair harness or connector.



Diagnostic Procedure 6

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

- Perform PRELIMINARY CHECK 2 before referring to the following chart.



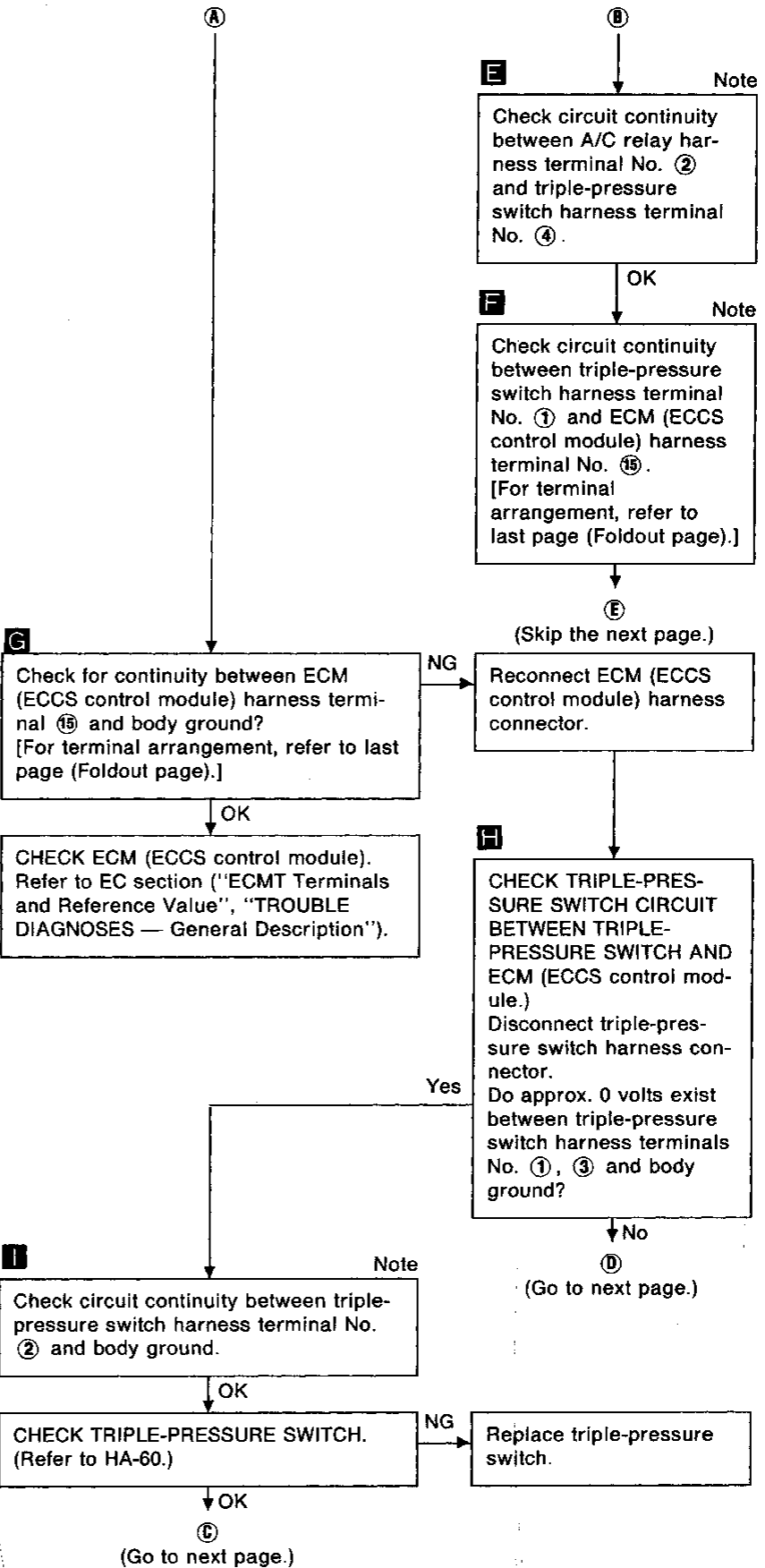
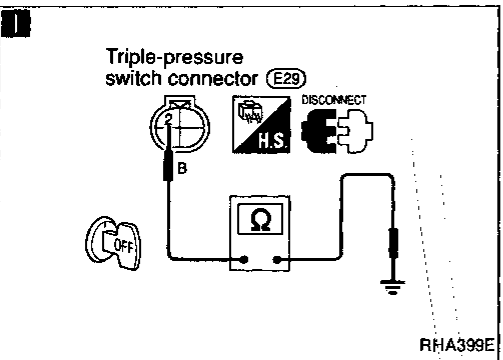
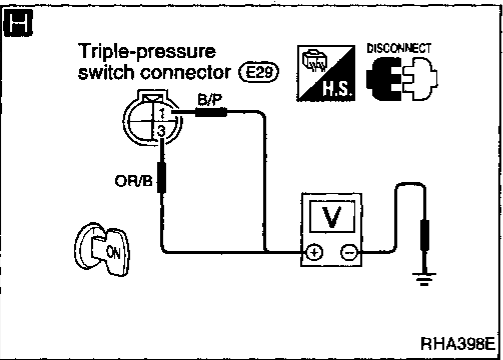
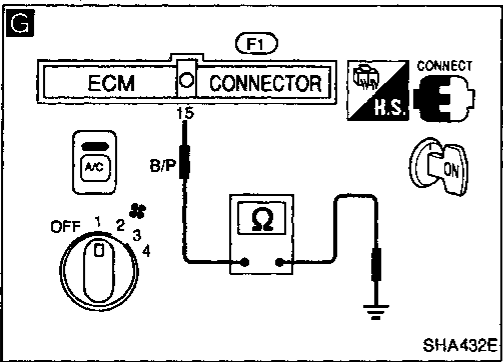
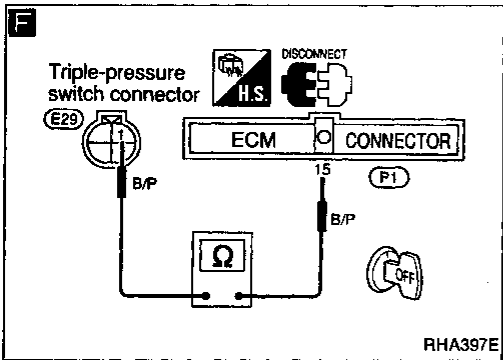
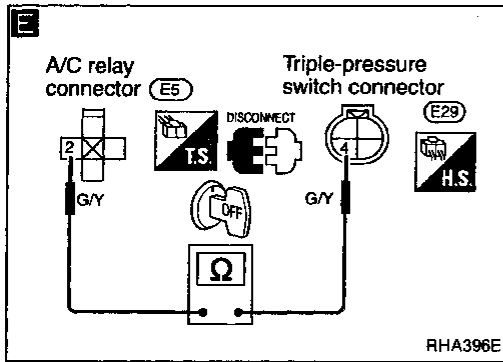
Ⓐ (Go to next page.) Ⓑ

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

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TROUBLE DIAGNOSES

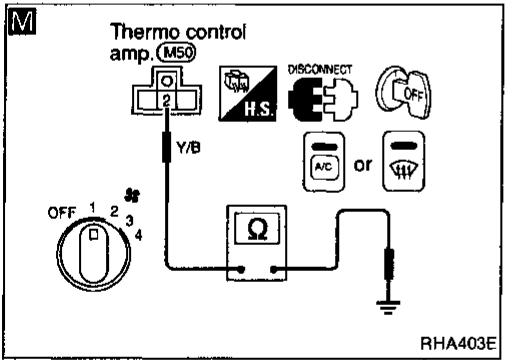
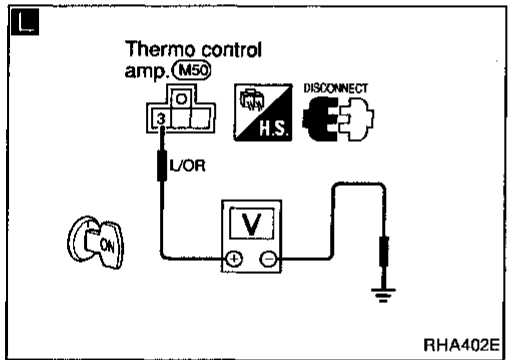
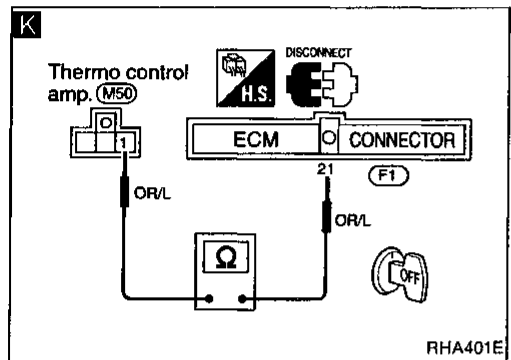
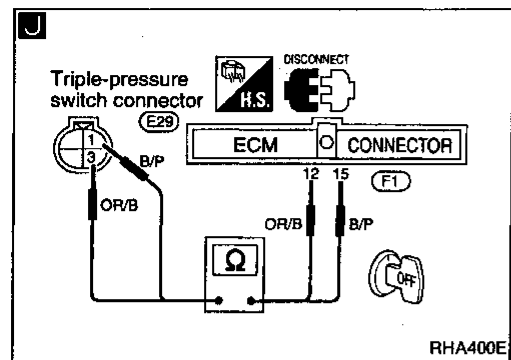
Diagnostic Procedure 6 (Cont'd)



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

TROUBLE DIAGNOSES

Diagnostic Procedure 6 (Cont'd)



①
Disconnect ECM (ECCS control module) harness connector.

②
Disconnect thermo control amp. harness connector.

Note
Check circuit continuity between ECM (ECCS control module) harness terminal No. ⑫ (⑮) and triple-pressure switch harness terminal No. ① (③). [For terminal arrangement, refer to last page (Foldout page).]

Note
Check circuit continuity between thermo control amp. harness terminal No. ① and ECM (ECCS control module) harness terminal No. ⑫.

OK
Replace ECM (ECCS control module).

L
CHECK POWER SUPPLY FOR THERMO CONTROL AMP.
Disconnect thermo control amp. harness connector.
Do approx. 12 volts exist between thermo control amp. harness terminal No. ③ and body ground?

No
Check 7.5A fuses at fuse block
Refer to EL section ("Wiring Diagram", "POWER SUPPLY ROUTING").

M
CHECK BODY GROUND CIRCUIT FOR THERMO CONTROL AMP.
Turn A/C switch or DEF switch ON.
Check for continuity between thermo control amp. harness terminal ② and body ground.

NG
Disconnect push control unit harness connector.

OK
Replace thermo control amp.

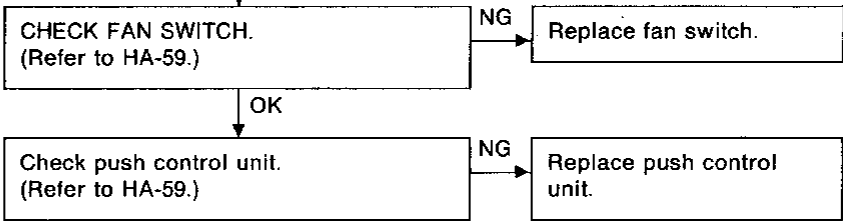
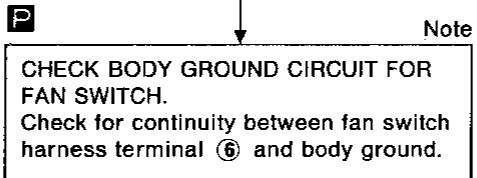
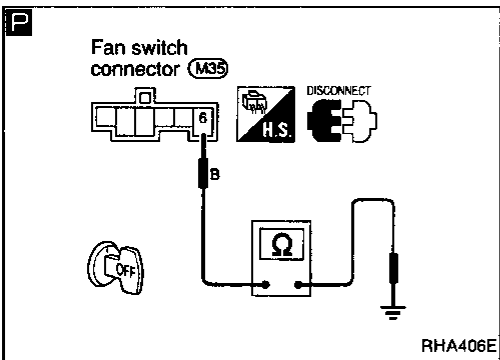
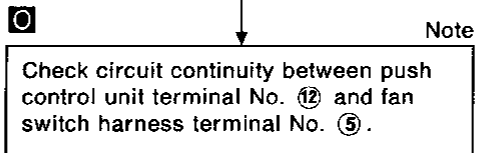
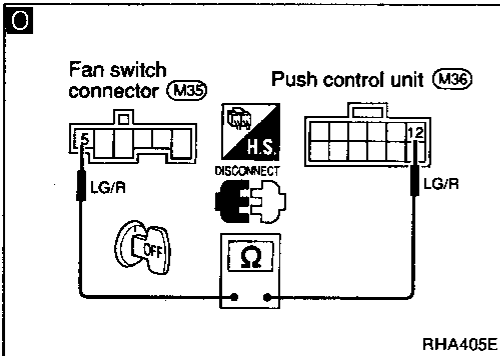
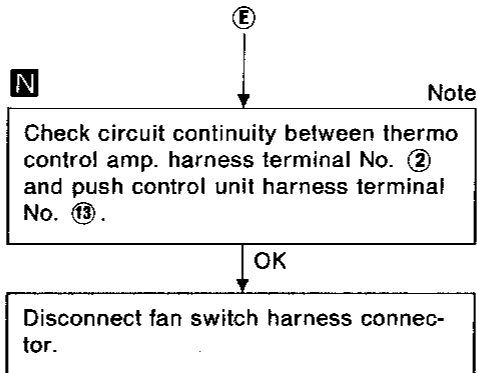
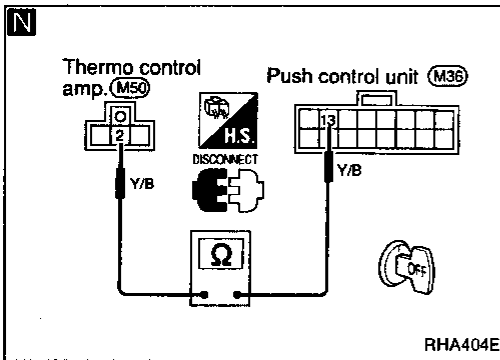
③
(Go to next page.)

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

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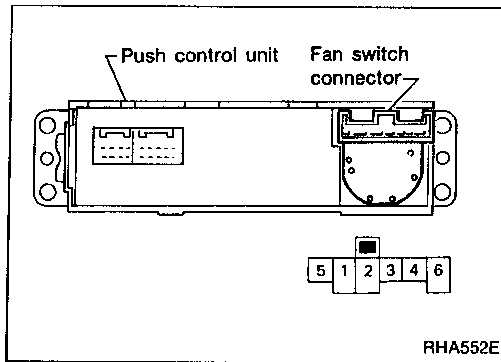
TROUBLE DIAGNOSES

Diagnostic Procedure 6 (Cont'd)



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

TROUBLE DIAGNOSES



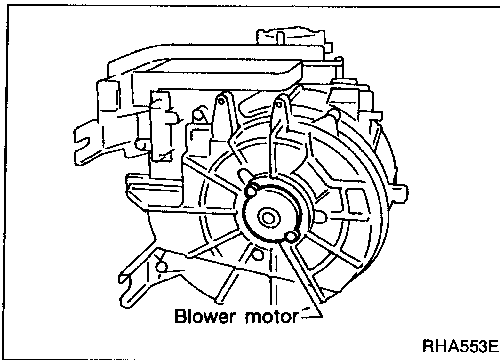
Electrical Components Inspection

FAN SWITCH

Check continuity between terminals at each position.

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

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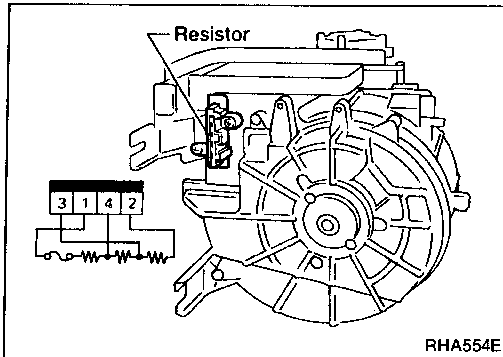


BLOWER MOTOR

Check blower motor for smooth rotation.

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

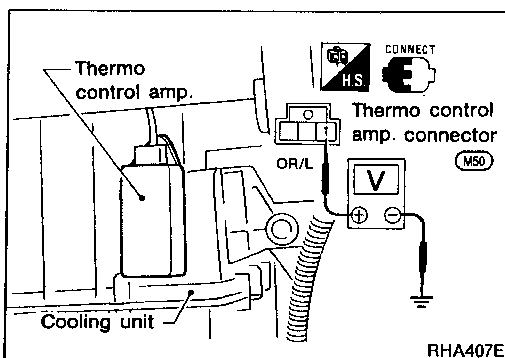
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BLOWER RESISTOR

Check continuity between terminals.

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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.

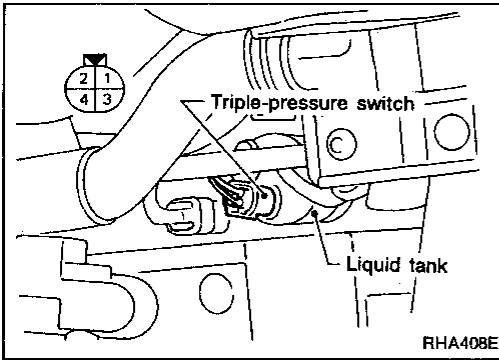
Evaporator outlet air temperature °C (°F)	Thermo amp. operation	Tester
Decreasing to 0.5 - 1.5 (33 - 35)	Turn OFF	Approx. 12V
Increasing to 1 - 2 (34 - 36)	Turn ON	Approx. 0V

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TROUBLE DIAGNOSES

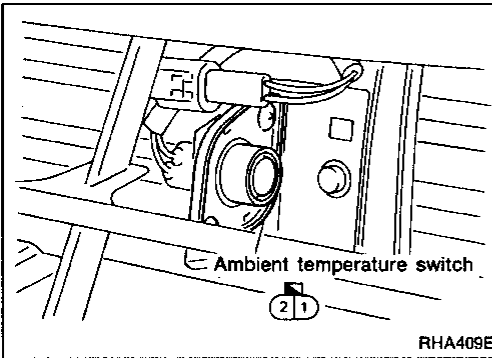
Electrical Components Inspection (Cont'd)

TRIPLE-PRESSURE SWITCH



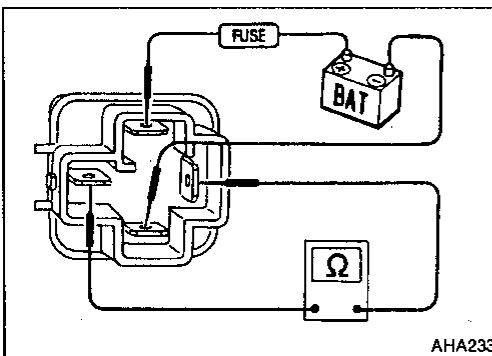
	Terminals	High-pressure side line pressure kPa (kg/cm ² , psi)	Operation	Continuity
Low-pressure side	① - ④	Increasing to 157 - 226 (1.6 - 2.3, 23 - 33)	ON	Exist
		Decreasing to 152.0 - 201.0 (1.55 - 2.05, 22.0 - 29.2)	OFF	Does not exist
Medium-pressure side*	② - ③	Increasing to 1,422 - 1,618 (14.5 - 16.5, 206 - 235)	ON	Exist
		Decreasing to 1,128 - 1,422 (11.5 - 14.5, 164 - 206)	OFF	Does not exist
High-pressure side	① - ④	Increasing to 1,667 - 2,059 (17 - 21, 242 - 299)	ON	Exist
		Decreasing to 2,452 - 2,844 (25 - 29, 356 - 412)	OFF	Does not exist

* For cooling fan motor operation.



AMBIENT TEMPERATURE SWITCH

Ambient temperature °C (°F)	Ambient temp. switch operation	Continuity
Increasing to approx. 19 - 22 (66 - 72)	Turn OFF	No
Decreasing to approx. 22 - 25 (72 - 77)	Turn ON	Yes



A/C RELAY

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

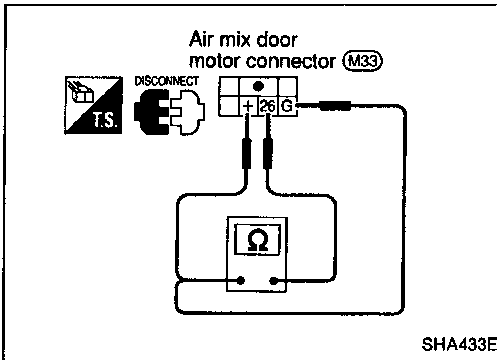
TROUBLE DIAGNOSES

Electrical Components Inspection (Cont'd)

AIR MIX DOOR MOTOR

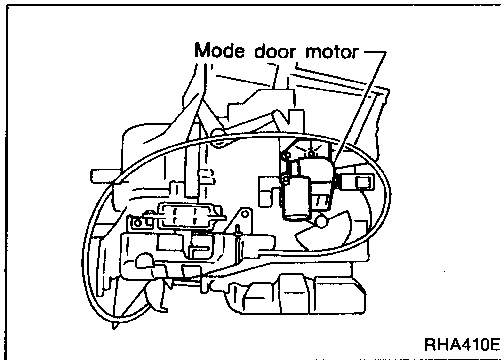
Check for PBR resistance.

1. Turn ignition switch ON and temperature control lever to FULL HOT position.
2. Turn ignition switch OFF.
3. Disconnect air mix door motor connector.
4. Check for resistance between air mix door motor harness terminal ⊕ and ⊕.
5. Using above procedures, check for each terminal as indicated in chart below.



Terminal No.		Temp. control lever position	Resistance
⊕	⊕	FULL HOT	Approx. 0Ω
⊕	⊕	FULL COLD	Approx. 3 kΩ
⊕	⊕	FULL HOT	Approx. 3 kΩ
⊕	⊕	FULL COLD	Approx. 0Ω

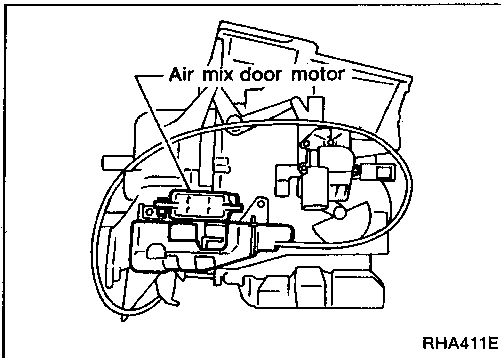
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Control Linkage Adjustment

MODE DOOR

1. Move side link by hand and hold mode door in DEF mode.
2. Install mode door motor on heater unit and connect it to main harness.
3. Turn ignition switch to ON.
4. Turn VENT switch ON.
5. Attach mode door motor rod to side link rod holder.
6. Turn DEF switch ON. Check that side link operates at the fully-open position. Also turn DEF switch ON to check that side link operates at the fully-open position.

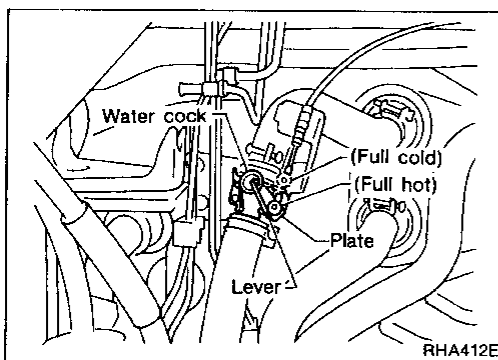


AIR MIX DOOR (Water cock)

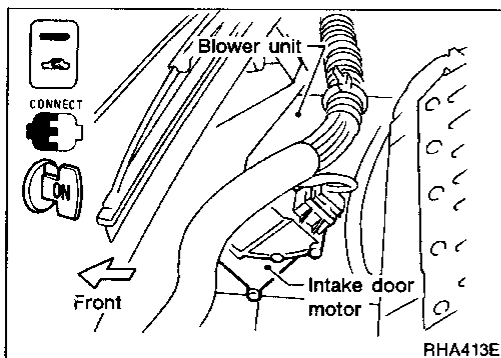
1. Move air mix link by hand and hold air mix door in full cold position.
2. Install air mix door motor on heater unit and connect sub-harness.
3. Turn ignition switch to ON.
4. Slide temperature control lever to full cold.
5. Attach air mix door motor rod to air mix door link rod holder.
6. Check that air mix door operates properly when temperature control lever is slid to full hot and full cold.
7. Slide temperature control lever to full cold.

TROUBLE DIAGNOSES

Control Linkage Adjustment (Cont'd)

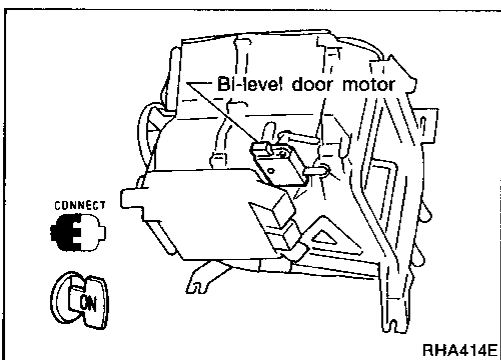


8. Attach water cock cable to air mix door linkage and secure with clip.
9. Rotate and hold water cock lever AND plate in the full cold position (CLOCKWISE completely).
10. Attach water cock cable to plate and secure with clip (white mark on cable housing should be centered under the retaining clip).
11. Check that water cock operates properly when temperature lever is slid to full hot and full cold. (After several cycles, water cock lever should be midpoint of plate opening when temperature slider is full cold).




INTAKE DOOR

1. Connect intake door motor harness connector before installing intake door motor.
2. Turn ignition switch to ON.
3. Turn REC switch ON.
4. Install intake door motor on intake unit.
5. Install intake door lever.
6. Set intake door rod in REC position and fasten door rod to holder on intake door lever.
7. Check that intake door operates properly when REC switch is turned ON and OFF.



BI-LEVEL (B/L) DOOR

1. Connect B/L door motor harness connector before installing B/L door motor.
2. Turn ignition switch to ON.
3. Install B/L door motor on heater unit.
4. Attach B/L door rod to B/L door link rod holder.
5. Check that B/L door operates properly when bi-level switch  is turned ON and OFF with the temperature control lever in the middle position.

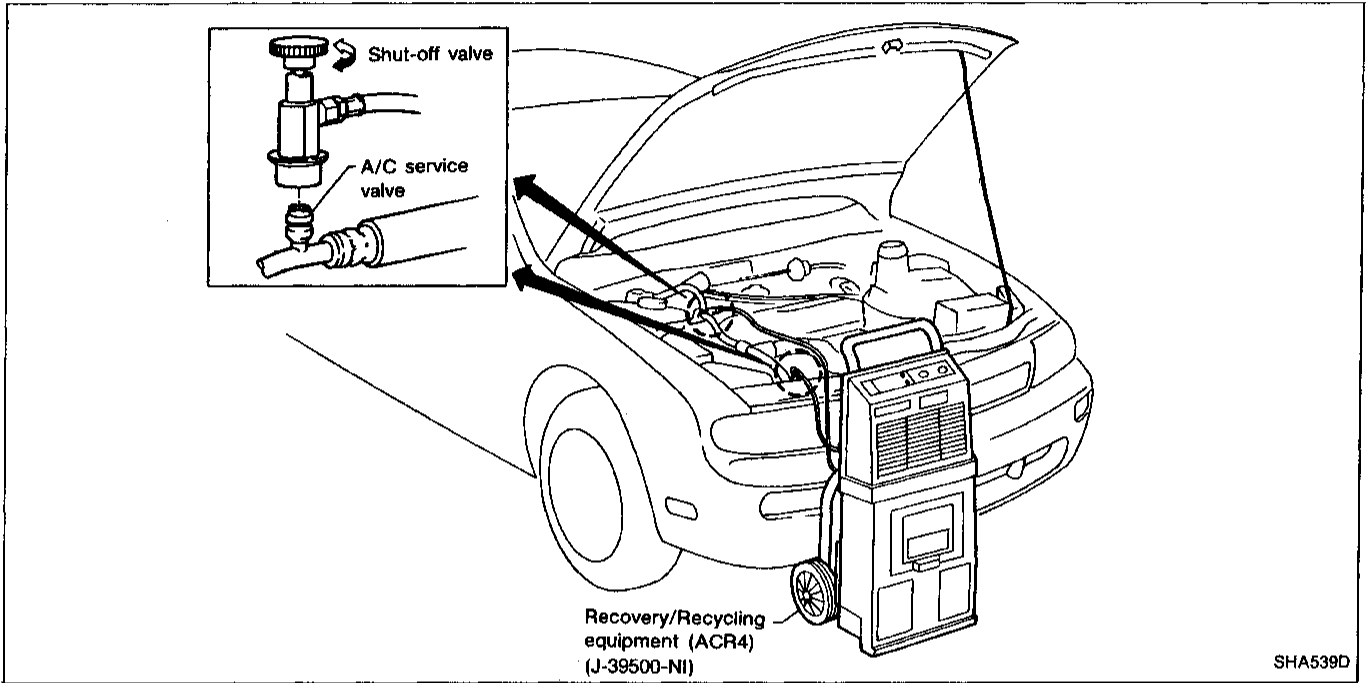
SERVICE PROCEDURES

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

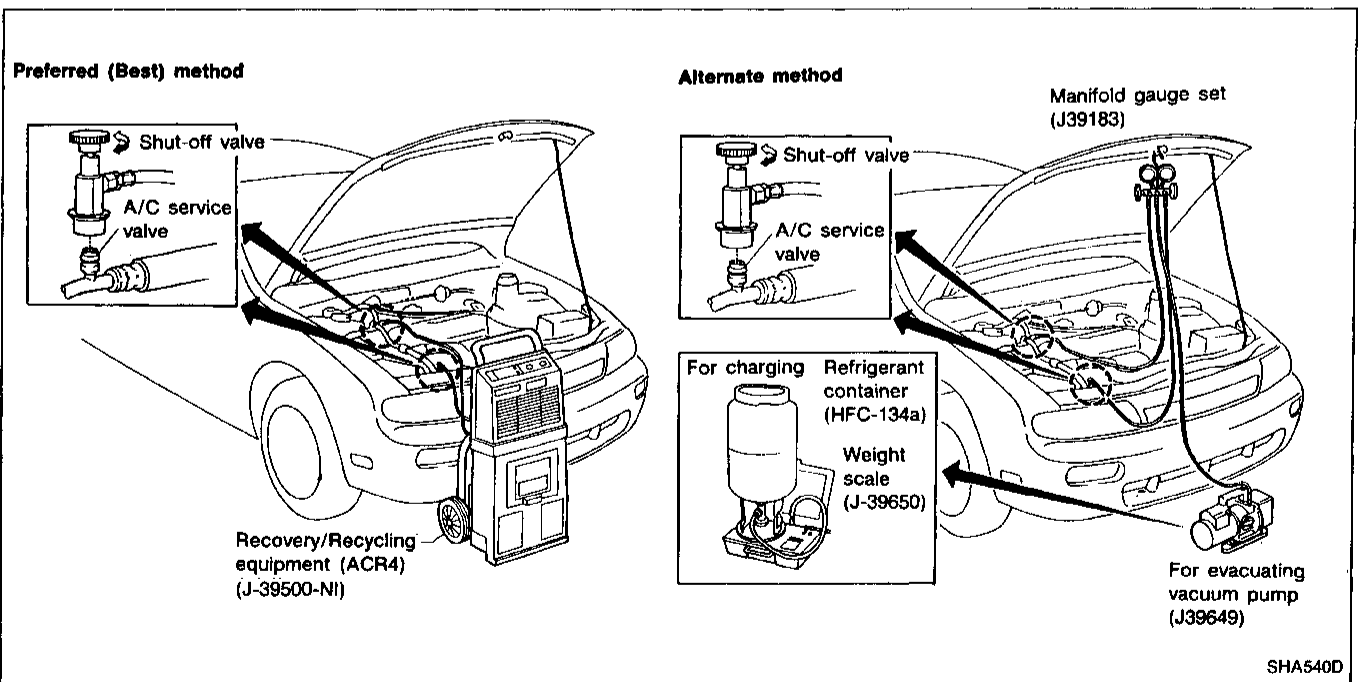
DISCHARGING REFRIGERANT

WARNING:

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



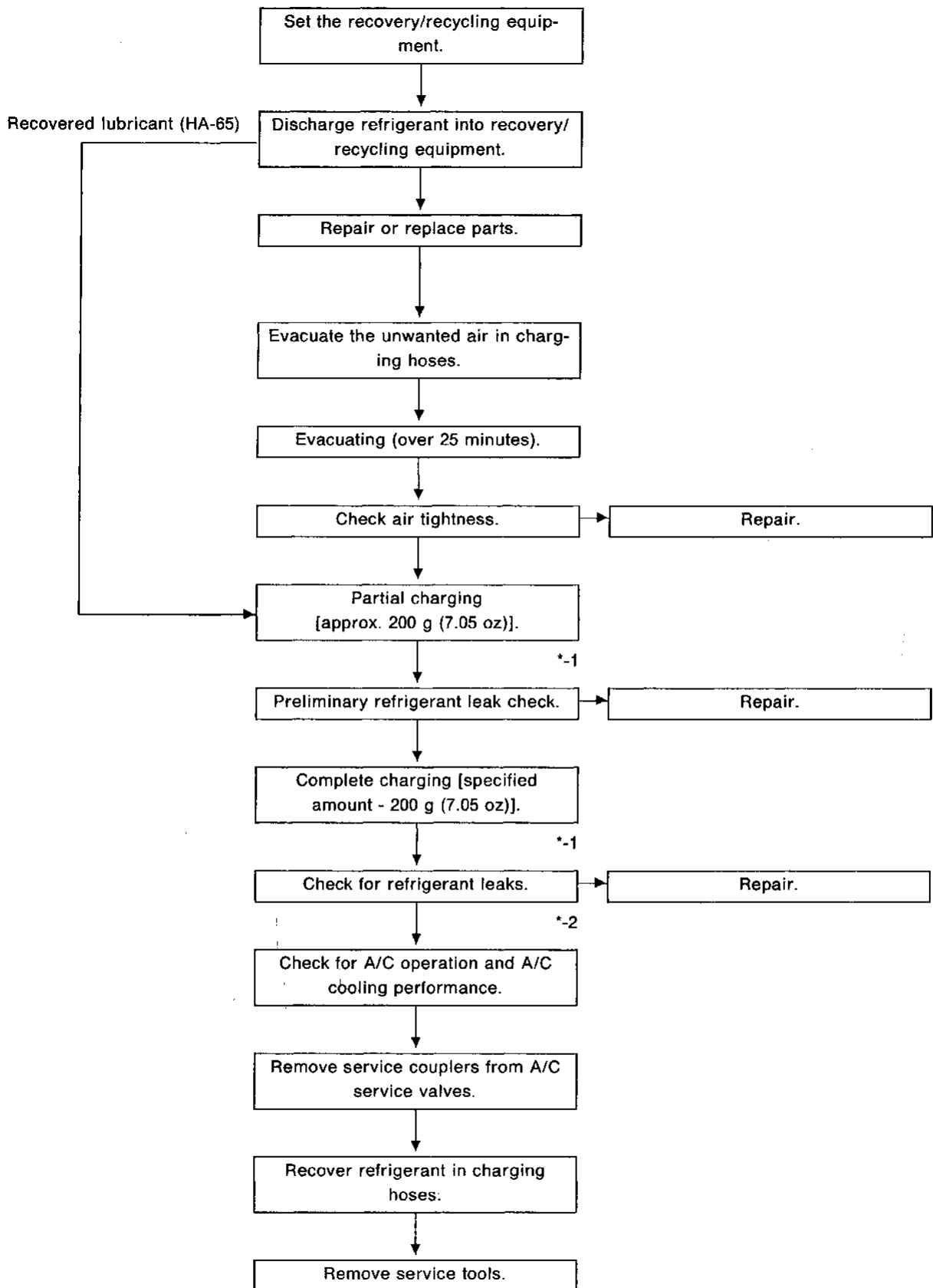
EVACUATING SYSTEM AND CHARGING REFRIGERANT



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SERVICE PROCEDURES

HFC-134a (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 conditioning system then turn it off. Service valve caps must be attached to valves (to prevent leakage).

Maintenance of Oil Quantity in Compressor

The lubricant used to lubricate the compressor circulates through the system with the refrigerant. Add lubricant to the compressor to maintain the specified amount when: replacing any component of the system, or a large amount of gas leakage occurs.

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)

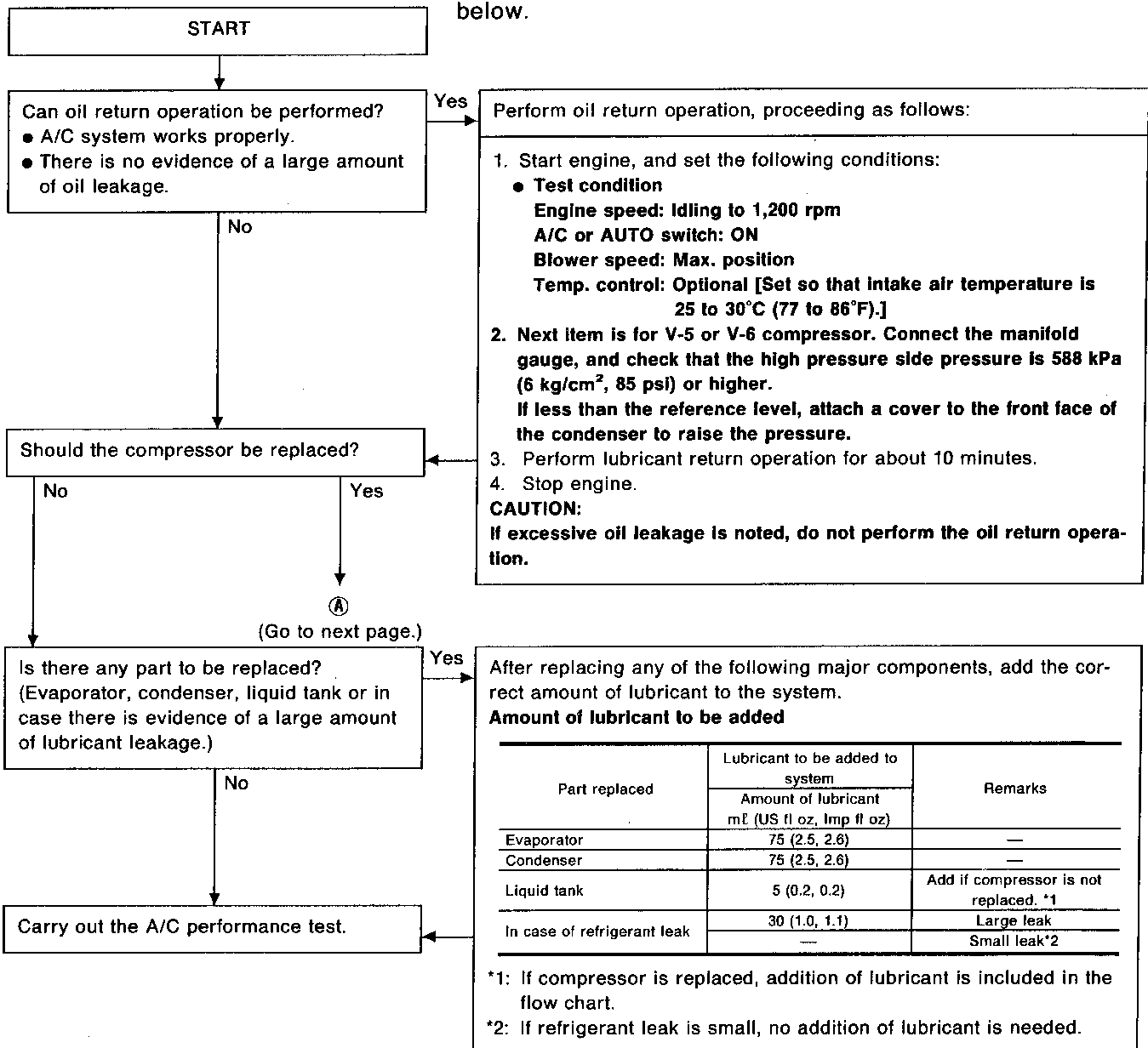
CHECKING AND ADJUSTING

LUBRICANT

Name: Nissan A/C System Oil Type S

Part number: KLH00-PAGS0

Adjust the lubricant quantity according to the flowchart shown below.



SERVICE PROCEDURES

Maintenance of Oil Quantity in Compressor (Cont'd)

A



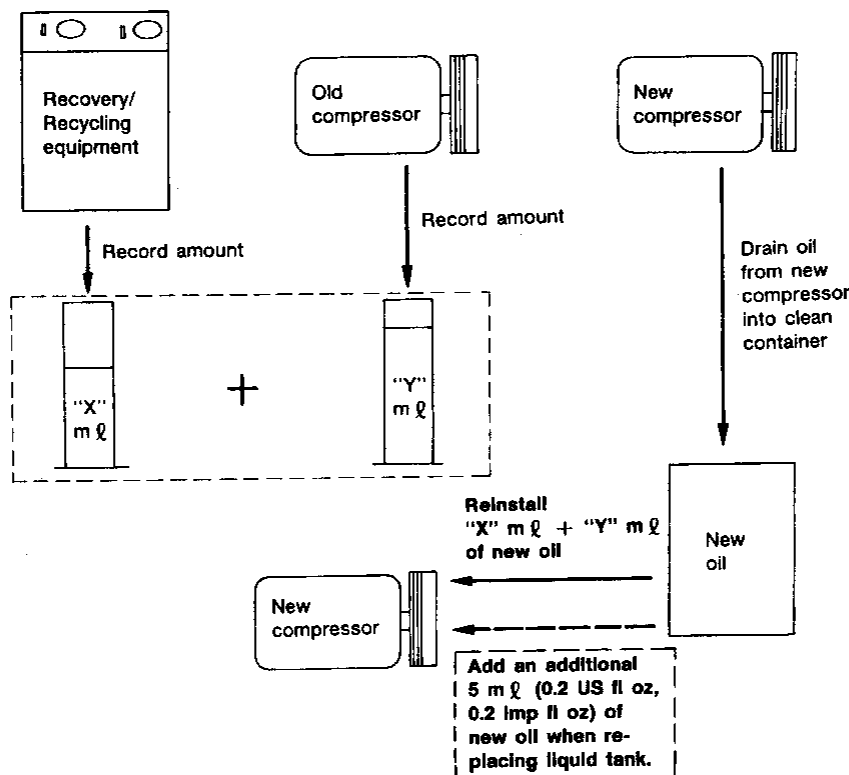
1. Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure oil discharged into the recovery/recycling equipment.
2. Remove the drain plug of the "old" (removed) compressor (applicable only to V-5, V-6 or DKS-16H compressor). Drain the oil into a graduated container and record the amount of drained oil.
3. Remove the drain plug and drain the oil from the "new" compressor into a separate, clean container.
4. Put the same amount (refer to 2. above) of new oil into the new compressor. Put it through the drain plug or suction port opening.
5. Also add the old oil amount [discharged from A/C system (refer to 1. above)] of the new oil to the new compressor.
6. Torque the drain plug.

V-5 or V-6 compressor: 18 - 19 N·m (1.8 - 1.9 kg-m, 13 - 14 ft-lb)

DKS-16H compressor: 14 - 16 N·m (1.4 - 1.6 kg-m, 10 - 12 ft-lb)

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

Oil adjusting procedure for compressor replacement



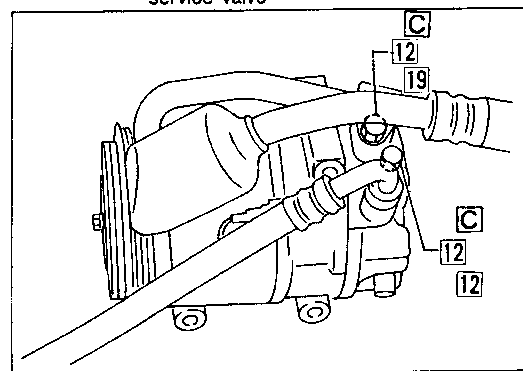
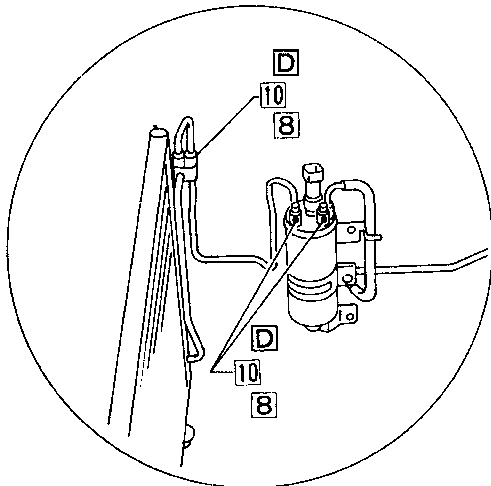
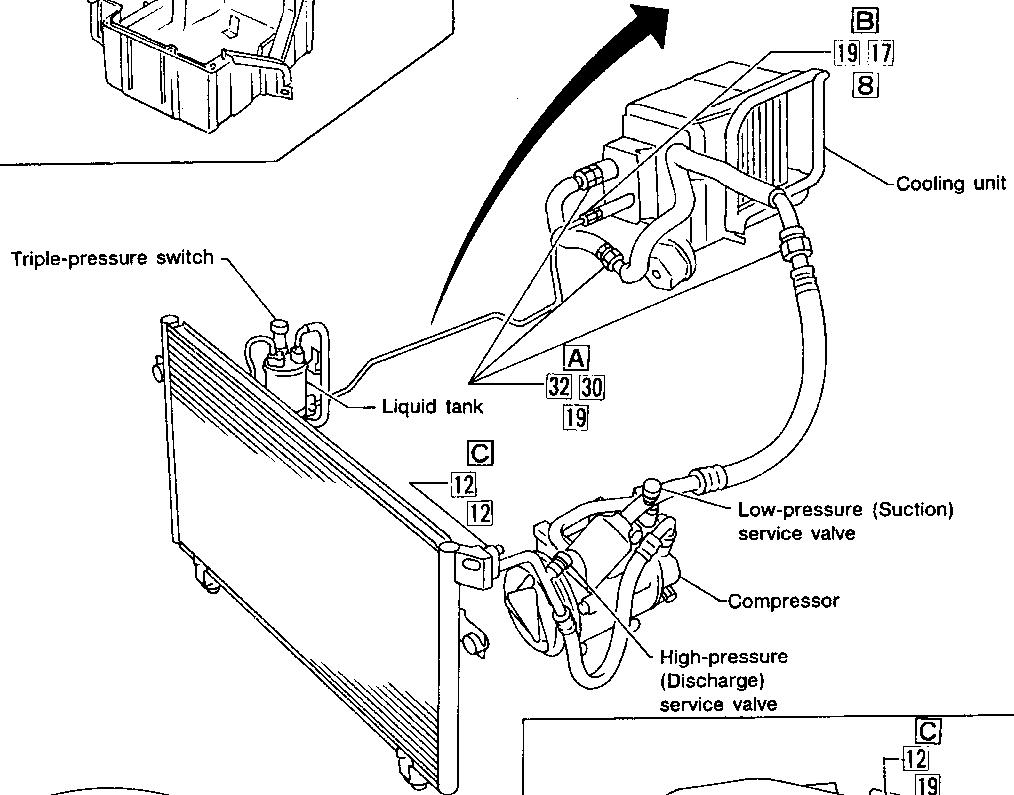
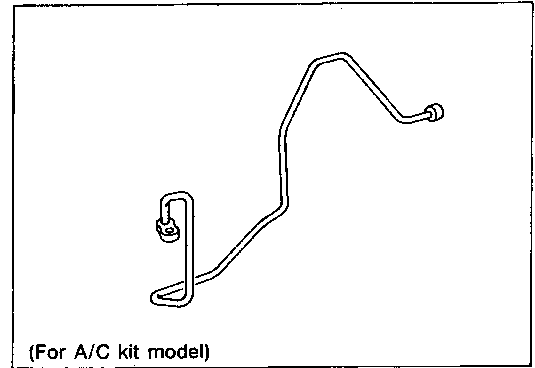
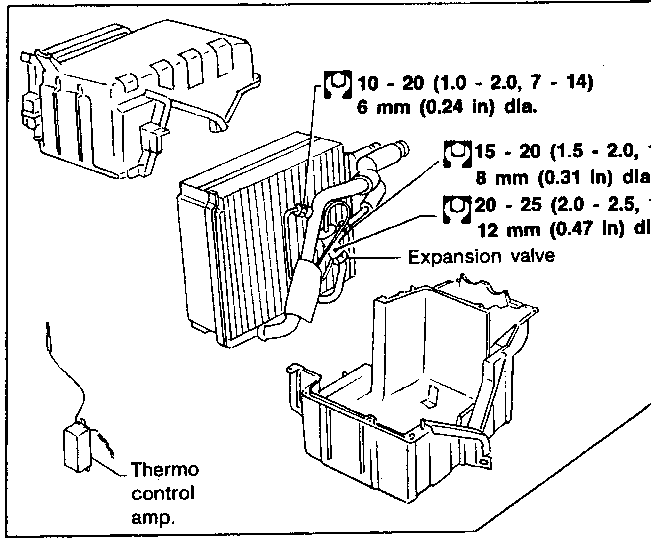
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SERVICE PROCEDURES

Refrigerant Lines

- Refer to HA-3.

SEC. 271-272-276



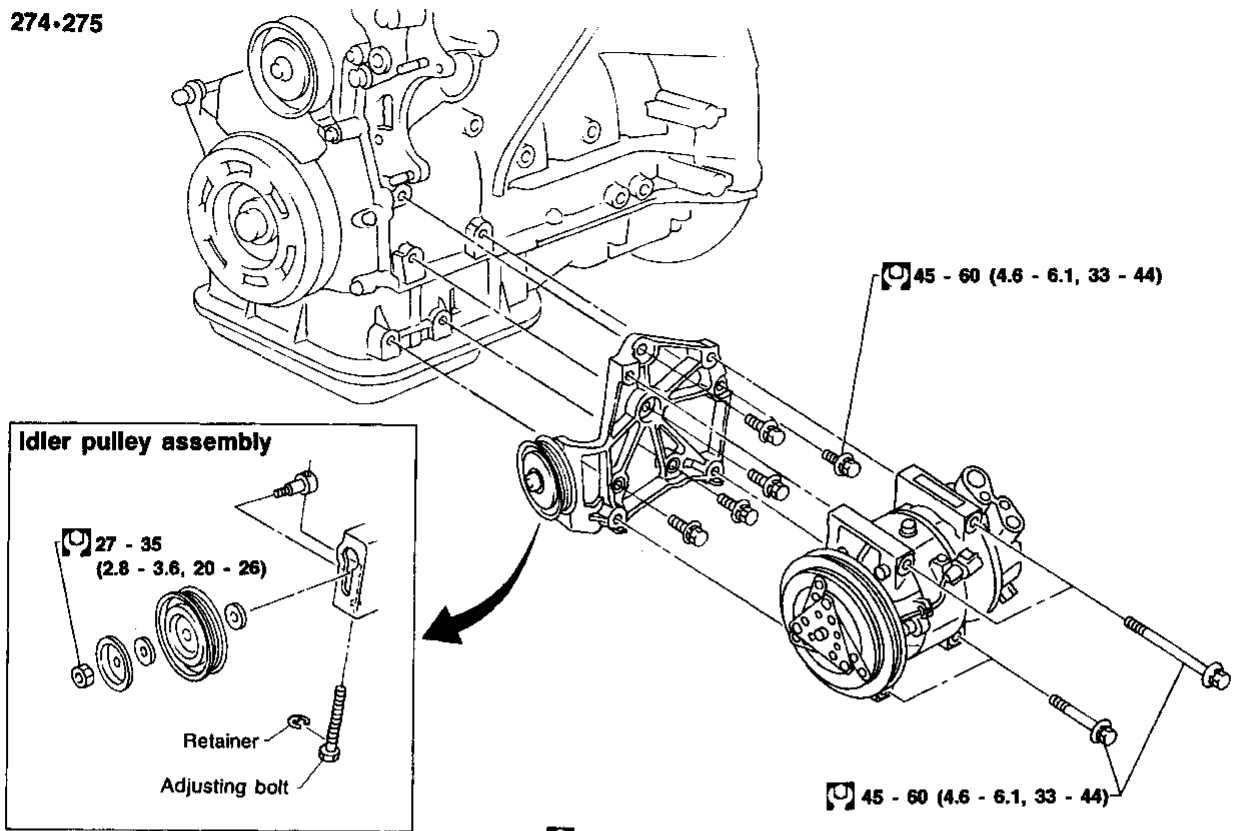
- (Tightening torque)
- (Wrench size)
- (O-ring size)
- A : 25 - 34 (2.5 - 3.5, 18 - 25)
- B : 10 - 20 (1.0 - 2.0, 7 - 14)
- C : 8 - 11 (0.8 - 1.1, 5.8 - 8.0)
- D : 2.9 - 3.9 (0.3 - 0.4, 2.2 - 2.9)

: N·m (kg·m, ft·lb)

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Compressor Mounting

SEC. 274-275



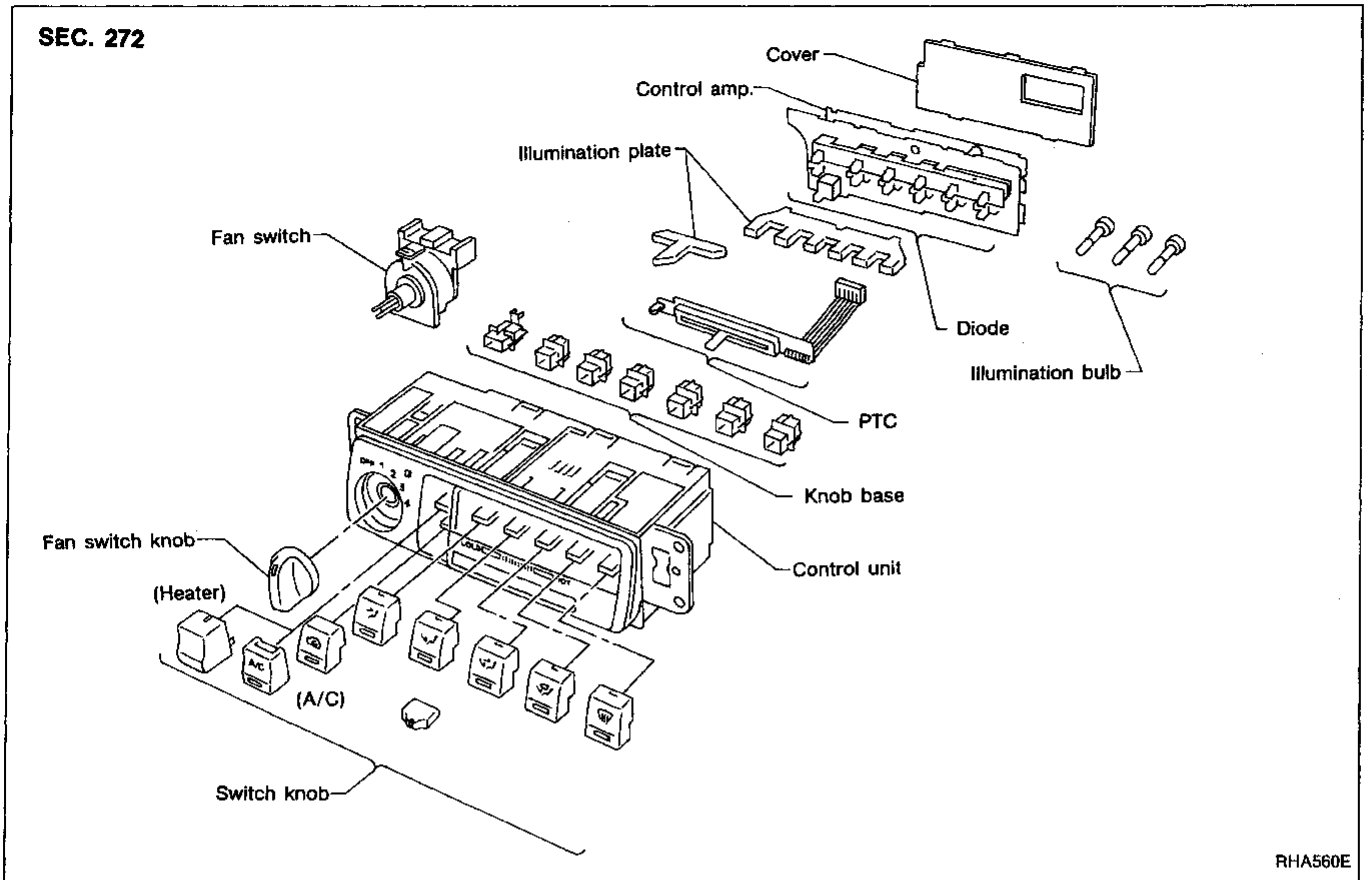
Belt Tension

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

Fast Idle Control Device (FICD)

- Refer to EC section ("IACV-FICD SOLENOID VALVE", "TROUBLE DIAGNOSES FOR NON-DETECTIVE ITEMS").

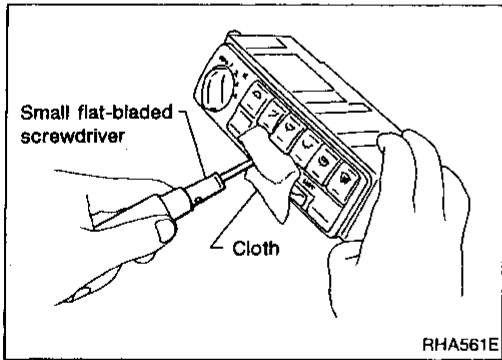
Overhaul — Push Control Unit Assembly



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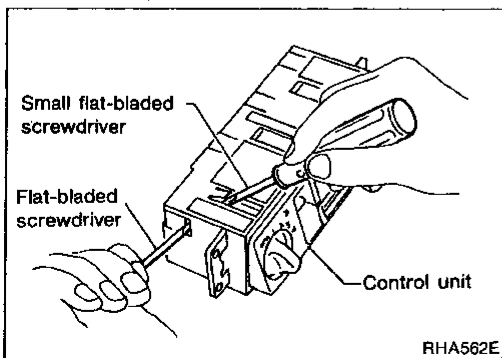
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Disassembly

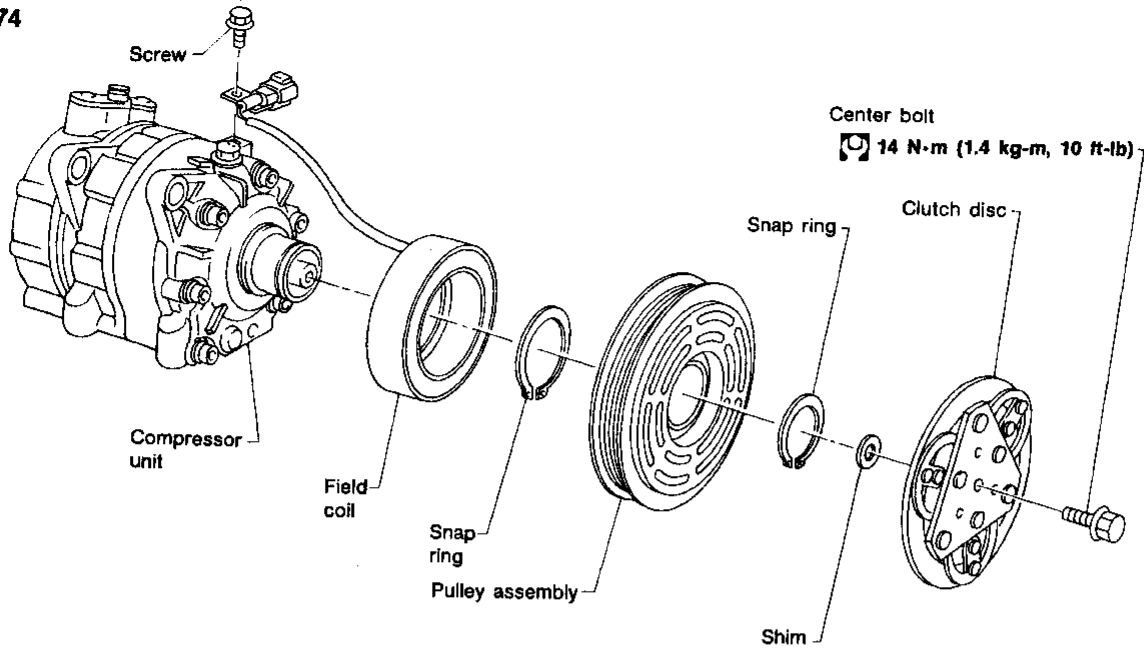
1. Remove switch knobs.
Be careful not to scratch knobs during removal.



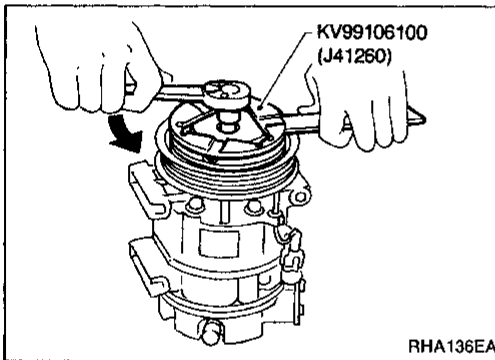
2. Remove fan switch knob.

COMPRESSOR — Model V-6 (CALSONIC make)

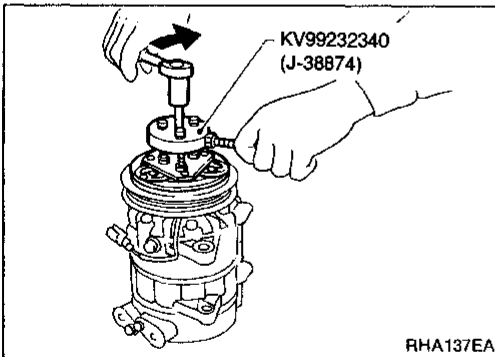
SEC. 274



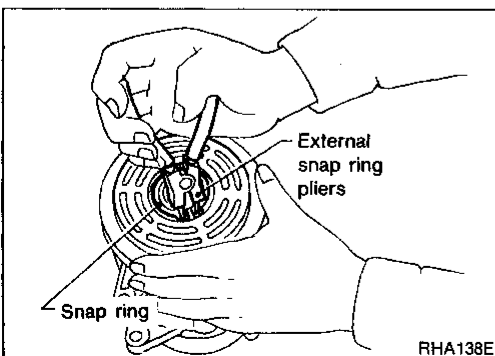
RHA135EA



RHA136EA



RHA137EA



RHA138E

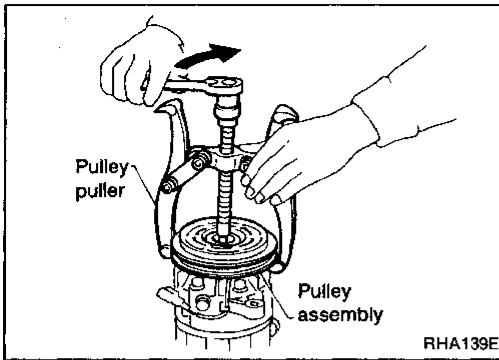
Compressor Clutch

REMOVAL

- When removing center bolt, hold clutch disc with clutch disc wrench.
- Remove the clutch disc using the clutch disc puller. Insert the holder's three pins into the holes in the clutch disc. Rotate the holder clockwise to hook it onto the plate. Then, tighten the center bolt to remove the clutch disc. After removing the clutch disc, remove the shims from either the drive shaft or the clutch disc.
- Remove the snap ring using external snap ring pliers.

COMPRESSOR — Model V-6 (CALSONIC make)

Compressor Clutch (Cont'd)



- Pulley removal
Use any commercially available pulley puller. Position the center of it on the end of the drive shaft, and remove the pulley assembly.
To prevent the pulley groove from being deformed, the puller claws should be positioned onto the edge of the pulley assembly.

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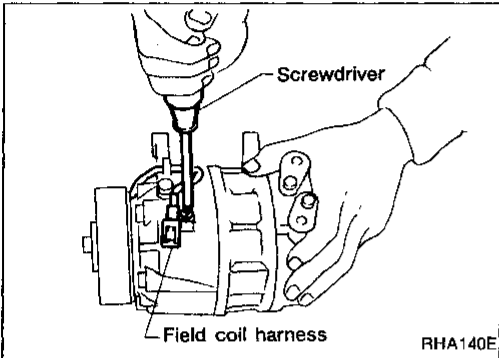
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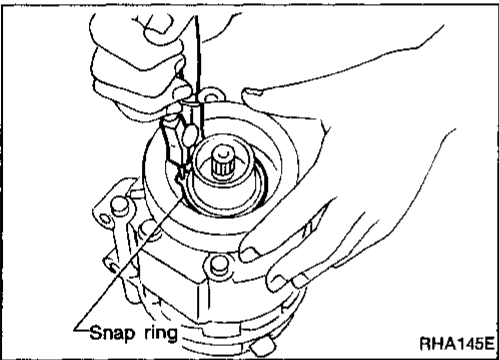
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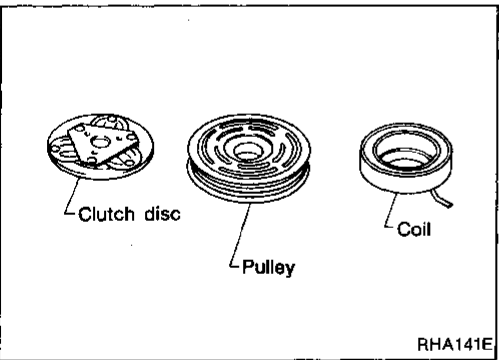
IDX



- Remove the field coil harness clip using a screwdriver.



- Remove the snap ring using external snap ring pliers.



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. Check the contact surface of the pulley for any sign of excessive grooving due to slippage. If any sign is found, replace both the pulley and clutch disc. The contact surfaces of the pulley assembly should be cleaned with a suitable solvent before reinstallation.

Coil

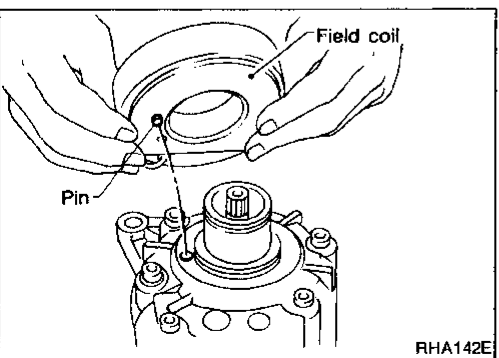
Check coil for loose connection or cracked insulation.

INSTALLATION

- Install the field coil.

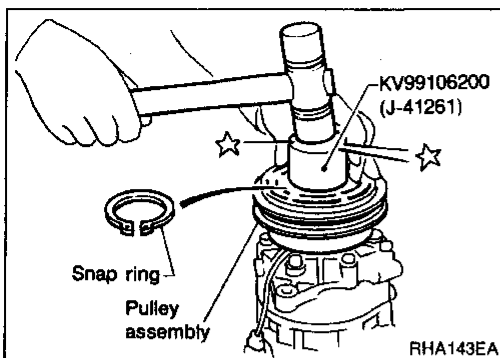
Be sure to align the coil's pin with the hole in the compressor's front head.

- Install the field coil harness clip using a screwdriver.

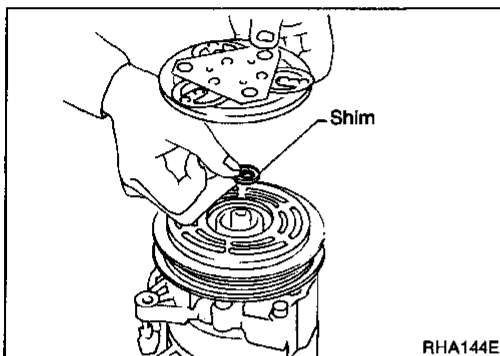


COMPRESSOR — Model V-6 (CALSONIC make)

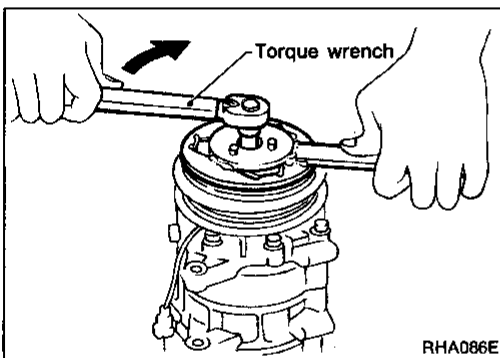
Compressor Clutch (Cont'd)



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

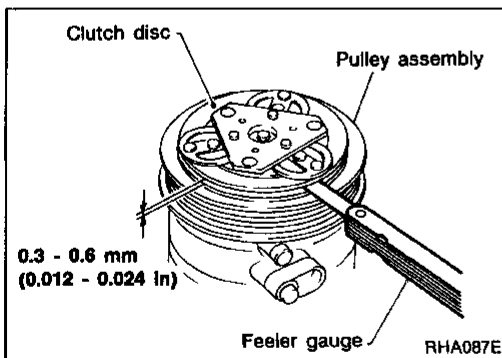


- Install the clutch disc on the drive shaft, together with the original shim(s). Press the clutch disc down by hand.



- Using the holder to prevent clutch disc rotation, tighten the bolt to 14 N·m (1.4 kg-m, 10 ft-lb) torque.

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



- Check clearance around the entire periphery of 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 readjust.

BREAK-IN OPERATION

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

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

COMPRESSOR

Model	CALSONIC make V-6	
Type	V-6 variable displacement	
Displacement	cm ³ (cu in)/rev.	
Max.	165 (10.07)	
Min.	10.5 (0.641)	
Cylinder bore x stroke	mm (in)	37 (1.46) x [1.6 - 25.6 (0.063 - 1.008)]
Direction of rotation	Clockwise (viewed from drive end)	
Drive belt	Poly V	

LUBRICANT

Model	CALSONIC make V-6	
Name	Nissan A/C System Oil Type S	
Part number	KLH00-PAGS0	
Capacity	mℓ (US fl oz, Imp fl oz)	
Total in system	250 (8.5, 8.8)	
Compressor (Service part) charging amount	250 (8.5, 8.8)	

REFRIGERANT

Type	HFC-134a (R-134a)	
Capacity	kg (lb)	0.60 - 0.70 (1.32 - 1.54)

Inspection and Adjustment

ENGINE IDLING SPEED

When A/C is ON

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

BELT TENSION

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

COMPRESSOR CLUTCH

Model	CALSONIC make V-6	
Clutch disc-pulley clearance	mm (in)	0.3 - 0.6 (0.012 - 0.024)

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