HEATER & AIR CONDITIONER

SECTION HA

CONTENTS

AUTO

MANUAL

CONTENTS (Cont'd)

Supplemental Restraint System (SRS) “AIR BAG”

NDHA0001

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 **RS section** of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance should be performed by an authorized NISSAN dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses are covered with yellow insulation either just before the harness connectors or for the complete harness, for easy identification.**

A/C Identification Label

NDHA0155

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

NOTE:
Vehicles with factory installed fluorescent dye have a green label.
Vehicles without factory installed fluorescent dye have a blue label.

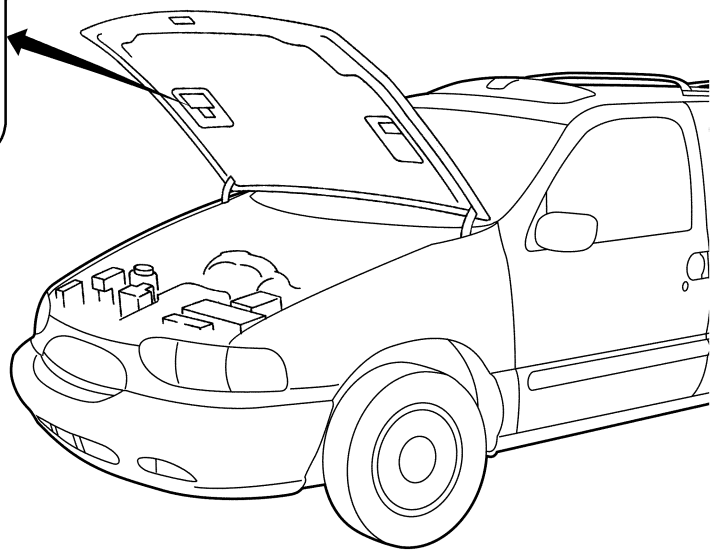
CAUTION (IF A/C EQUIPPED) **MISE EN GARDE** (VÉHICULES CLIMATISÉS)

· REFRIGERANT UNDER HIGH PRESSURE. AIR CONDITIONING SYSTEM TO BE SERVICED BY QUALIFIED PERSONNEL. IMPROPER SERVICE METHODS MAY CAUSE PERSONAL INJURY. CONSULT SERVICE MANUAL.
· LE FRIGOTIGENE EST SOUS FORTE PRESSION. NE CONFIER L'ENTRETIEN ET LA ŔEPARATION DU CLIMATISEUR QU'À UN PERSONNEL QUALIFIÉ. L'EMPLOI DE MAUVAISES MÉTHODES PEUT CAUSER DES BLESSURES. CONSULTER LE MANUEL DE ŔEPARATION.

DISTR.:
NISSAN—
CARSON, CA.

	REFRIG. FRIGORIG.	LUBRICANT/LUBRIFIANT
TYPE:	R-134a	PAG LUBRICANT W/LUMINESCENT DYE LUB. PAG AVEC TEINTURE LUMINESCENTE
AMOUNT: W/ FR A/C: QTE. CLIM. AV. :	2.0 LB	207 CC
W/FR & RR A/C: CLIM. AV. ET AR.	3.6 LB	325 CC

SAE J639



LHA218

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

=NDHA0002

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed, compressor failure is likely to occur, refer to "Contaminated Refrigerant". To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/ Recycling Recharging equipment (ACR4) (J-39500–NI) and Refrigerant Identifier.**
- **Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If lubricant other than that specified is used, compressor failure is likely to occur.**
- **The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**

a) When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.

b) When installing refrigerant components to a vehicle, do not remove the caps (unseal) until just before connecting the components. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.

c) Only use the specified lubricant from a sealed container. Immediately reseal containers of lubricant. Without proper sealing, lubricant will become moisture saturated and should not be used.

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

e) Do not allow lubricant (Nissan A/C System Oil Type S) to come in contact with styrofoam parts. Damage may result.

Contaminated Refrigerant

NDHA0266

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

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- If you choose to perform the repair, recover the refrigerant using only dedicated equipment and containers. **Do not recover contaminated refrigerant into your existing service equipment.** If your facility does not have dedicated recovery equipment, you may contact a local refrigerant product retailer for available service. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.
- If the vehicle is within the warranty period, the air conditioner warranty is void. Please contact Nissan Customer Affairs for further assistance.

Precautions for Leak Detection Dye

NDHA0275

- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety glasses to protect your eyes and enhance the visibility of the fluorescent dye.
- A compressor shaft seal should not be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electronic refrigerant leak detector (J-41995).
- Always remove any dye from the leak area after repairs are complete to avoid a misdiagnosis during a future service.
- Do not allow dye to come into contact with painted body panels or interior components. If dye is spilled, clean immediately with the approved dye cleaner. Fluorescent dye left on a surface for an extended period of time **cannot be removed**.
- Do not spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Do not use more than one refrigerant dye bottle (1/4 ounce / 7.4 cc) per A/C system.
- Leak detection dyes for R-134a and R-12 A/C systems are different. Do not use R-134a leak detection

dye in R-12 A/C systems or R-12 leak detection dye in R-134a A/C systems or A/C system damage may result.

- The fluorescent properties of the dye will remain for over three (3) years unless a compressor failure occurs.

General Refrigerant Precautions

NDHA0003

WARNING:

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

Precautions for Refrigerant Connection

NDHA0004

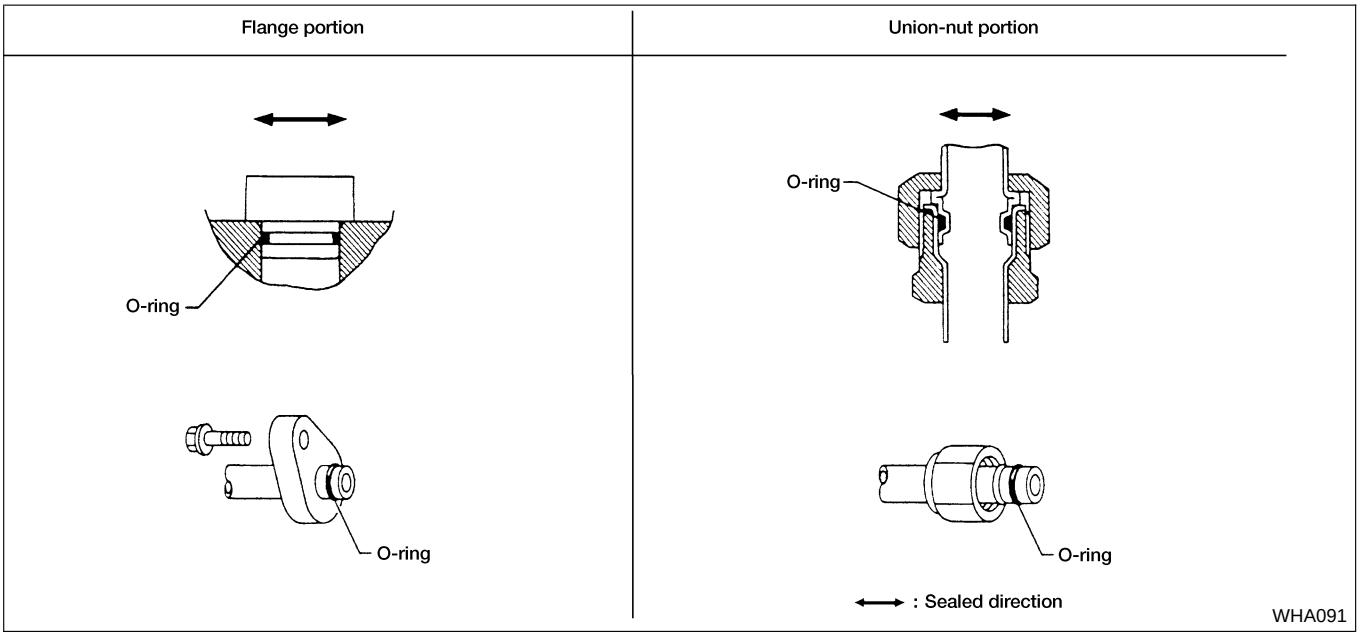
A new type refrigerant connection has been introduced to all refrigerant lines except the following portion.

- Front evaporator core connections.

FEATURES OF NEW TYPE REFRIGERANT CONNECTION

NDHA0004S01

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

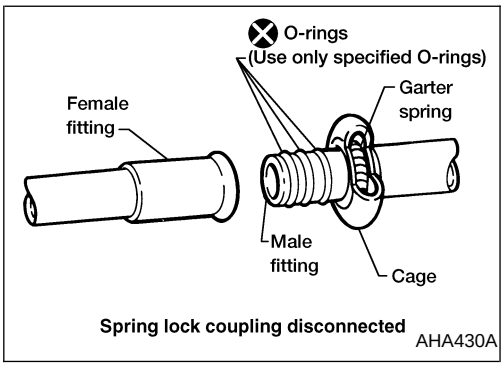


SPRING LOCK COUPLING

NDHA0004S03

The spring lock coupling is a refrigerant line coupling held together by a garter spring inside a circular cage. When the coupling is connected, the flared end of the female fitting slips behind the garter spring inside the cage of the male fitting. The garter spring and cage prevent the flared end of the female fitting from pulling out of the cage.

Three green O-rings are used to seal the three halves of the coupling. **These O-rings are made of special material and must be replaced with an O-ring made of the same material.** The O-rings normally used in refrigerant system connections **are not** the same material and should not be used with the spring lock coupling. **Use only the specified O-ring for the spring lock coupling. For Removal and Installation, refer to HA-145.**

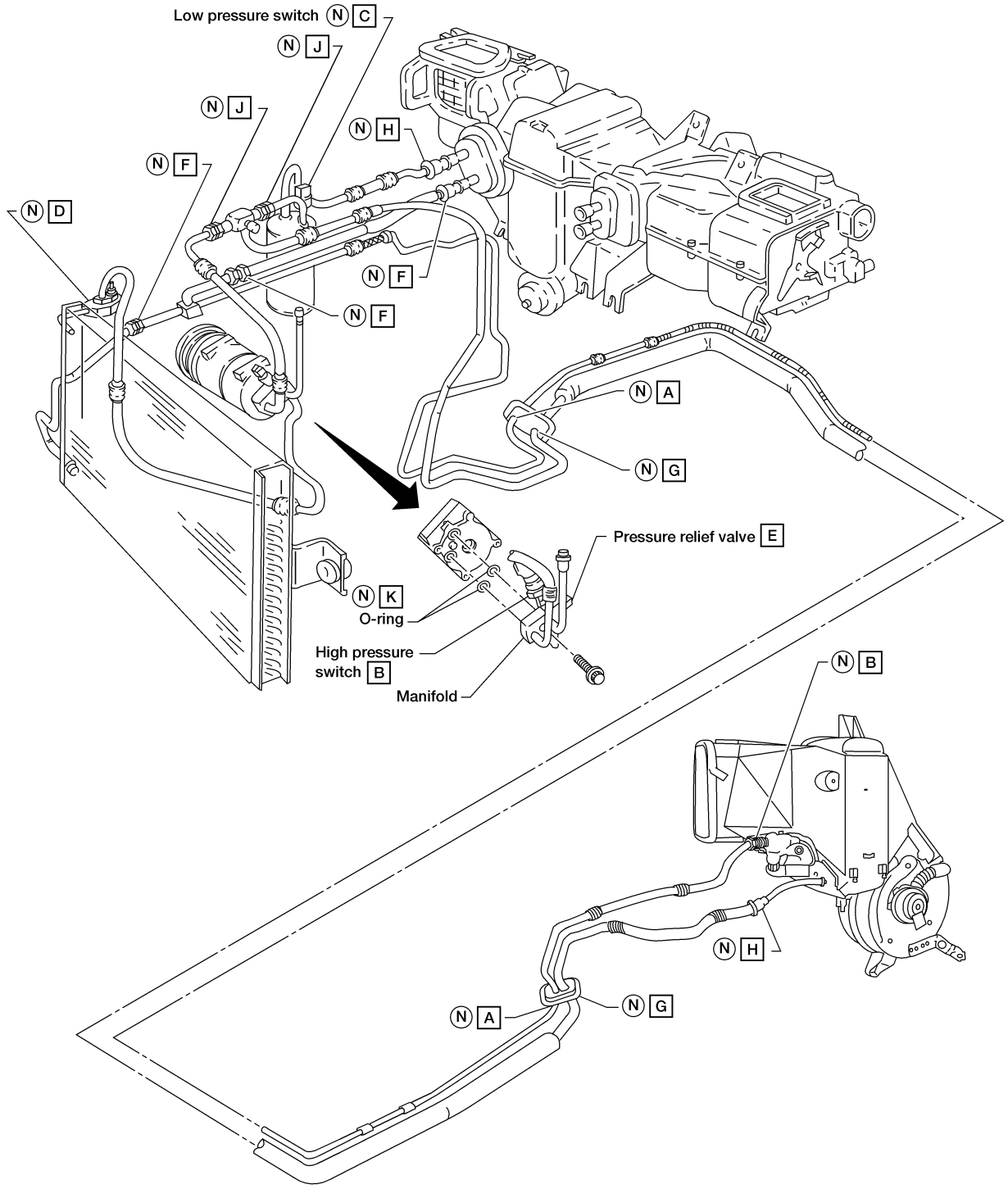


Spring lock coupling disconnected AHA430A

O-RING AND REFRIGERANT CONNECTION

=NDHA0004S02

SEC. 271 • 274 • 276



N : New type refrigerant connection

□ : O-ring size

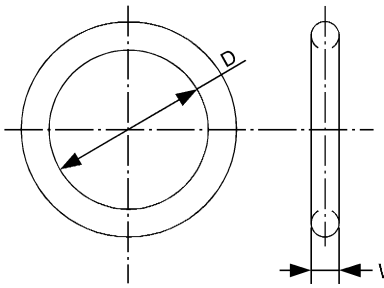
WHA216

CAUTION:

Refrigerant connections in some systems use different O-ring configurations. Do not confuse O-rings since they are not interchangeable. If a wrong O-ring is installed, refrigerant will leak at, or around, the connection.

O-Ring Part Numbers and Specifications

NDHA0004S0201



SHA814E

Connection type	O-ring size	Part number*	D mm (in)	W mm (in)
New	A	92477 7B003	6.45 (0.2539)	2.62 (0.1031)
New	B	92477 0B000	7.37 (0.2902)	1.81 (0.0713)
New	C	92477 0B003	8.03 (0.3161)	1.96 (0.0772)
New	D	92477 7B001	9.19 (0.3618)	2.62 (0.1031)
New	E	92477 7B004	9.25 (0.3642)	1.78 (0.0701)
New	F	92477 0B001	10.16 (0.4000)	1.85 (0.0728)
New	G	92477 7B005	11.60 (0.4567)	2.62 (0.1031)
New	H	92477 0B002	12.93 (0.5091)	1.86 (0.0732)
New	J	92477 7B002	15.67 (0.6169)	1.93 (0.0760)
New	K	92785 0B700	20.25 (0.7972)	3.53 (0.1390)

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

WARNING:

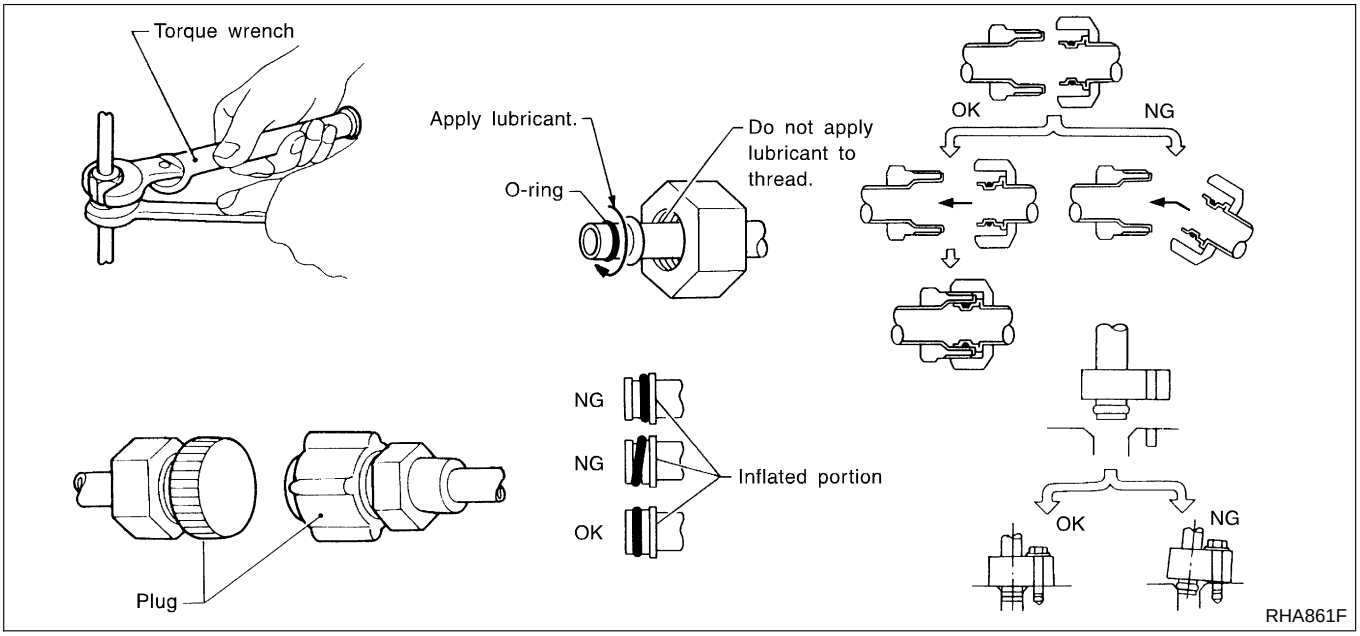
Make sure all refrigerant is discharged into the recycling equipment and the pressure in the system is less than atmospheric pressure. Then gradually loosen the discharge side hose fitting and remove it.

CAUTION:

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

- **When the compressor is removed, store it in the same position as it is when mounted on the car. Failure to do so will cause lubricant to enter the low pressure chamber.**
- **When connecting tubes, always use a torque wrench and a back-up wrench.**
- **After disconnecting tubes, immediately plug all openings to prevent entry of dirt and moisture.**
- **When installing an air conditioner in the vehicle, connect the pipes as the final stage of the operation. Do not remove the seal caps of pipes and other components until just before required for connection.**
- **Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.**
- **Thoroughly remove moisture from the refrigeration system before charging the refrigerant.**
- **Always replace used O-rings.**
- **When connecting tube, apply lubricant to circle of the O-rings shown in illustration. Be careful not to apply lubricant to threaded portion.**
  Lubricant name: Nissan A/C System Oil Type F
  Part number*: KLH00-PAGQU
- **O-ring must be closely attached to dented portion of tube.**
- **When replacing the O-ring, be careful not to damage O-ring and tube.**
- **Connect tube until you hear it click, then tighten the nut or bolt by hand until snug. Make sure that the O-ring is installed to tube correctly.**
- **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.**

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



Precautions for Servicing Compressor

NDHA0005

- **Plug all openings to prevent moisture and foreign matter from entering.**
- **When the compressor is removed, store it in the same position as it is when mounted on the car.**
- **When replacing or repairing compressor, follow “Maintenance of Lubricant Quantity in Compressor” exactly. Refer to HA-124.**
- **Keep friction surfaces between clutch and pulley clean. If the surface is contaminated, with lubricant, wipe it off by using a clean waste cloth moistened with thinner.**
- **After compressor service operation, turn the compressor shaft by hand more than five turns in both directions. This will equally distribute lubricant inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for one hour.**
- **After replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation.**

Precautions for Service Equipment

NDHA0006

RECOVERY/RECYCLING EQUIPMENT

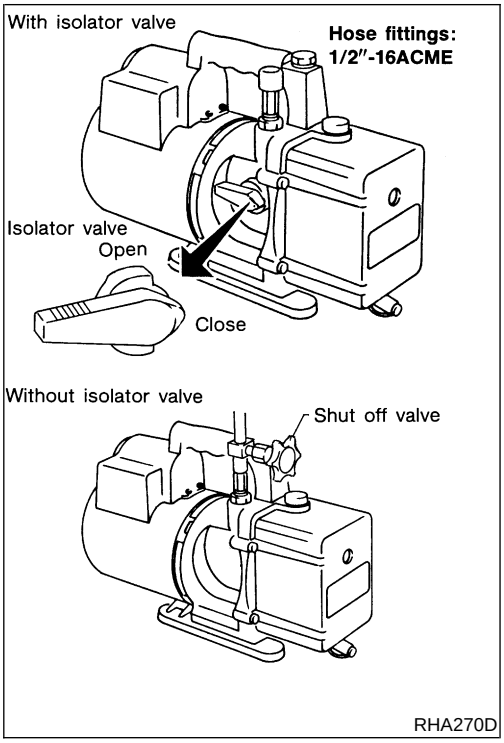
NDHA0006S01

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

ELECTRONIC LEAK DETECTOR

NDHA0006S02

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



VACUUM PUMP

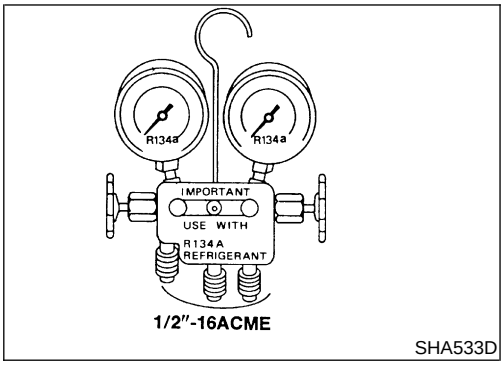
NDHA0006S03

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 lubricating oil may migrate.

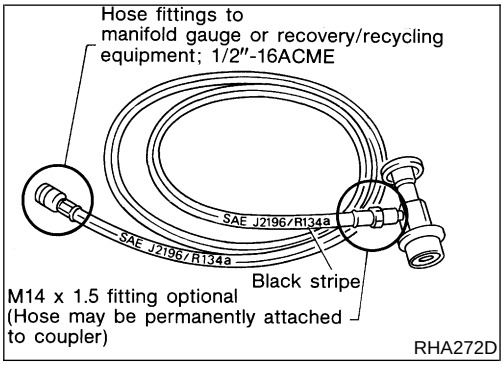
Some one-way valves open when vacuum is applied and close under a no vacuum condition. Such valves may restrict the pump's ability to pull a deep vacuum and are not recommended.



MANIFOLD GAUGE SET

NDHA0006S04

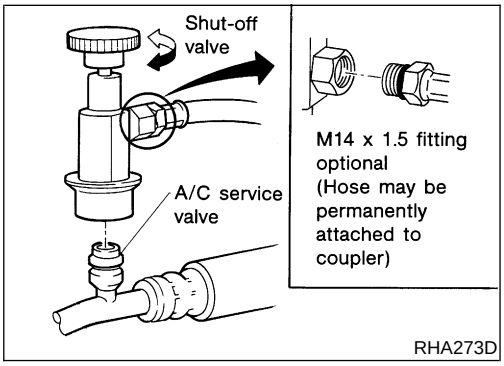
Be certain that the gauge face indicates R-134a or 134a. Make sure the gauge set has 1/2″-16 ACME threaded connections for service hoses. Confirm the set has been used only with refrigerant HFC-134a (R-134a) along with specified lubricant.



SERVICE HOSES

NDHA0006S05

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

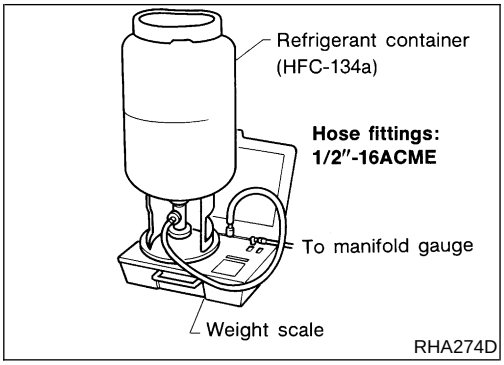


SERVICE COUPLERS

NDHA0006S06

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

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



REFRIGERANT WEIGHT SCALE

NDHA0006S07

Verify that no refrigerant other than HFC-134a (R-134a) and specified lubricants have been used with the scale. If the scale controls refrigerant flow electronically, the hose fitting must be 1/2″-16 ACME.

CALIBRATING ACR4 WEIGHT SCALE

NDHA0006S10

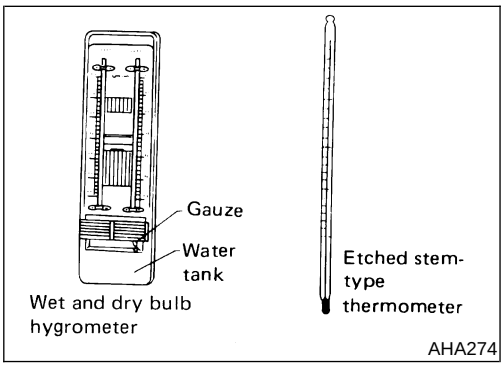
Calibrate the scale every 3 months.
To calibrate the weight scale on the ACR4 (J-39500–NI):

1. Press **Shift/Reset** and **Enter** at the same time.
2. Press **8787. "A1"** will be displayed.
3. Remove all weight from the scale.
4. Press **0**, then press **Enter. "0.00"** will be displayed and changed to **"A2"**.
5. Place a known weight (dumbbell or similar weight), between 10 and 19 lbs., on the center of the weight scale.
6. Enter the known weight using 4 digits. (Example 10 lbs = 10.00, 10.5 lbs = 10.50)
7. Press **Enter** — the display returns to the vacuum mode.
8. Press **Shift/Reset** and **Enter** at the same time.
9. Press **6** — the known weight on the scale is displayed.
10. Remove the known weight from the scale. "0.00" will be displayed.
11. Press **Shift/Reset** to return the ACR4 to the program mode.

CHARGING CYLINDER

NDHA0006S08

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



THERMOMETER AND HYGROMETER

NDHA0006S09

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

Wiring Diagrams and Trouble Diagnosis

NDHA0007

When you read wiring diagrams, refer to the followings:

- “HOW TO READ WIRING DIAGRAMS”, ***GI-10***
- “POWER SUPPLY ROUTING”, ***EL-10***

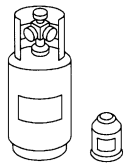
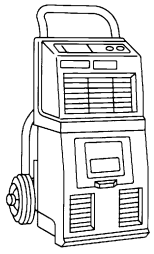
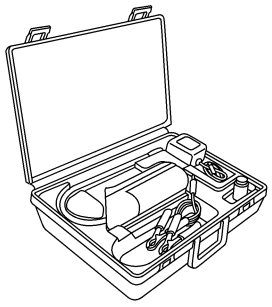
When you perform trouble diagnosis, refer to the followings:

- “HOW TO FOLLOW TEST GROUP IN TROUBLE DIAGNOSIS”, ***GI-34***
- “HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT”, ***GI-23***

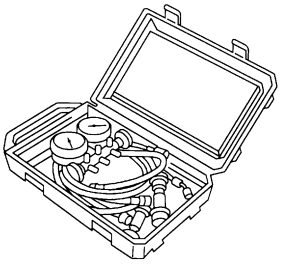
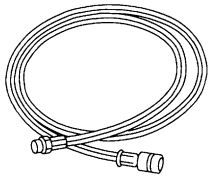
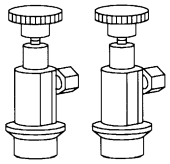
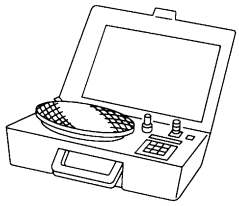
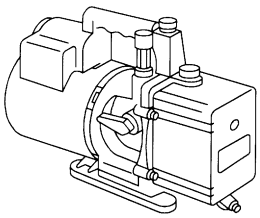
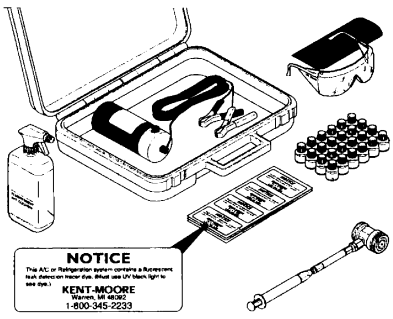
HFC-134a (R-134a) Service Tools and Equipment

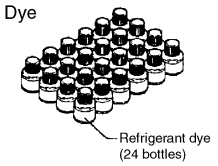
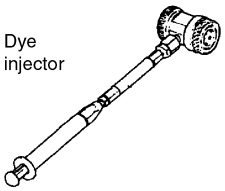
=NDHA0009

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	
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-PAGQU KLH00-PAGQF (—) Nissan A/C System Oil Type F	 NT197	Type: Poly alkylene glycol oil (PAG), type F Application: HFC-134a (R-134a) swash plate (piston) compressors (Nissan only) Lubricity: 206 mℓ (7.0 US fl oz, 7.3 Imp fl oz) 295 mℓ (10.0 US fl oz, 10.4 Imp fl oz)
(J-39500-NI) Recovery/Recycling Recharging equipment (ACR4)	 NT195	Function: Refrigerant Recovery and Recycling and Recharging
(J-41995) Electronic refrigerant leak detector	 AHA281A	Function: Checks for refrigerant leaks.

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

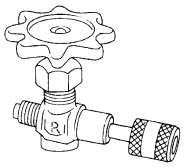
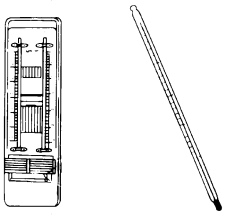
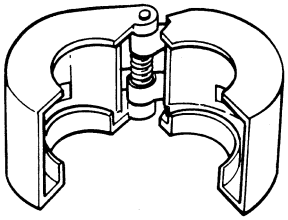
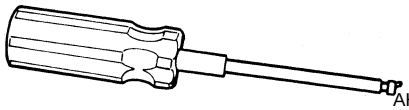
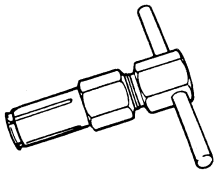
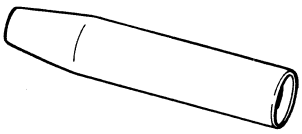
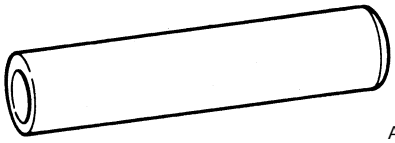
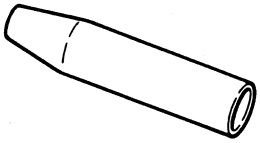
Tool number (Kent-Moore No.) Tool name	Description	
(J-39183) Manifold gauge set (with hoses and couplers)	 NT199	Identification: ● The gauge face indicates R-134a. Fitting size: Thread size ● 1/2″-16 ACME
Service hoses ● High side hose (J-39501-72) ● Low side hose (J-39502-72) ● Utility hose (J-39476-72)	 NT201	Hose color: ● Low hose: Blue with black stripe ● High hose: Red with black stripe ● Utility hose: Yellow with black stripe or green with black stripe Hose fitting to gauge: ● 1/2″-16 ACME
Service couplers ● High side coupler (J-39500-20) ● Low side coupler (J-39500-24)	 NT202	Hose fitting to service hose: ● M14 x 1.5 fitting is optional or permanently attached.
(J-39650) Refrigerant weight scale	 NT200	For measuring of refrigerant Fitting size: Thread size ● 1/2″-16 ACME
(J-39649) Vacuum pump (Including the isolator valve)	 NT203	Capacity: ● Air displacement: 4 CFM ● Micron rating: 20 microns ● Oil capacity: 482 g (17 oz) Fitting size: Thread size ● 1/2″-16 ACME
(J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety glasses (J-41459) Refrigerant dye injector (J-41447) Qty. 24 R-134a refrigerant dye (J-43872) Refrigerant dye cleaner	 LHA176	Power supply: DC 12V (Battery terminal)

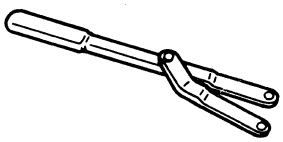
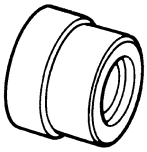
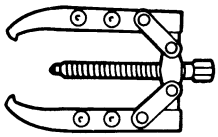
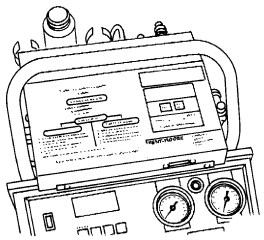
Tool number (Kent-Moore No.) Tool name	Description	
(J-42220) Fluorescent dye leak detector	 LHA177	Power supply: DC12V (Battery terminal) For checking refrigerant leak when fluorescent dye is installed in A/C system Includes: UV lamp and UV safety glasses
(J-41447) R134a fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)	 LHA178	Application: For R-134a PAG oil Container: 1/4 ounce (7.4 cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye)
(J-41459) R134a dye injector Use with J-41447, 1/4 ounce bottle	 LHA179	For injecting 1/4 ounce (7.4 cc) of Fluorescent Leak Detection Dye into A/C system
(J-43872) Dye cleaner	 LHA180	For cleaning dye spills

Commercial Service Tools

=NDHA0008

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

Tool name	Description	Note
Additional Valve	 SHA898C	For discharging, evacuating and charging refrigerant
Thermometer and hygrometer	 SHA900C	For checking temperature and humidity
Spring lock coupling remover	 AHA283	For disconnecting spring lock coupling ● 3/8″ ● 1/2″ ● 5/8″ ● 3/4″
Snap ring remover	 AHA284	For removing snap rings from compressor
Shaft seal remover	 AHA285	For removing shaft seal from compressor
Shaft seal protector	 AHA286	For protecting compressor shaft seal during shaft seal installation
Shaft seal installer	 AHA287	For installing compressor shaft seal
Coil remover	 AHA288	For removing compressor magnet clutch coil

Tool name	Description	Note
Spanner wrench	 AHA289	For removing compressor clutch hub retaining bolt
Coil pressing tool	 AHA290	For installing compressor magnet clutch coil
Puller	 AHA291	For removing and installing compressor magnet clutch coil
Refrigerant Identifier Equipment	 NT765	Checks refrigerant purity and for system contamination

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

Refrigeration System

REFRIGERATION CYCLE

NDHA0010

Refrigerant Flow

NDHA0010S01

The refrigerant flows in the standard pattern, that is, through the compressor, the condenser, orifice tube and/or thermal expansion valve, through the evaporator, the accumulator (from orifice tube), and back to the compressor. The refrigerant evaporation through the evaporator coil is controlled by an orifice tube or an externally equalized expansion valve, located outside the evaporator case.

Freeze Protection

NDHA0010S02

Under normal operating conditions, when the A/C is switched on, the compressor runs continuously, and the evaporator pressure, and therefore temperature, is controlled by the compressor to prevent freeze up.

Refrigerant System Protection

NDHA0010S03

High-pressure switch

NDHA0010S0301

The refrigerant system is protected against excessively high pressure by a high-pressure switch, located on the end of the compressor. If the system pressure rises above the specifications, the high-pressure switch opens to interrupt the compressor operation and a set of contacts close to switch the cooling fan on high. Refer to “Air Conditioner High Pressure Switch”, ***EC-560*** and “High Pressure Switch”, HA-104.

Low-pressure switch

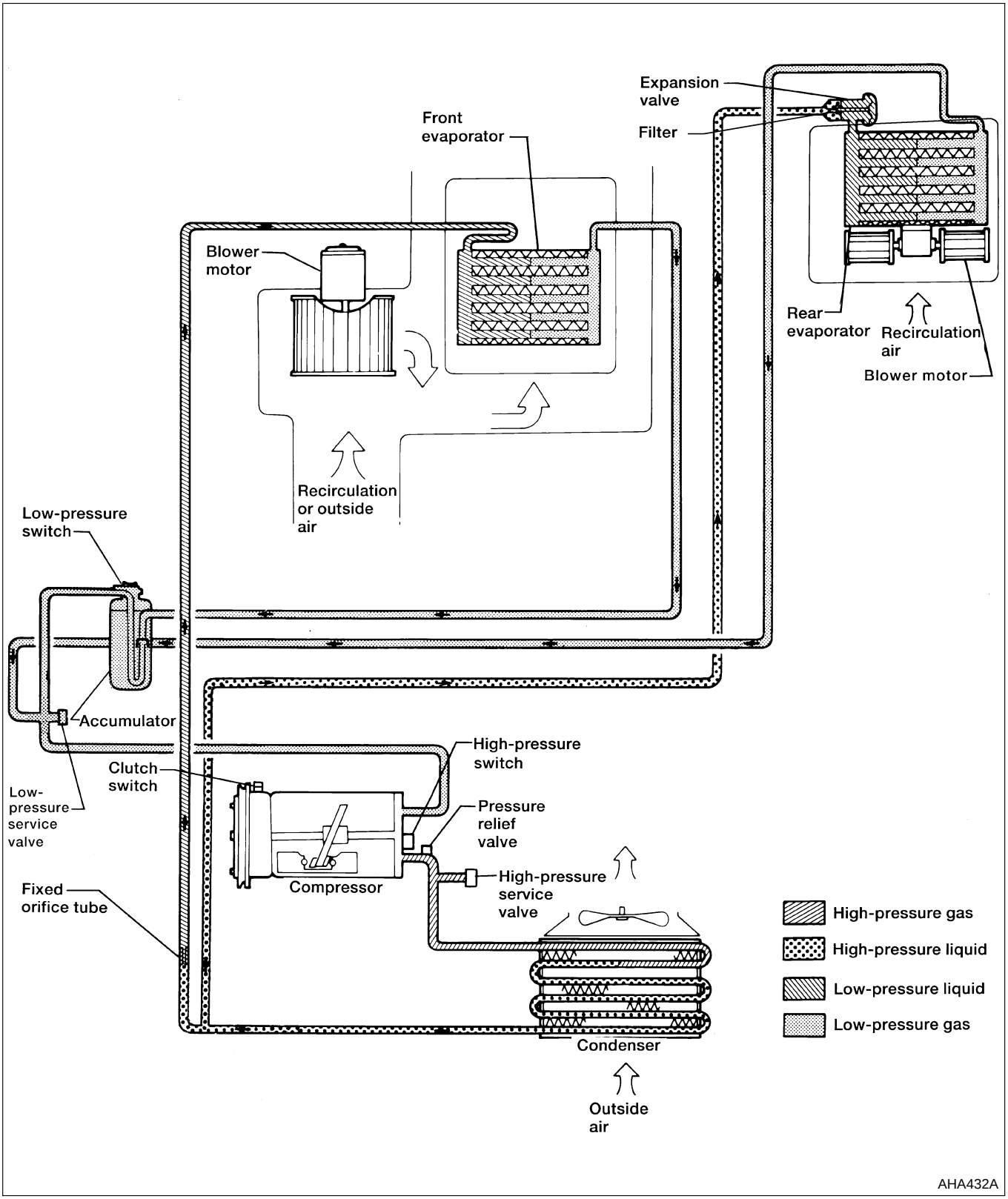
NDHA0010S0304

The refrigerant system is protected against excessively low pressure by the low-pressure switch, located on the accumulator. If the system pressure falls below the specifications, the low-pressure switch opens to interrupt the compressor operation. When the outside temperature is below 4°C (40°F) the low pressure switch opens to interrupt the compressor operation. Refer to “Low Pressure Switch”, HA-103.

Pressure Relief Valve

NDHA0010S0302

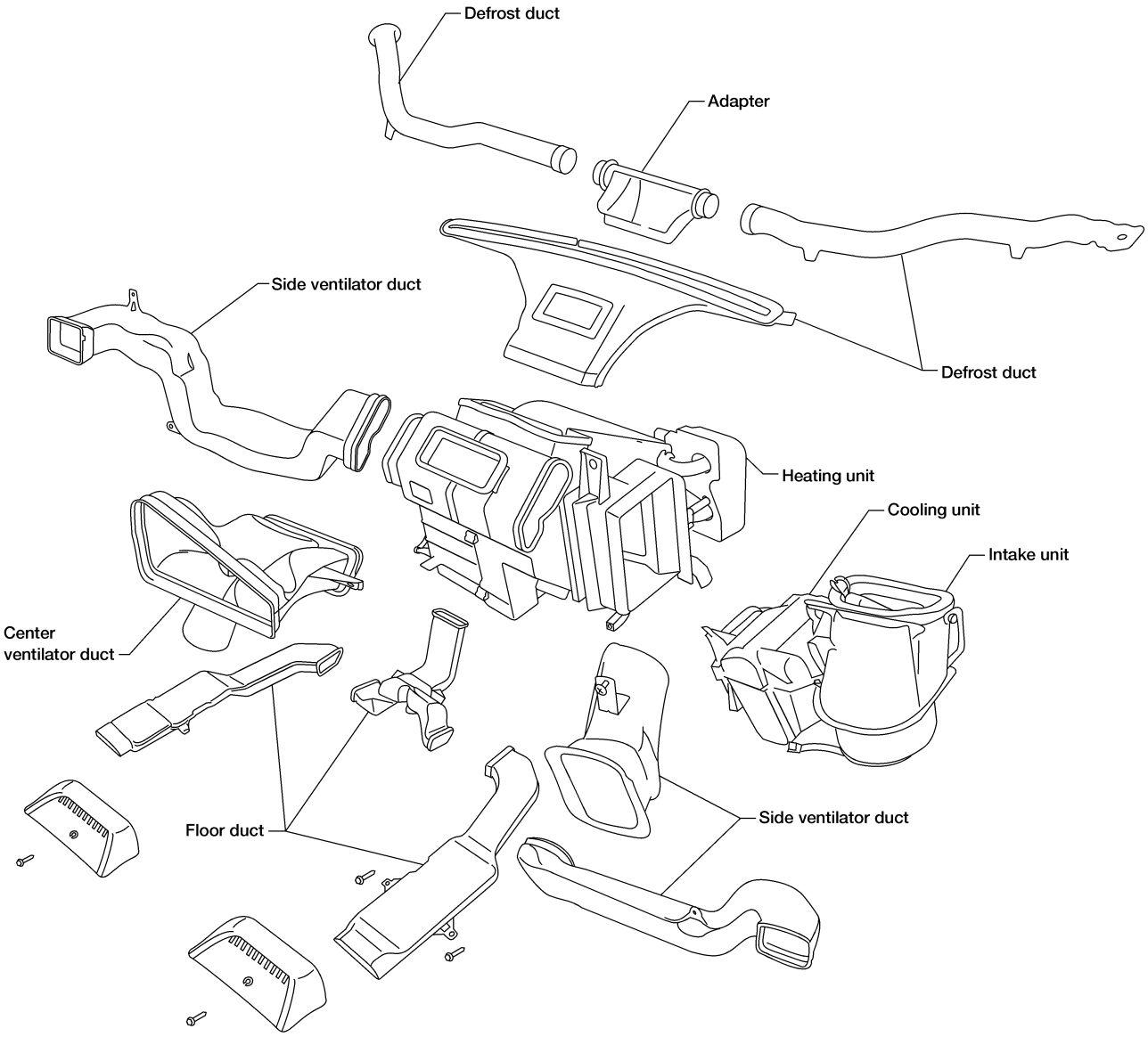
The refrigerant system is also protected by a pressure relief valve located on the flexible high pressure hose near the compressor. When the pressure of refrigerant in the system increases to an abnormal level [more than 3,727 kPa (38 kg/cm^2, 540 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.


Expansion valve
Filter
Front evaporator
Blower motor
Rear evaporator
Recirculation air
Blower motor
Recirculation or outside air
Low-pressure switch
Accumulator
Clutch switch
Low-pressure service valve
High-pressure switch
Pressure relief valve
High-pressure service valve
Compressor
Fixed orifice tube
Condenser
Outside air
High-pressure gas
High-pressure liquid
Low-pressure liquid
Low-pressure gas
AHA432A

Component Layout

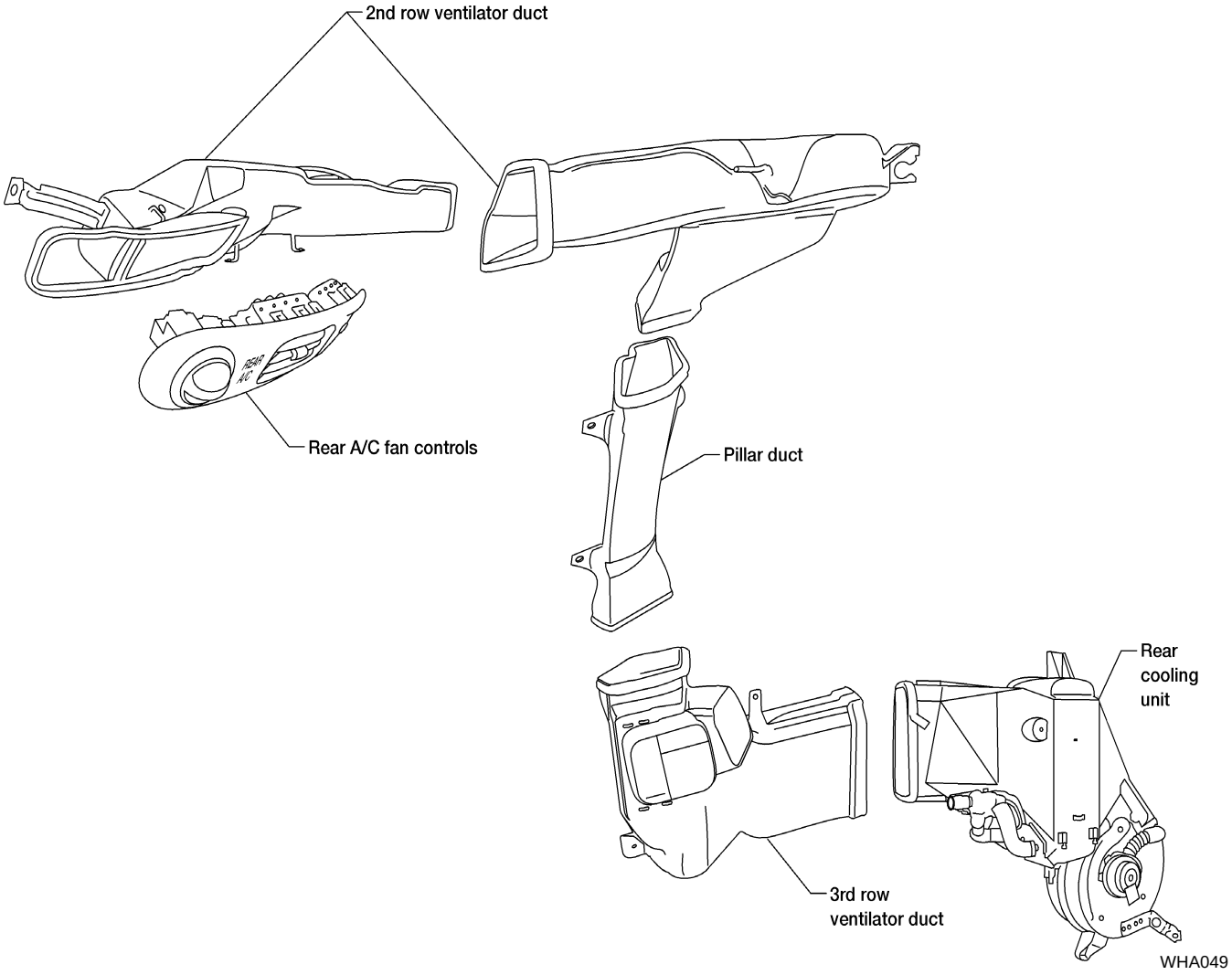
NDHA0012

SEC. 270 • 271 • 272 • 273 • 685
Front heating and A/C unit



AHA405A

SEC. 270 • 271
Rear A/C unit



Introduction

=NDHA0013

The Electronic Automatic Temperature Control (EATC) system provides automatic regulation of the vehicle's interior temperature. The system is based on the operator selected "set temperature", regardless of the outside temperature changes. This is done by utilizing a microcomputer, also referred to as the EATC unit, which receives input signals from the following five sensors:

- Ambient temperature sensor
- In-vehicle temperature sensor
- Engine coolant ambient temperature sensor
- Sunload sensor
- PBR (Potentio Balance Resistor).

The EATC unit uses these input signals (including the set temperature) to automatically control:

- Outlet air volume
- Air temperature
- Air distribution.

Features

NDHA0014

AIR MIX DOOR CONTROL (AUTOMATIC TEMPERATURE CONTROL)

NDHA0014S01

The air mix door is automatically controlled so that in-vehicle temperature is maintained at a predetermined value by the temperature setting, ambient temperature, in-vehicle temperature and amount of sunload.

FRONT FAN SPEED CONTROL

NDHA0014S02

The front blower speed is automatically controlled based on temperature setting, ambient temperature, in–vehicle temperature and amount of sunload.
When the EATC unit is set to AUTOMATIC, the blower motor starts to gradually increase air flow volume. When engine coolant temperature is low and vehicle interior warming is required under cold ambient conditions the blower motor operation is delayed to prevent cool air from flowing.

REAR FAN SPEED CONTROL

NDHA0014S09

The rear blower speed can be controlled from the EATC unit or from the rear A/C control unit, when the rear fan switch (front) is set to REAR.

FRONT INTAKE DOOR CONTROL

NDHA0014S04

When AUTOMATIC mode is selected, the front intake door is automatically controlled by: The temperature setting, ambient temperature, in-vehicle temperature and amount of sunload. The ON-OFF operation of the MAX A/C switch will allow manual control of the front intake door. The front intake door is set to the FRESH position when DEF or F/D mode is selected.

OUTLET DOOR CONTROL

NDHA0014S05

The front mode outlet doors are automatically controlled by: The temperature setting, ambient temperature, in-vehicle temperature, and amount of sunload.

MAGNET CLUTCH CONTROL

NDHA0014S06

The ECM controls compressor ON-OFF operation using signals from the throttle position sensor, low-pressure switch, high-pressure switch, engine coolant temperature sensor and EATC unit.

SELF-DIAGNOSTICS SYSTEM

NDHA0014S08

The self-diagnostic system is built into the EATC unit to quickly locate the cause of problems.

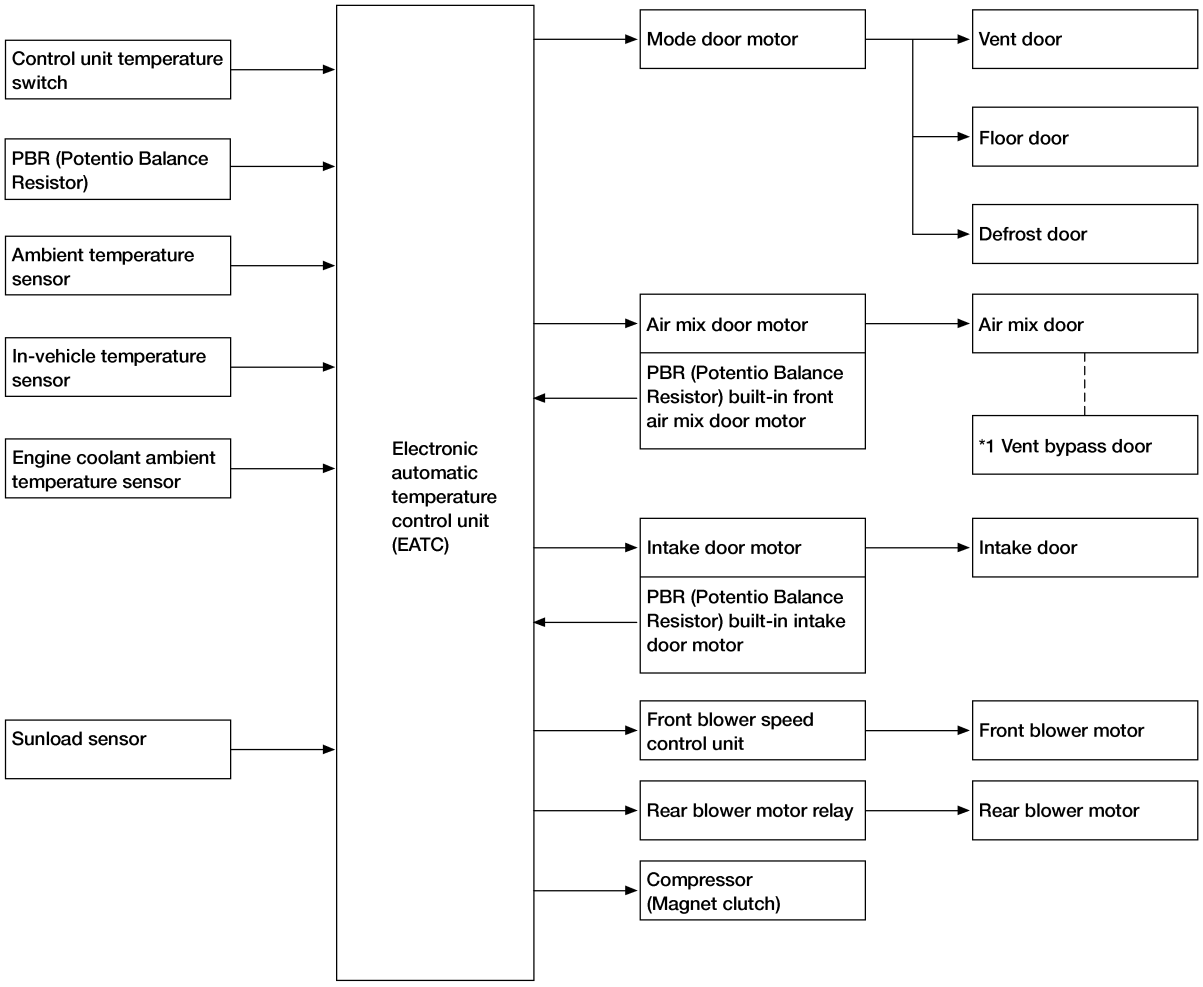
Overview of Control System

=NDHA0015

The control system consists of:

- Input sensors and switches,
- Electronic Automatic Temperature Control unit (microcomputer)
- Actuators

The relationship of these components is shown in the diagram below:

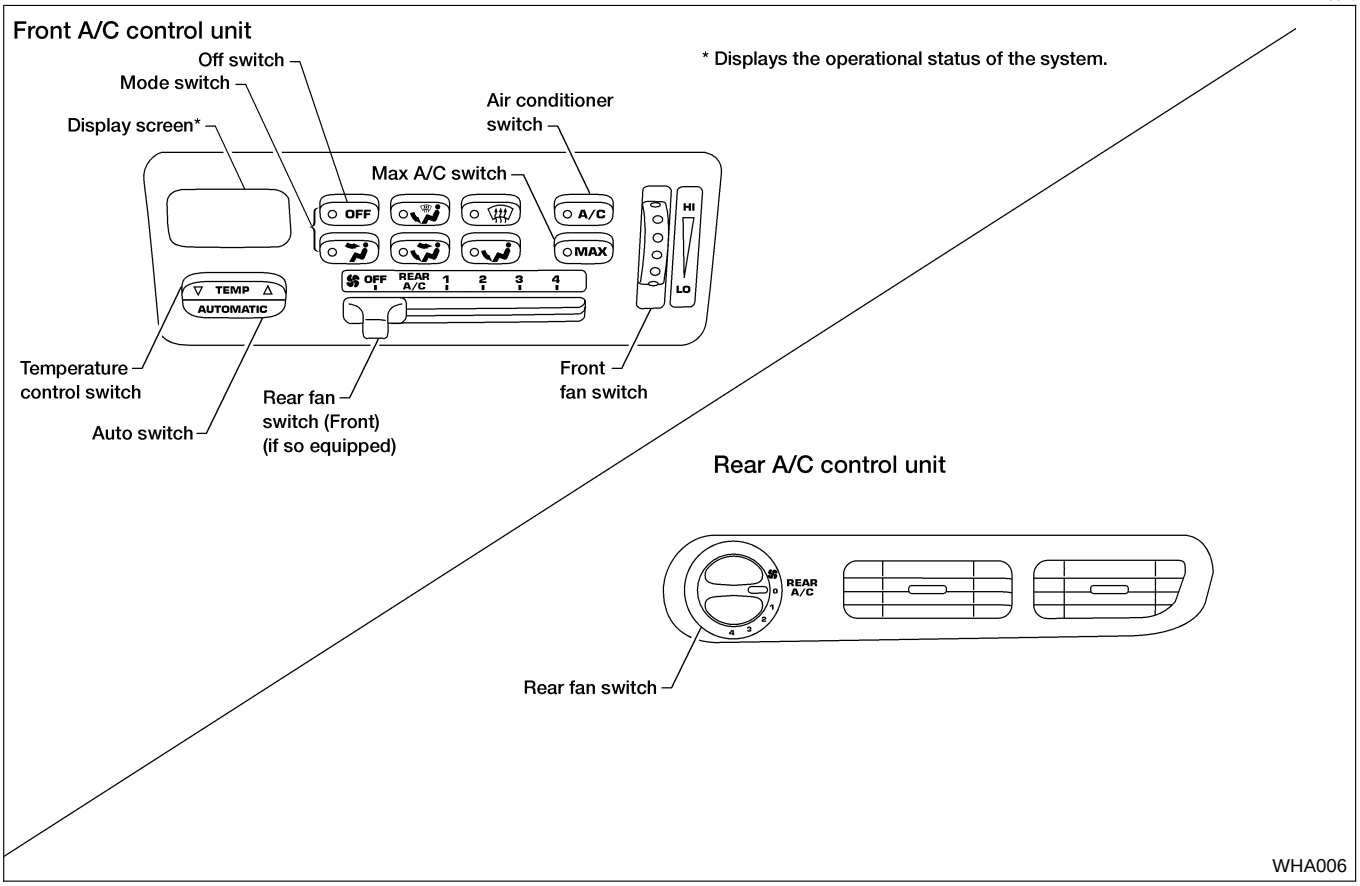


*1: The vent bypass door is only open when face mode is selected and the temperature control switch is in the full cool position.

AHA433A

Control Operation

NDHA0016



AUTO SWITCH

NDHA0016S01

The following components are automatically controlled so that in-vehicle temperature will reach and maintain the set temperature.

- Compressor
- Air intake door
- Air mix door
- Mode doors
- Blower speed

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

TEMPERATURE CONTROL SWITCH

NDHA0016S02

Increases or decreases the set temperature.

OFF SWITCH

NDHA0016S03

The compressor, front and rear blower motors are off, the front intake door is set to the recirculation position, and the mode doors remain in their previous positions.

FRONT FAN SWITCH

NDHA0016S04

Manual control of the front blower speed can be obtained by rotating the front fan switch. The fan symbol ( ) will be shown in the display screen.

REAR FAN SWITCH

NDHA0016S05

When the rear fan switch (front) is in the OFF position, the rear blower motor cannot operate.
When the rear fan switch (front) is in the REAR position, it allows the rear fan switch to control the rear blower speed. In any other position (1–4), the rear fan switch (front) controls the rear blower speed regardless of the rear fan switch position.

MODE SWITCH

NDHA0016S06

Manual control of the air discharge outlets. Five selections are available:
FACE ( ), BI-LEVEL "B/L" ( ), FOOT ( ), FOOT and DEFROST "F/D" ( ), and DEFROST ( ).
DEF ( ) or F/D ( ) positions the front intake door to the outside air FRESH position. The compressor operates at ambient temperature approx. 4°C (40°F) or above.

MAX A/C SWITCH

NDHA0016S07

ON position: Interior air is recirculated inside the vehicle.
OFF position: Automatic control resumes.
MAX A/C is canceled when DEF ( ) or F/D ( ) is selected

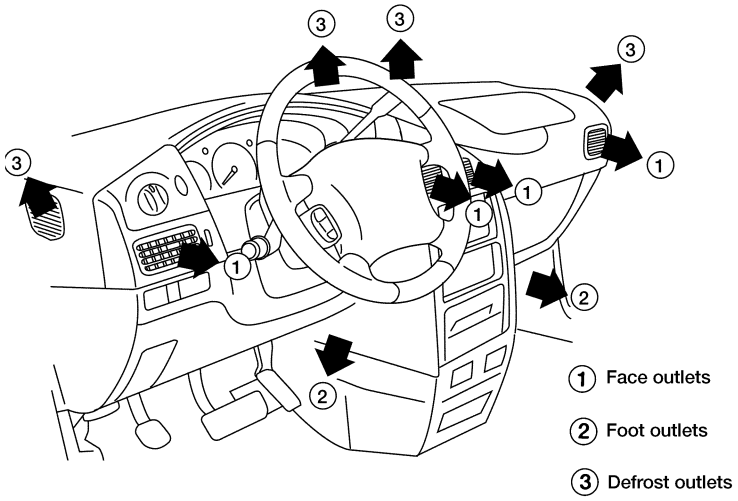
AIR CONDITIONER SWITCH

NDHA0016S08

This switch controls A/C operation when any mode switch is selected except OFF or AUTOMATIC mode is selected the indicator light will be off and A/C operation is automatically controlled.
The air conditioner cooling function operates only when the engine is running.

Discharge Air Flow

NDHA0017

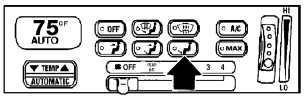


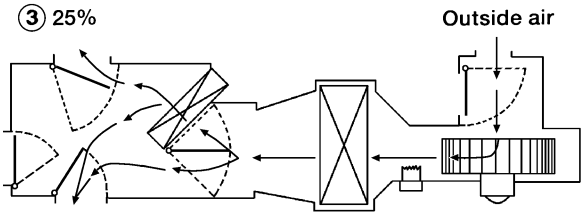
1 Face outlets

2 Foot outlets

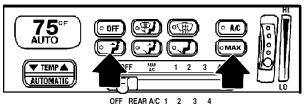
3 Defrost outlets

Foot mode

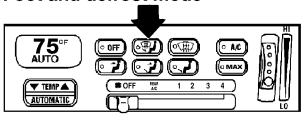


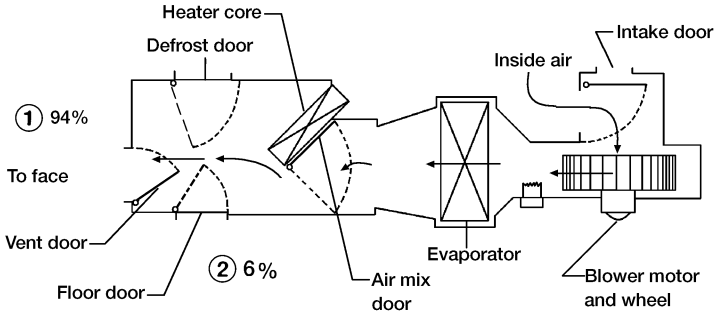


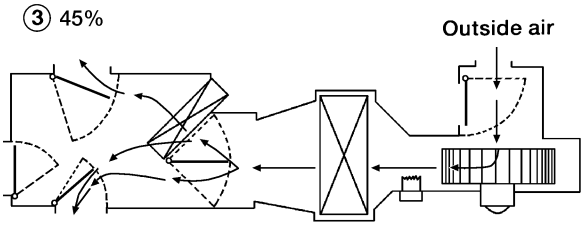
Face mode (recirc switch "ON")



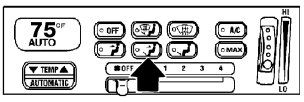
Foot and defrost mode



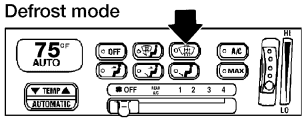


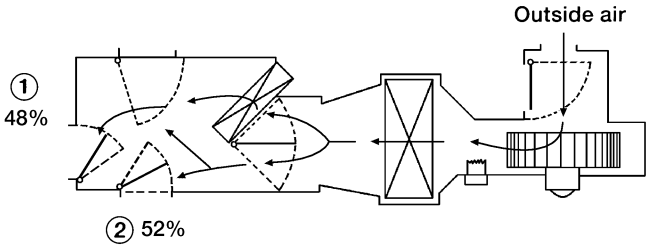


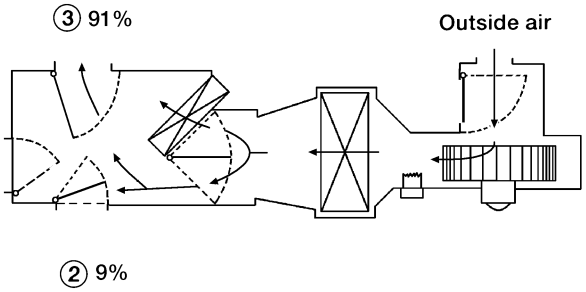
Bi-level mode



Defrost mode







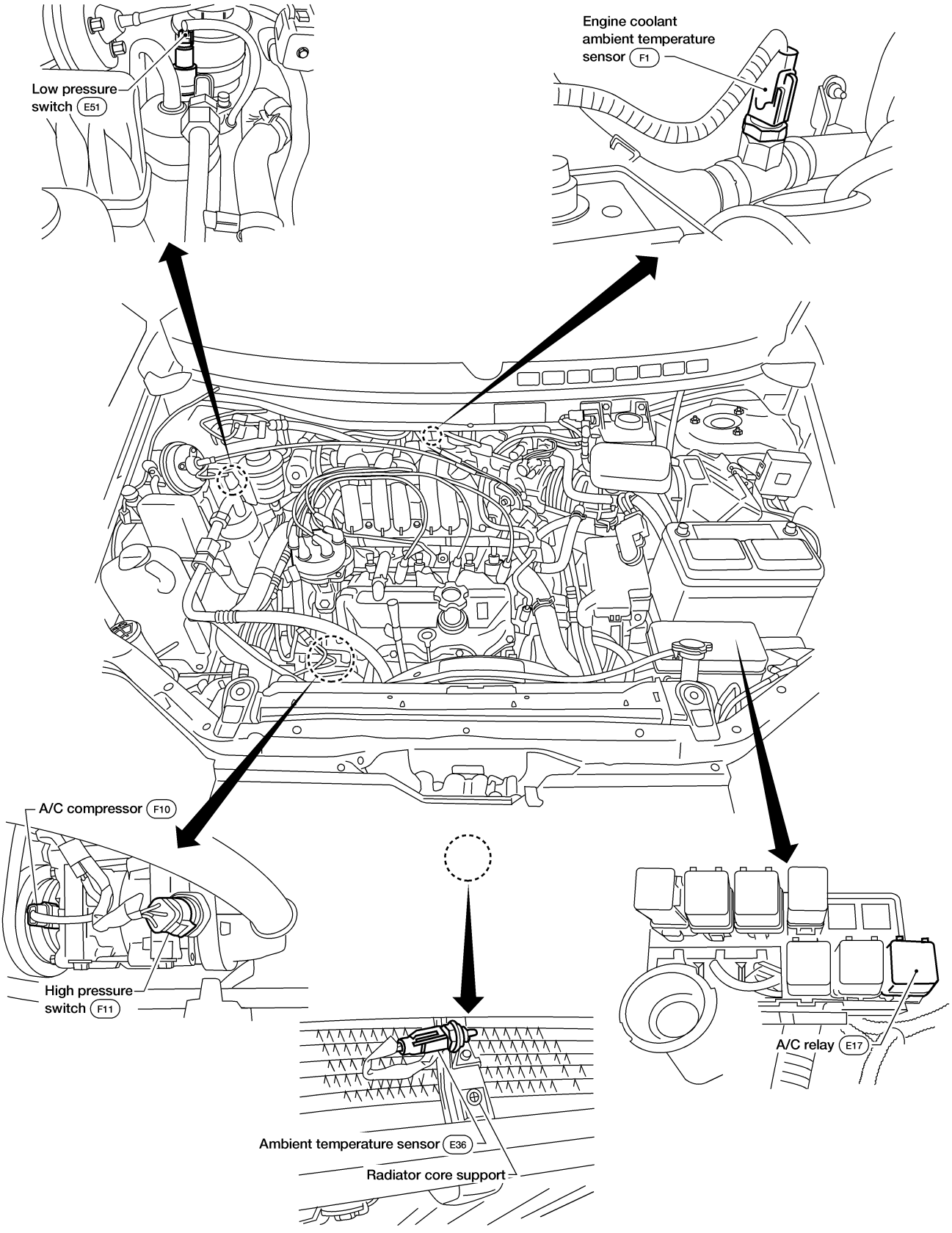
WHA050

Component Location

NDHA0029

ENGINE COMPARTMENT

NDHA0029S01

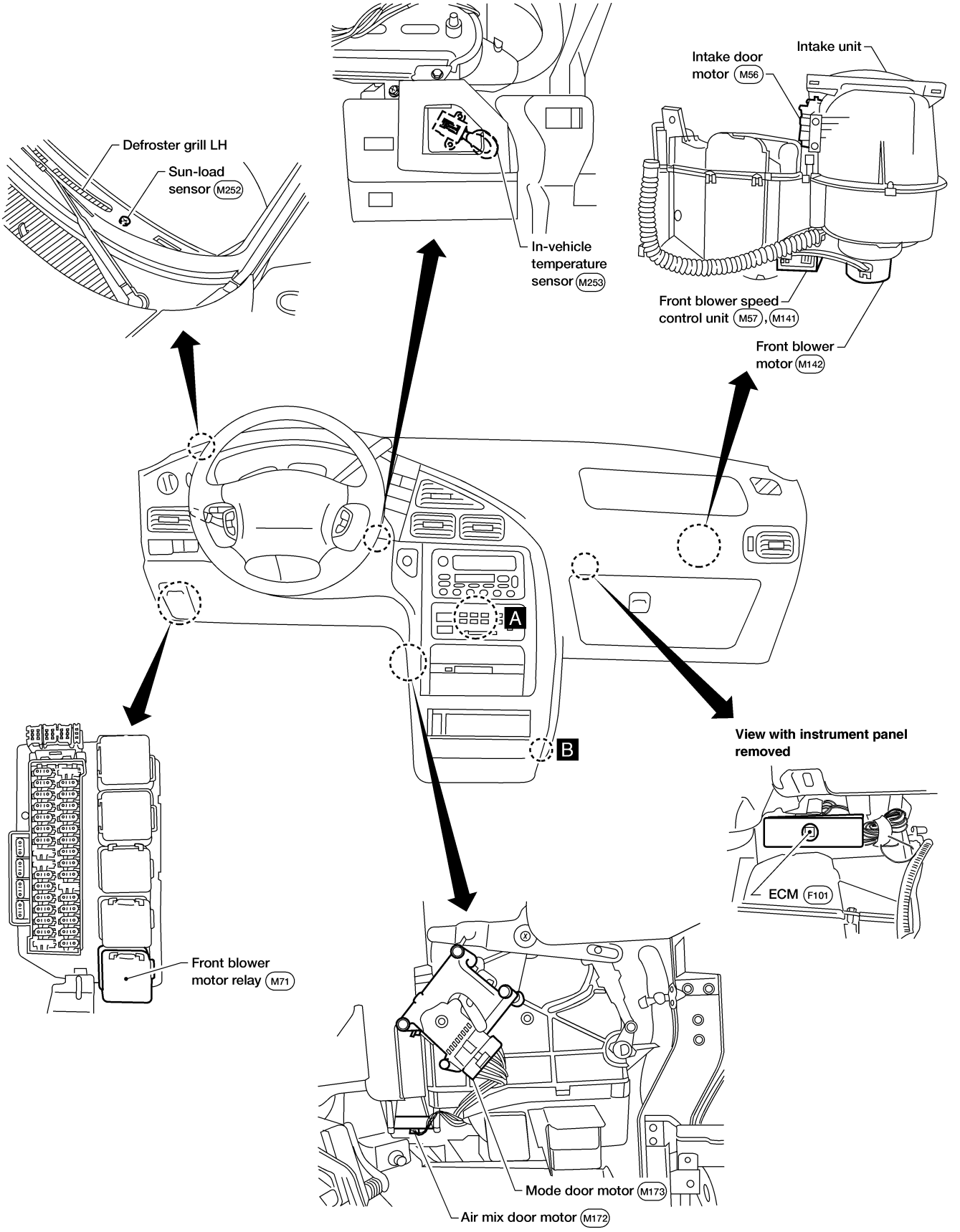


AHA294A

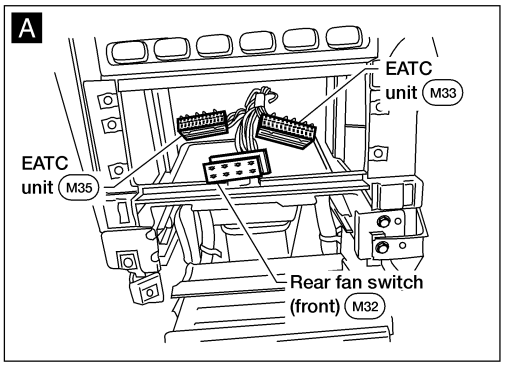
Component Location (Cont'd)

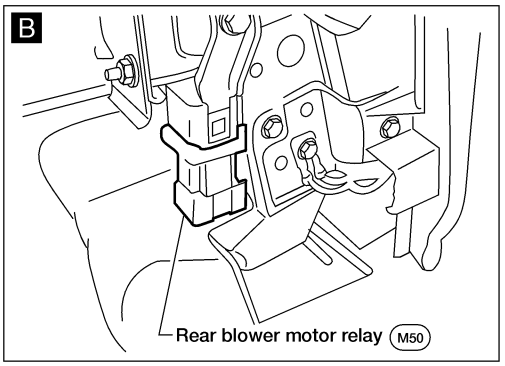
PASSENGER COMPARTMENT

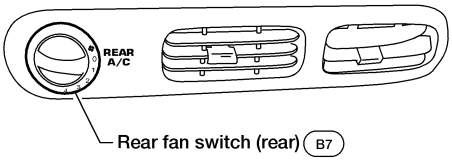
NDHA0029S02

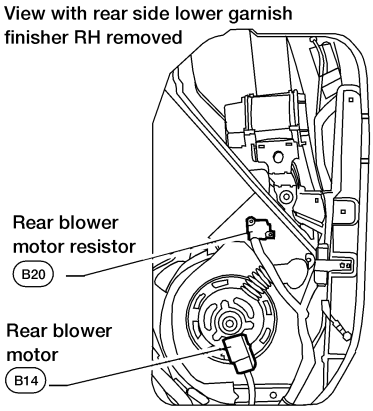


AHA295A


A
EATC unit M33
EATC unit M35
Rear fan switch (front) M32


B
Rear blower motor relay M50

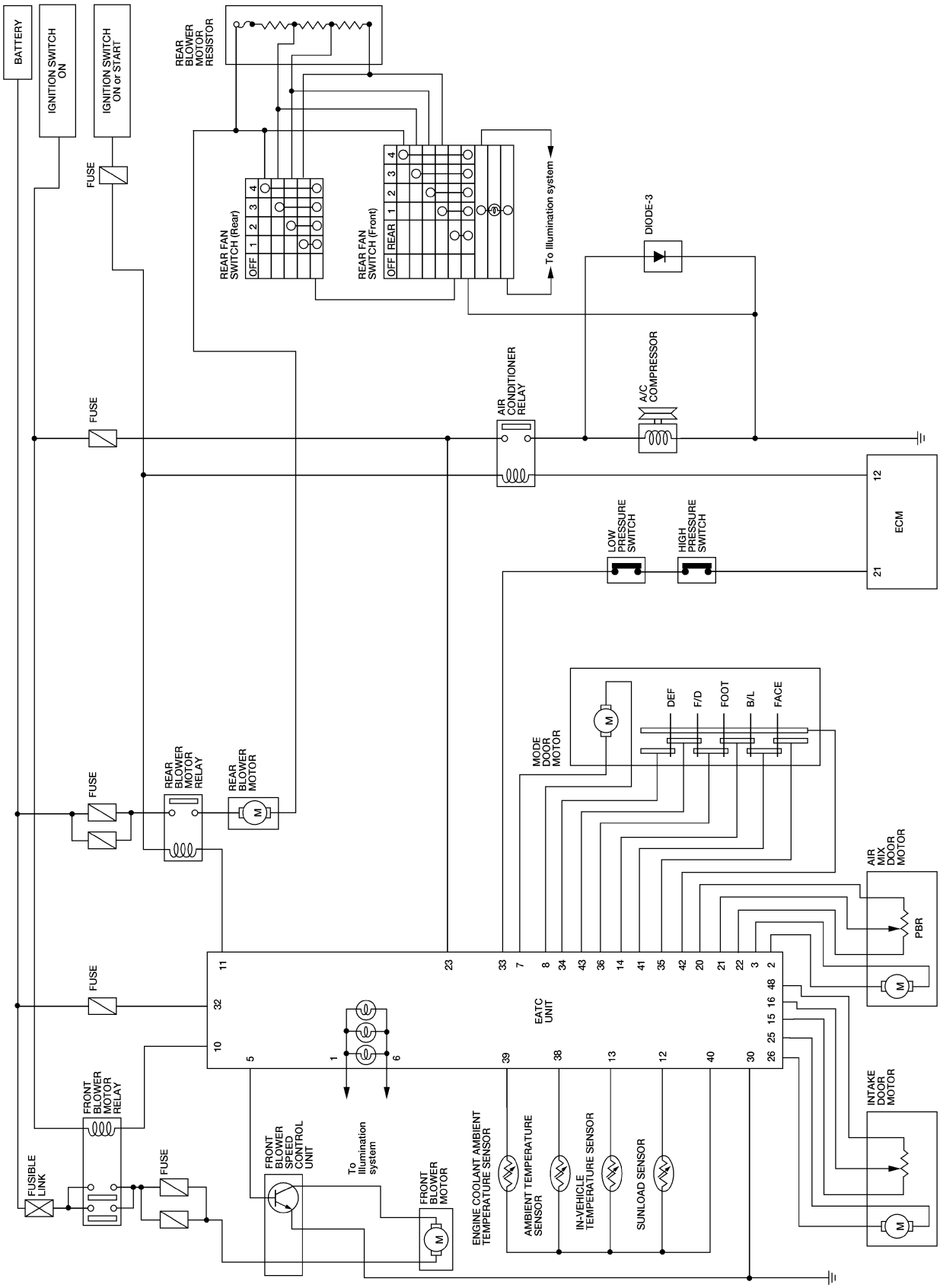

REAR A/C
Rear fan switch (rear) B7


View with rear side lower garnish finisher RH removed
Rear blower motor resistor B20
Rear blower motor B14

WHA007

Circuit Diagram — Auto Air Conditioner

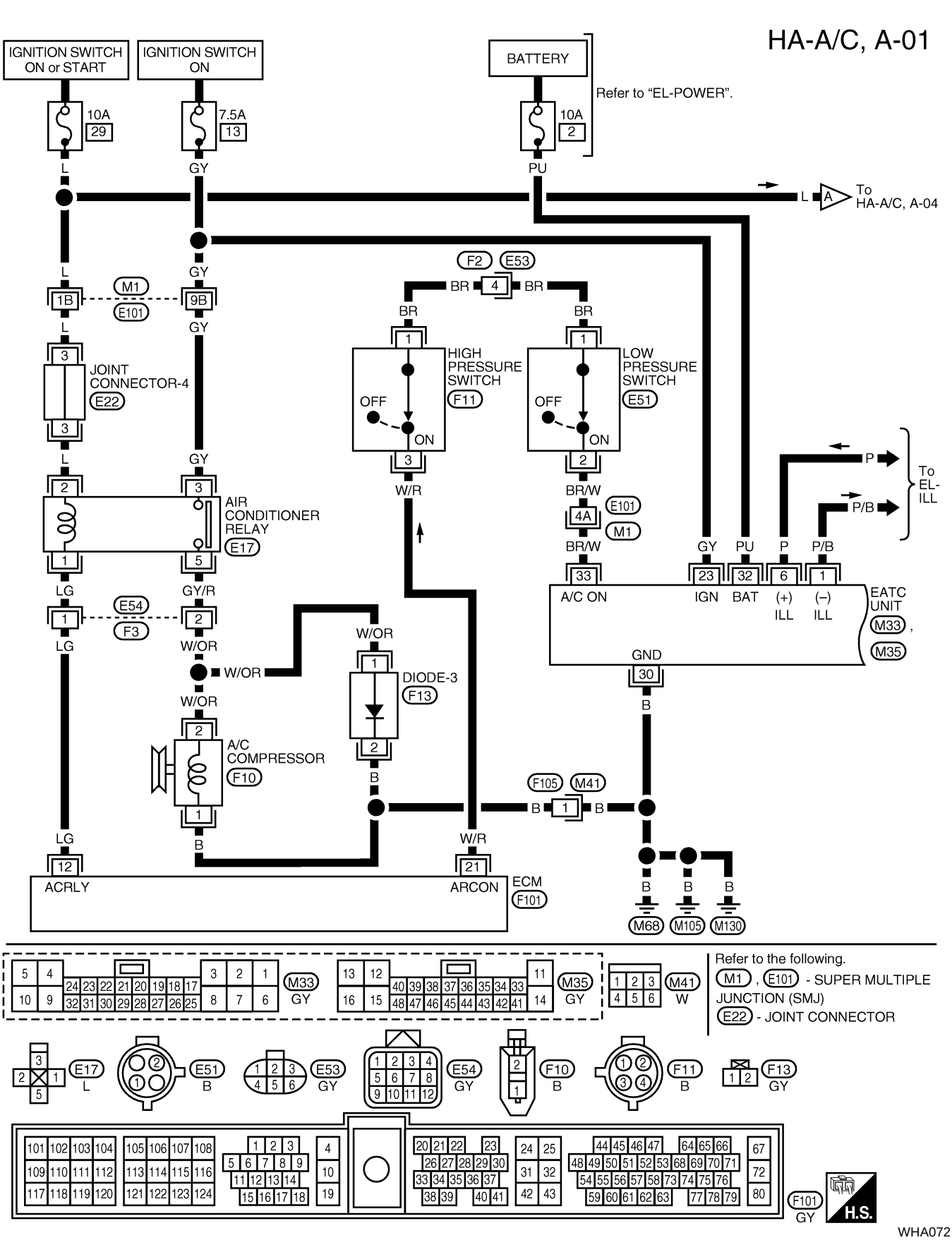
NDHA0030



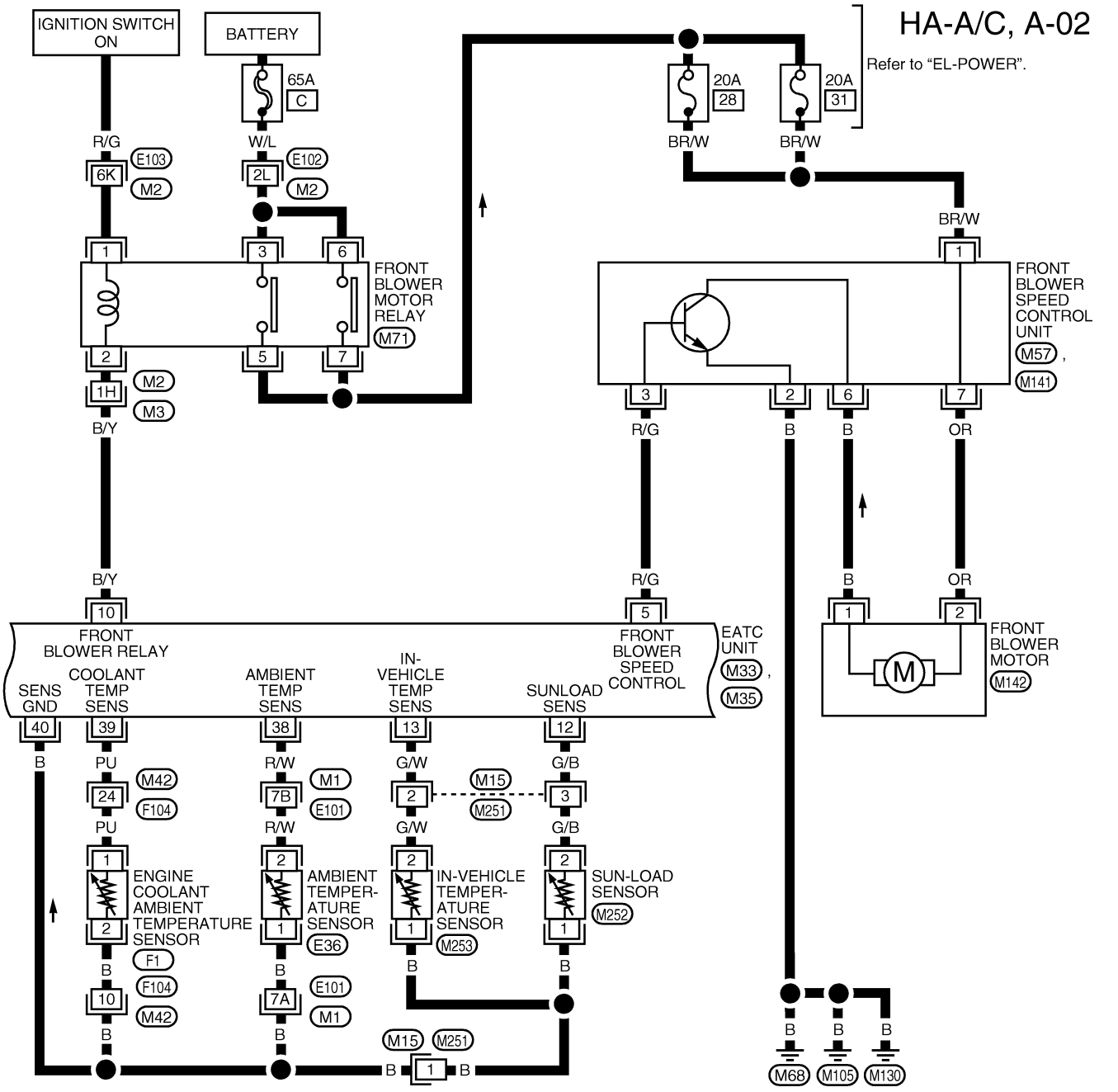
WHA207

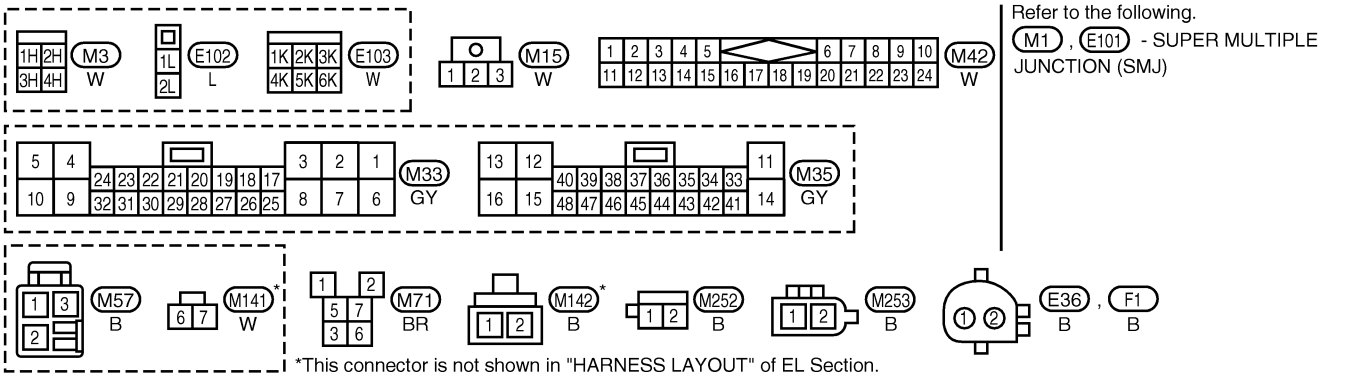
Wiring Diagram — A/C, A —

NDHA0031



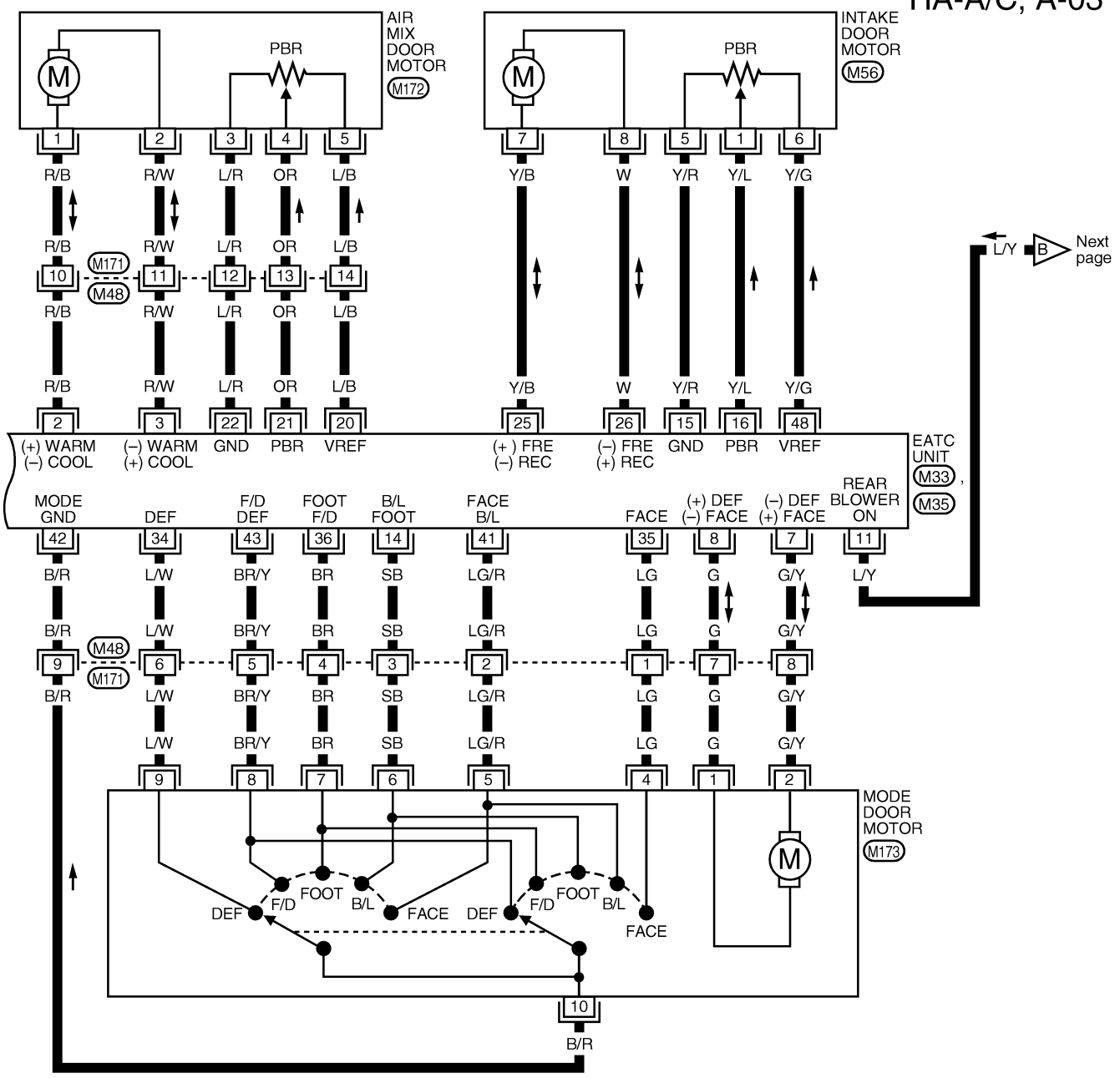
WHA072

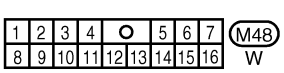

HA-A/C, A-02
IGNITION SWITCH ON
BATTERY
65A C
20A 28
20A 31
Refer to "EL-POWER".
R/G
W/L
BR/W
BR/W
E103
E102
6K
2L
M2
M2
FRONT BLOWER MOTOR RELAY
M71
FRONT BLOWER SPEED CONTROL UNIT
M57 , M141
1H
M2
M3
B/Y
R/G
B
B
OR
FRONT BLOWER RELAY
EATC UNIT
M33 , M35
FRONT BLOWER SPEED CONTROL
SENS GND
COOLANT TEMP SENS
AMBIENT TEMP SENS
IN-VEHICLE TEMP SENS
SUNLOAD SENS
40
39
38
13
12
M42
F104
M1
E101
M15
M251
ENGINE COOLANT AMBIENT TEMPERATURE SENSOR
F1
AMBIENT TEMPER-ATURE SENSOR
E36
IN-VEHICLE TEMPER-ATURE SENSOR
M253
SUN-LOAD SENSOR
M252
FRONT BLOWER MOTOR
M142
M68
M105
M130

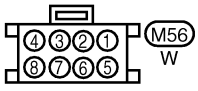

M3 W
E102 L
E103 W
M15 W
M42 W
M33 GY
M35 GY
M57 B
M141 W
M71 BR
M142 B
M252 B
M253 B
E36 B
F1 B
Refer to the following.
M1 , E101 - SUPER MULTIPLE JUNCTION (SMJ)
*This connector is not shown in "HARNESS LAYOUT" of EL Section.

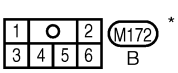
WHA073

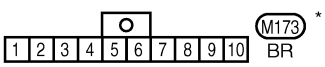
HA-A/C, A-03







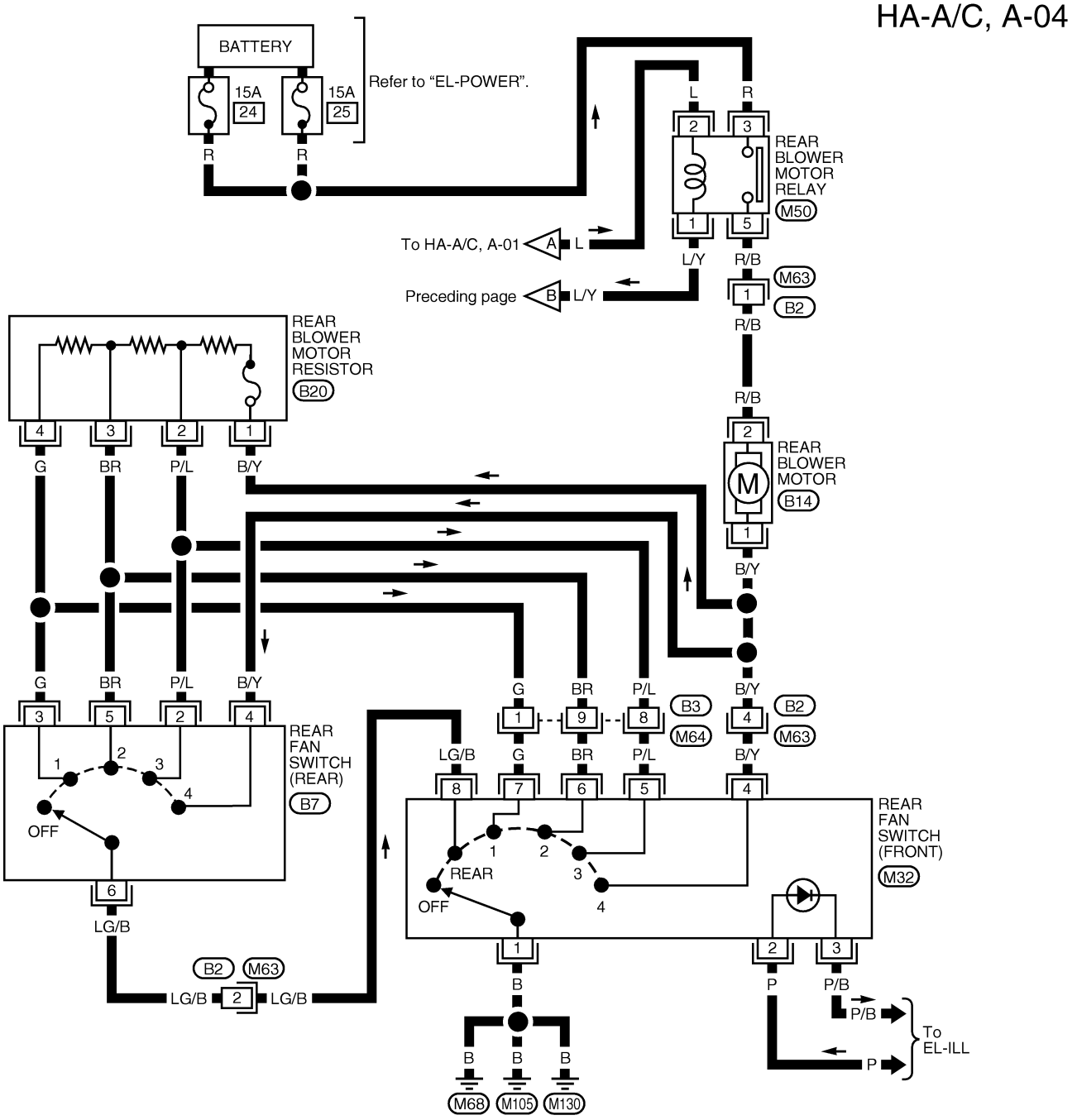


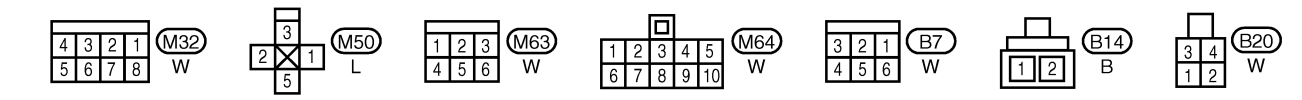


*This connector is not shown in "HARNESS LAYOUT" of EL Section.

WHA074

HA-A/C, A-04





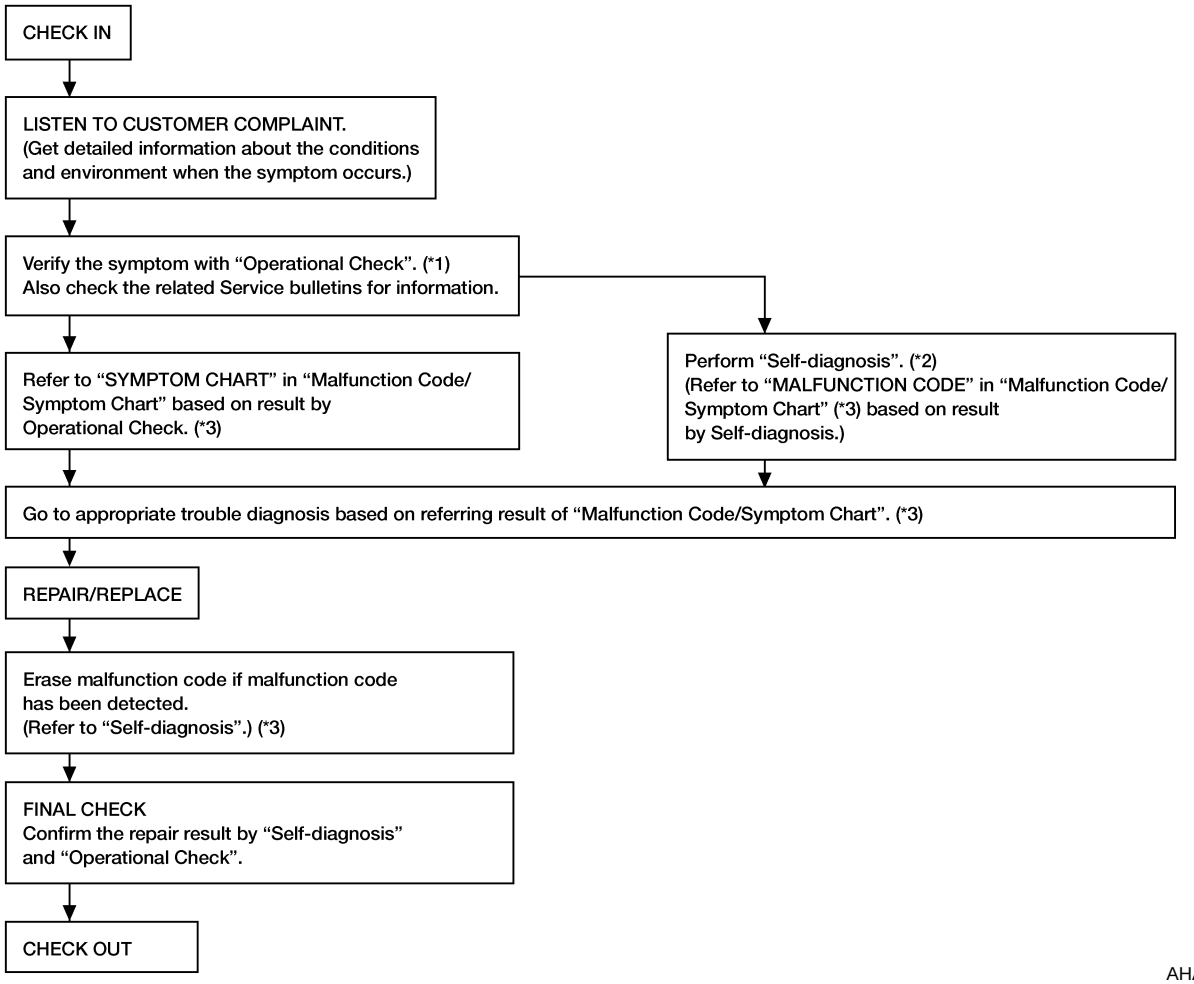
WHA208

How to Perform Trouble Diagnoses for Quick and Accurate Repair

NDHA0021

WORK FLOW

NDHA0021S01



AHA198A

*1: HA-36 *2: HA-39 *3: HA-40

Operational Check

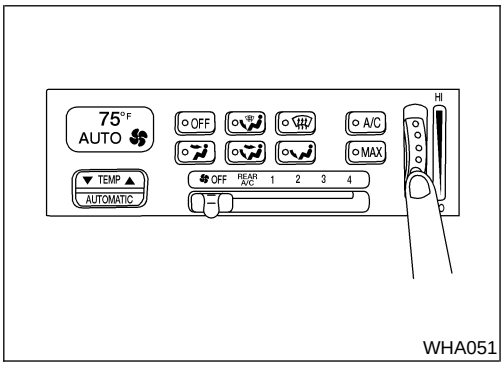
=NDHA0022

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

CONDITIONS:

NDHA0022S01

Engine running at normal operating temperature.



WHA051

PROCEDURE:

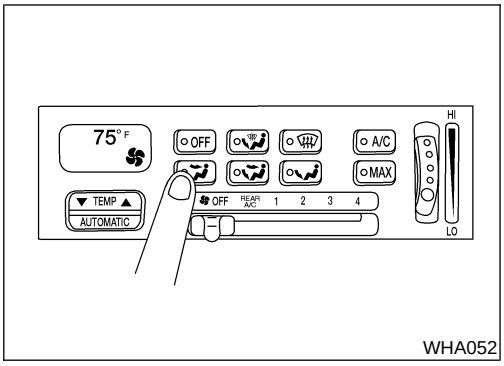
NDHA0022S02

1. Check Front Blower

NDHA0022S0201

1) Press any mode switch except OFF.
2) Rotate the front fan switch up and check for blower operation (Fan symbol lit in display screen).
3) Continue checking that blower speed increases as the front fan switch is rotated up.
4) Leave blower on HI speed ( ).

If NG, go to “Memory Function”(HA-84).
If OK, continue with the next check.



WHA052

2. Check Discharge Air

NDHA0022S0202

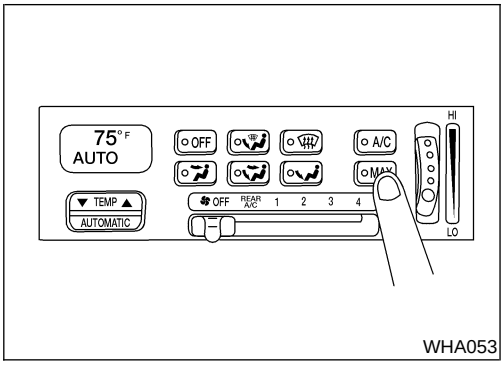
1) Press each mode switch.
2) Confirm that discharge air comes out according to the air distribution table at left and that the indicator lamp illuminates.
   Refer to “Discharge Air Flow” in “DESCRIPTION” (HA-26).
   If NG, refer to “Mode Door” (HA-63).
   If OK, continue with the next check.

Discharge air flow

Mode control knob	Air outlet/distribution		
	Face	Foot	Defroster
	94%	6%	–
	48%	52%	–
	–	75%	25%
	–	55%	45%
	–	9%	91%

AHA207A

NOTE:
Confirm that the compressor clutch is engaged (visual inspection).



WHA053

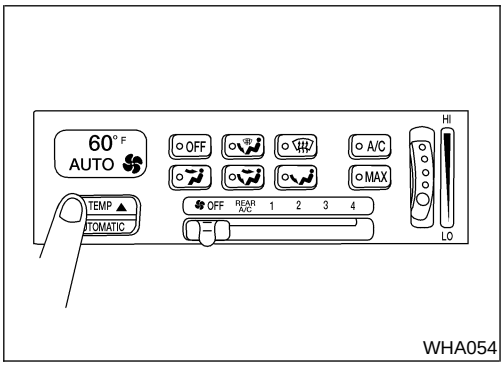
3. Check MAX A/C (Recirculation)

=NDHA0022S0203

1) Press MAX A/C switch. MAX A/C indicator should illuminate.
2) Listen for intake door position change (you should hear blower sound change slightly).

If NG, refer to "Intake Door" (HA-54).
If OK, continue with the next check.

NOTE:
MAX A/C operates in FACE ( ) mode only.



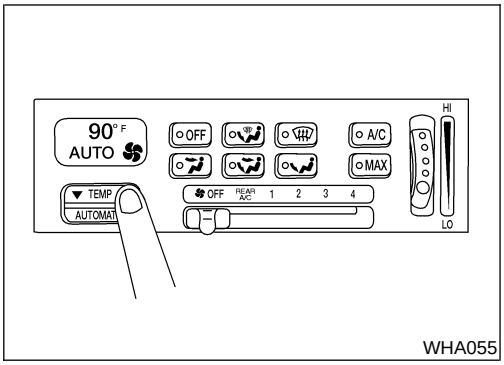
WHA054

4. Check Temperature Decrease

NDHA0022S0204

1) Press the temperature control switch ( ) until [16°C (60°F)] is displayed.
2) Check for cold air at discharge air outlets.

If NG, refer to "Insufficient Cooling" (HA-105).
If OK, continue with the next check.



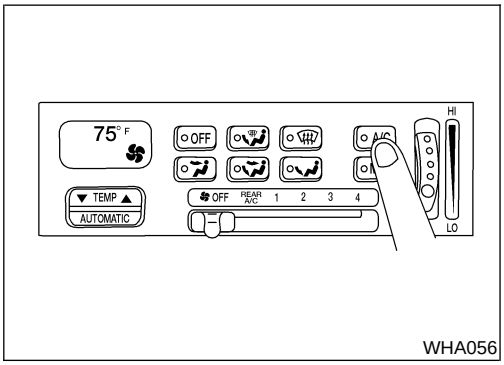
WHA055

5. Check Temperature Increase

NDHA0022S0205

1) Press the temperature control switch ( ) until [32°C (90°F)] is displayed.
2) Check for hot air at discharge air outlets.

If NG, refer to "Insufficient Heating" (HA-110).
If OK, continue with the next check.



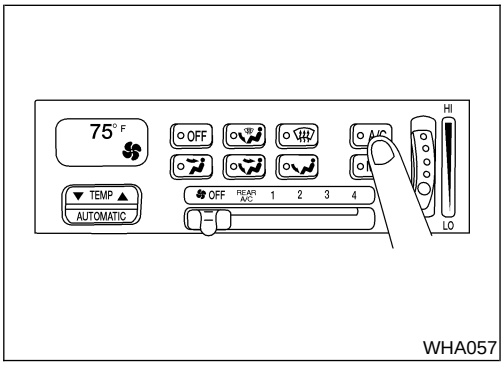
WHA056

6. Check A/C Switch

NDHA0022S0206

1) Press any mode switch.
2) Press the A/C switch.
   A/C indicator should illuminate.
3) Confirm that the compressor clutch engages (audio or visual inspection).
4) Check for cold air at the appropriate discharge air outlets.

If NG, refer to "A/C System" (HA-42).
If OK, continue with the next check.



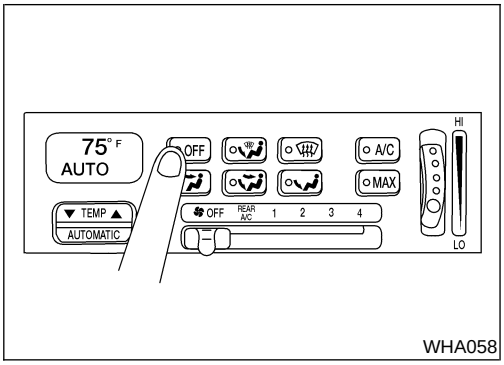
WHA057

7. Check AUTOMATIC Mode

NDHA0022S0207

1) Press the AUTOMATIC switch.
2) Display should indicate AUTOMATIC [no fan symbol ( ) displayed].
3) Confirm that the compressor clutch engages (audio or visual inspection).
   (Discharge air will depend on ambient, in-vehicle, and set temperatures.)

If NG, refer to "A/C System" (HA-42).
If OK, continue with the next check.



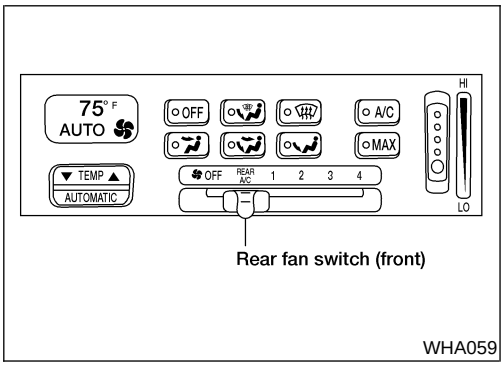
WHA058

8. Check Memory Function

NDHA0022S0208

1) Press the OFF switch.
2) Turn the ignition OFF.
3) Turn the ignition ON.
4) Press the AUTOMATIC switch.
5) Confirm that the set temperature remains at previous temperature.

If NG, refer to "Memory Function" (HA-84).
If OK, continue with the next check.



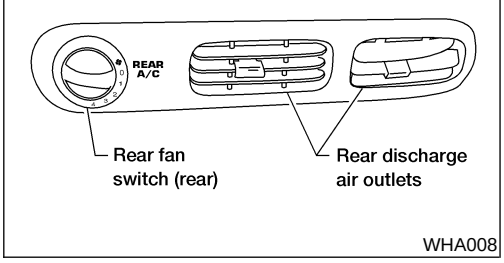
WHA059

9. Check Rear Blower

NDHA0022S0209

1) Set rear fan switch (front) to REAR position.
2) Press any mode switch except OFF.
3) Press air conditioner switch ON.
4) Turn rear fan switch to 1-speed.
   Blower should operate on 1-speed.
5) Confirm air flow from the rear discharge air outlets.
6) Turn rear fan switch to 2-speed.
7) Continue checking blower speed until all four speeds are checked.
8) Turn rear fan switch (rear) to 0 (OFF).
9) Set rear fan switch (front) to 1-speed.
   Blower should operate on 1-speed.
10) Turn rear fan switch (front) to 2-speed.
11) Continue checking blower speed until all four speeds are checked.

If NG, refer to "Rear Blower" (HA-85).
If OK, continue with the next check.
If all operation checks are OK (symptom cannot be duplicated), refer to***GI-24*** "Incident Simulation Tests", and perform tests as outlined to simulate driving conditions environment. If symptom appears, refer to HA-41 "Symptom Chart" and perform the applicable trouble diagnosis procedure.



WHA008

Self-diagnosis

FUNCTION

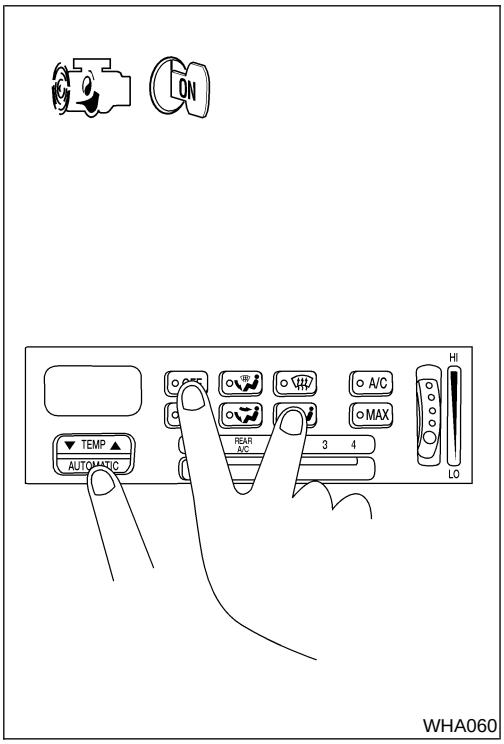
NDHA0254

The Self-diagnosis system monitors sensors and door motors. Shifting from normal mode to Self-diagnosis mode is accomplished by starting the engine (turning the ignition switch from OFF to ON) then simultaneously pressing the OFF and FOOT ( ) mode switches. The AUTOMATIC switch must be pressed within 2 seconds of pressing OFF and FOOT ( ) mode switches simultaneously. The diagnostic trouble codes are displayed on the display screen at a rate of one code per second. The display starts 30 to 60 seconds after the sequence is initiated.

PROCEDURE

NDHA0217

1. Turn the ignition switch ON. (Engine must be running for A/C to operate.)
2. Set the interior temperature between 18°C (65°F) and 29°C (85°F).

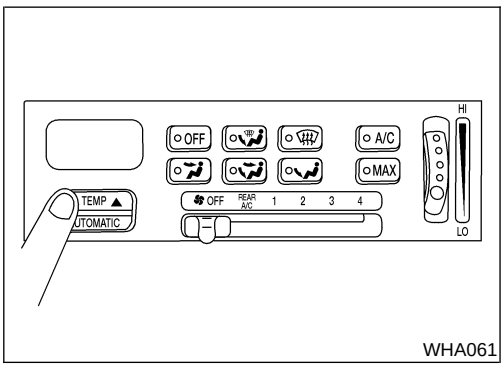


WHA060

3. Simultaneously press OFF and FOOT ( ) switches then press AUTOMATIC switch within 2 seconds.

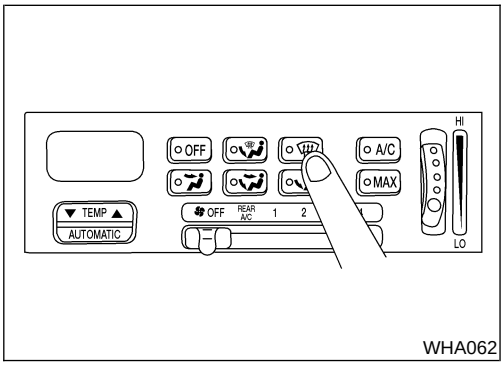
The display screen will have a pulse tracer going around the center of the display screen, while the EATC unit checks all sensor and mode door circuits. (The system goes to OFF mode and the mode doors are recalibrated.)
If Self-diagnosis cannot be performed, go to Trouble Diagnosis Procedure for Self-diagnosis, HA-43.

4. The malfunction codes are displayed at a rate of one code per second. If no malfunction code exists, 88 and all symbols will be shown on the display screen. Press the DEFROST ( ) switch to exit Self-diagnosis.
5. Verify the location of the malfunction using the Malfunction Code/Symptom Chart. Refer to HA-40.



WHA061

6. Press the TEMP DOWN ( ) switch to cancel Self-diagnosis without erasing malfunction codes.



WHA062

7. After the malfunctions are repaired, erase the malfunction codes by pressing the DEFROST ( ) switch.
8. Perform Self-diagnosis again to verify that no malfunction codes exist.

Malfunction Code/Symptom Chart

NDHA0218

MALFUNCTION CODE

NDHA0218S01

Diagnostic trouble code No. (Shown on display screen)*	Malfunctioning part	Reference page
22	Air mix door short	HA-46
26	Air mix door PBR circuit short	HA-46
27	Air mix door PBR circuit open or voltage too high (>0.8V)	HA-46
28	Air mix door time-out	HA-46
30	In-vehicle temperature sensor short	HA-117
31	In-vehicle temperature sensor open	HA-117
40	Ambient temperature sensor short	HA-114
41	Ambient temperature sensor open	HA-114
50	Sunload sensor short	HA-120
82	Intake door short	HA-54
86	Intake door PBR circuit open or voltage too high (>0.8V)	HA-54
87	Intake door PBR circuit short	HA-54
88	Intake door time-out	HA-54
92	Mode door short	HA-63
98	Mode door time-out	HA-63
Intermittent diagnostic trouble code No. (Shown on display screen)*		
20	Air mix door short	HA-46
42	Ambient temperature sensor short	HA-114
43	Ambient temperature sensor open	HA-114
52	Sunload sensor short	HA-120
60	Mode switch button stuck	HA-63
61	Ignition over voltage	Refer to “Trouble Diagnoses”, “CHARGING SYSTEM”, ***SC-13***
80	Intake door short	HA-54
90	Mode door short	HA-63

*: Diagnostic trouble codes are displayed when a malfunction is detected and exists at the present time. Intermittent diagnostic trouble codes are displayed when a malfunction is detected, but may not exist at the present time.

SYMPTOM CHART

NDHA0218S02

Symptom	Reference page	
• A/C system does not come on.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR A/C SYSTEM".	HA-42
• Self-diagnosis cannot be performed.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR SELF-DIAGNOSIS".	HA-43
• Air mix door does not operate normally.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR AIR MIX DOOR MOTOR".	HA-46
• Intake door does not operate normally.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR INTAKE DOOR MOTOR".	HA-54
• Mode door does not operate normally.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR MODE DOOR MOTOR".	HA-63
• Front blower motor does not rotate.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR FRONT BLOWER MOTOR".	HA-72
• Memory function does not operate.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR MEMORY FUNCTION"	HA-84
• Rear blower motor does not rotate when rear fan switch (front) is set to REAR position.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR REAR FAN SWITCH (FRONT)".	HA-85
• Rear blower motor does not rotate when rear fan switch (front) is set at 1-4 speed.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR REAR BLOWER MOTOR (1-4 SPEED)".	HA-88
• Magnet clutch does not engage.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH".	HA-98
• Insufficient cooling	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT COOLING".	HA-105
• Insufficient heating	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT HEATING".	HA-110
• Noise	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR NOISE".	HA-112

A/C System

TROUBLE DIAGNOSIS PROCEDURE FOR A/C SYSTEM

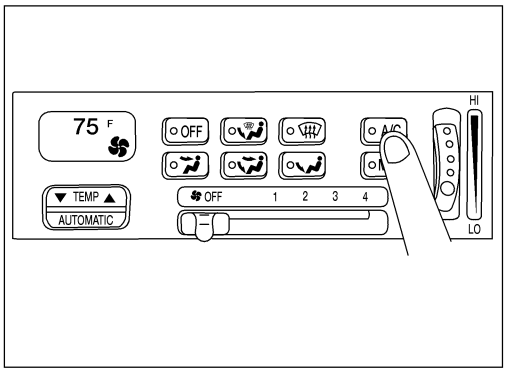
=NDHA0112

Symptom:

- **A/C system does not come on.**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – A/C switch

Press any mode switch and press air conditioner switch to turn ON air conditioner. Indicator light will come on when air conditioner is ON.

2. Check for any Service bulletins.

OK

3. Check main power supply and ground circuit. (*1)

OK

4. Check A/C system circuit. (*2)

OK

5. Replace EATC unit.

WHA009

*1: HA-44

*2: HA-44

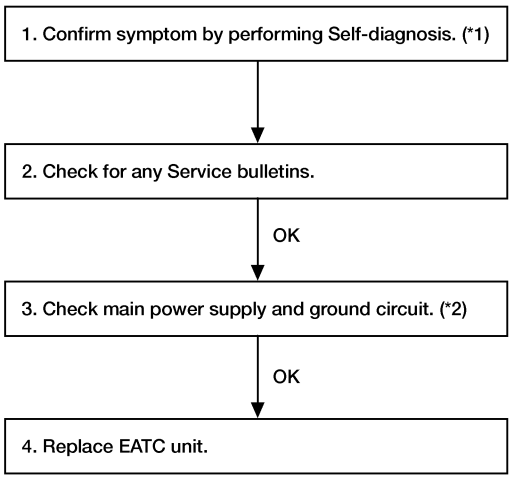
TROUBLE DIAGNOSIS PROCEDURE FOR SELF-DIAGNOSIS

=NDHA0219

Symptom:

- **Self-diagnosis cannot be performed.**

Inspection Flow



AHA210A

*1: HA-39

*2: HA-44

MAIN POWER SUPPLY AND GROUND CIRCUIT CHECK

=NDHA0032

Power Supply Circuit Check for Auto A/C System

NDHA0032S01

Check power supply circuit for auto air conditioning system.
Refer to "POWER SUPPLY ROUTING" in EL section and Wiring Diagram.

A/C System Circuit

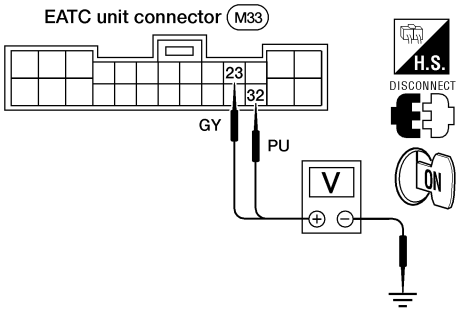
NDHA0032S02

SYMPTOM

- A/C system does not come on.

1	CHECK POWER SUPPLY CIRCUIT FOR EATC UNIT

1.



Voltmeter terminal		Voltage
(+)	(-)	
23	Body ground	Approx. 12V
32		

WHA084

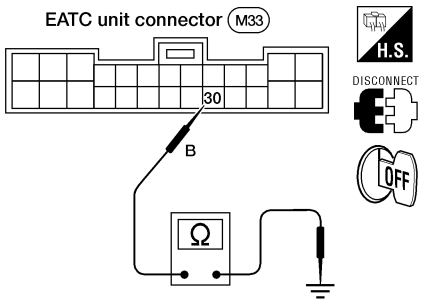
Disconnect EATC unit harness connector.
2. Connect Voltmeter to harness side.
3. Measure the voltage across terminal Nos. 23, 32, 33 and body ground.

OK or NG

OK	▶	GO TO 2.
NG	▶	• Check 7.5A fuse (No. 13 located in the fuse block) and 10A fuse (No. 2, located in the fuse block) • If fuses are OK, check for open circuit in wiring harness. Repair or replace as necessary. • If fuses are NG, replace fuse and check wiring harness for short circuit. Repair or replace as necessary.

2	CHECK BODY GROUND CIRCUIT FOR EATC

1.



Voltmeter terminal		Continuity
(+)	(-)	
30	Body ground	Yes

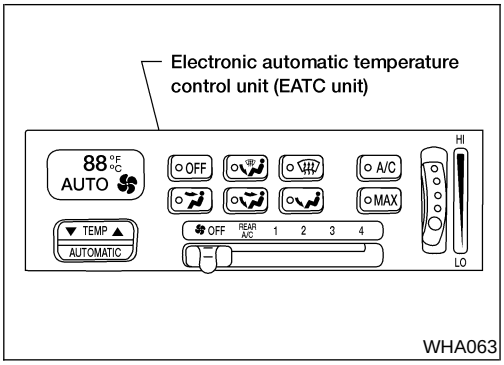
Continuity should exist

WHA085

Disconnect EATC unit harness connector.
2. Connect Ohmmeter to harness side.
3. does continuity exsist between harness terminal No 30 and body ground?

Yes or No

Yes	▶	Replace EATC **INSPECTION END**
No	▶	Repair or replace harness.



WHA063

CONTROL SYSTEM — ELECTRONIC AUTOMATIC TEMPERATURE CONTROL UNIT (EATC UNIT)

NDHA0019

The EATC unit has a built-in microcomputer which processes information sent from various sensors needed for air conditioner operation. The air mix door motor, mode door motor, intake door motor, front blower motor and compressor are then controlled.
The EATC unit is unitized with control mechanisms. Signals from various switches are directly entered into EATC unit.
Self-diagnostic functions are also built into EATC unit to provide a quick check of malfunctions in the auto air conditioner system.

Ambient Temperature Input Process

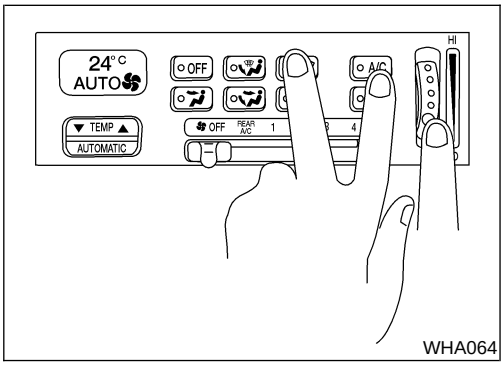
NDHA0019S01

The EATC unit includes a "processing circuit" for the ambient temperature sensor input. When a temperature increase less than 12°C (20°F) is detected by the ambient temperature sensor, the "processing circuit" allows the EATC unit to recognize the temperature increase after 80 seconds. When the temperature increase is greater than 12°C (20°F) 5 minutes is required.
As an example, consider stopping for a cup of coffee after high speed driving. Even though the actual ambient temperature has not changed, the temperature detected by the ambient sensor will increase because heat radiated from the engine compartment can radiate to the grille area (where the ambient temperature sensor is located).

Sunload Input Process

NDHA0019S02

The EATC unit includes a processing circuit to "average" variations in detected sunload over a period of time. This prevents drastic swings in the EATC system operation due to small or quick variations in detected sunload.
For example, consider driving along a road bordered by an occasional group of large trees. The sunload detected by the sunload sensor will vary whenever the trees obstruct the sunlight. The processing circuit averages the detected sunload over a period of time. The (insignificant) effect of the trees momentarily obstructing the sunlight does not cause any change in the EATC system operation. On the other hand, shortly after entering a long tunnel, the system will recognize the change in sunload, and the system will react accordingly.



WHA064

English/Metric Mode

NDHA0019S03

English or metric can be selected for the display mode.

1. Turn ignition switch ON.
2. Push any mode switch except OFF.
3. Press DEFROST ( ) and A/C switches holding the blower switch in the upward position for 1 second.
4. The display mode will be changed to English or Metric.

Air Mix Door

TROUBLE DIAGNOSIS PROCEDURE FOR AIR MIX DOOR MOTOR

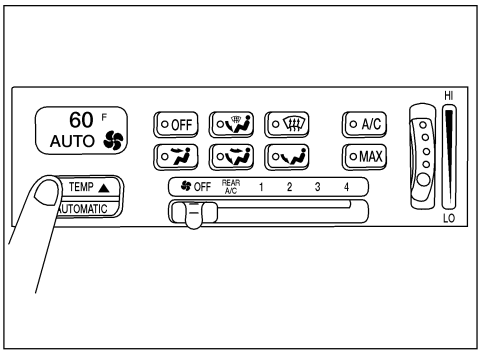
=NDHA0220

Symptom:

- **Air mix door does not operate normally.**

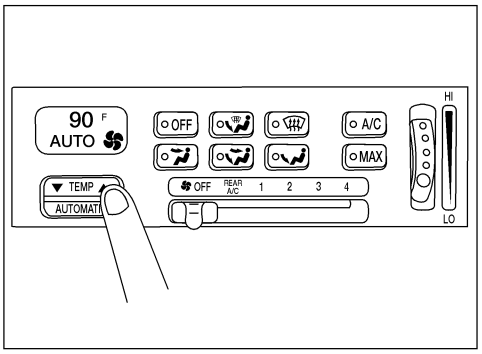
Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Temperature decrease and increase

1. Check Temperature Decrease
1) Press temperature control switch until [16 C (60 F)] is displayed.
2) Check for cold air at discharge air outlets.



2. Check Temperature Increase
1) Press temperature control switch until [32 C (90 F)] is displayed.
2) Check for hot air at discharge air outlets.

If OK (symptom cannot be duplicated), perform complete operational check (*5).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

3. Check air mix door mechanism. (*1)

OK

4. Check air mix door motor circuit [EATC Self-diagnosis Code 20, 22, or 28 (*2) or 26 or 27 (*3)].

OK

5. If the symptom still exists, perform “Self-diagnosis” (*4) and a complete “Operational Check” (*5) and check for other codes and symptoms. [Refer to “Malfunction Code/Symptom Chart” (*6).] Does another code or symptom exist?

Yes → Go to Trouble Diagnosis for related code or symptom.

[Another code or symptom exists.]

No

6. Replace EATC unit.

INSPECTION END.

WHA010

*1: HA-53
*2: HA-49
*3: HA-51
*4: HA-39
*5: HA-36
*6: HA-40

CONTROL SYSTEM OUTPUT COMPONENTS

NDHA0221

Air Mix Door Control (Automatic Temperature Control)

NDHA0221S01

Component Parts

NDHA0221S0101

Air mix door control system components are:

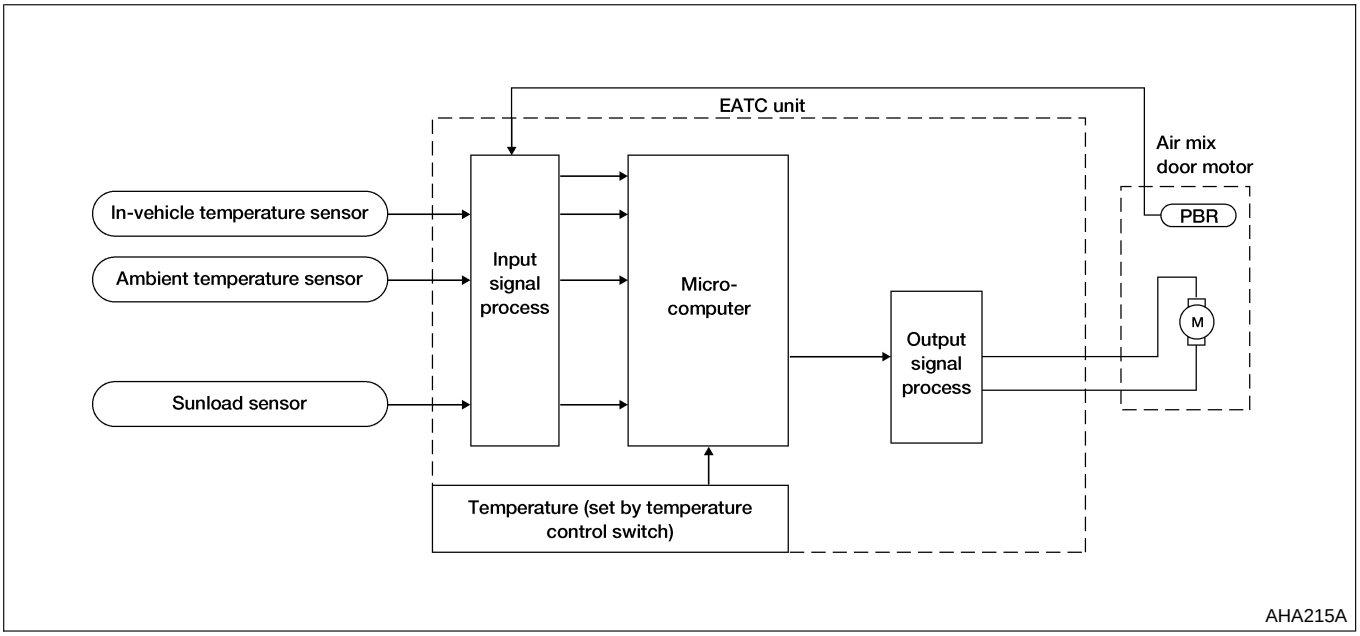
1) EATC unit
2) Air mix door motor
3) PBR
4) In-vehicle temperature sensor
5) Ambient temperature sensor
6) Sunload sensor

System Operation

NDHA0221S0102

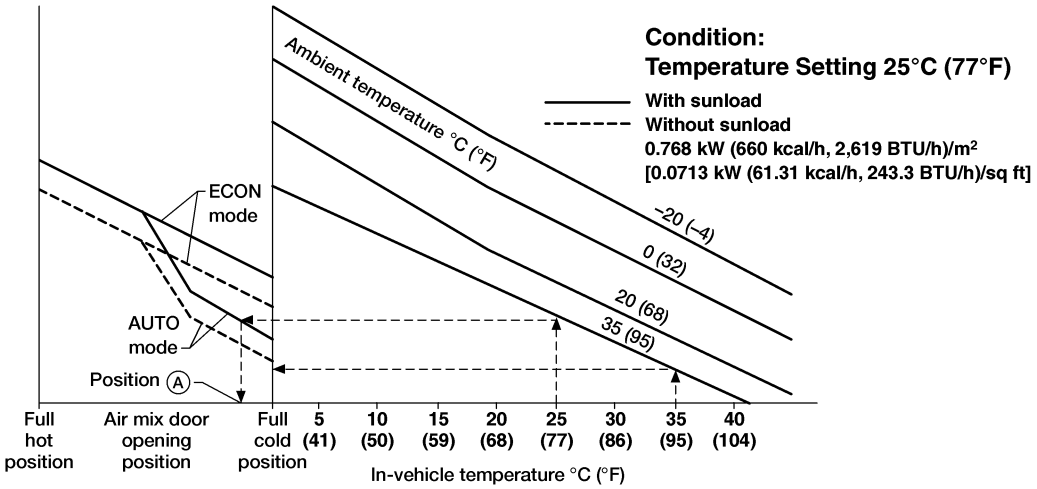
Temperature set by temperature control switch is compensated through setting temperature correction circuit to determine target temperature.

EATC unit will operate air mix door motor to set air conditioning system in WARM or COOL position, depending upon relationship between conditions (target temperature, sunload, in-vehicle temperature and ambient temperature) and conditions (air mix door position and compressor operation).



Air Mix Door Control Specification

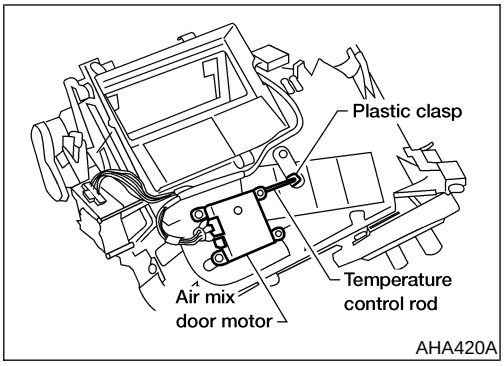
NDHA0221S0103



Example:

- **If temperature setting is set at 25°C (77°F) under no sunload condition when ambient and in-vehicle temperature is 35°C (95°F), air mix door is initially automatically set in full cold position.**
- **Within some period, in-vehicle temperature will lower towards the objective temperature, and the air mix door position will shift incrementally towards the hot side and finally stay in this position Ⓐ if mode is at AUTO position (No. ECON mode). Air mix door opening position is always fed back to EATC unit by PBR built-in air mix door motor.**

AHA216A

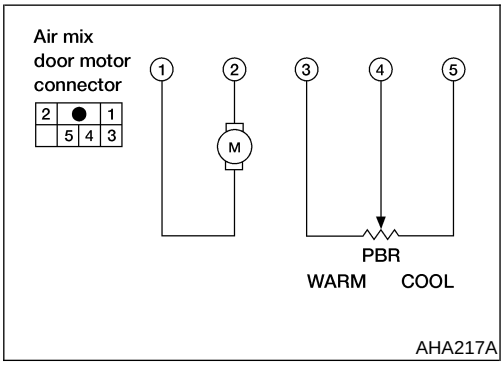


AHA420A

Air Mix Door Motor

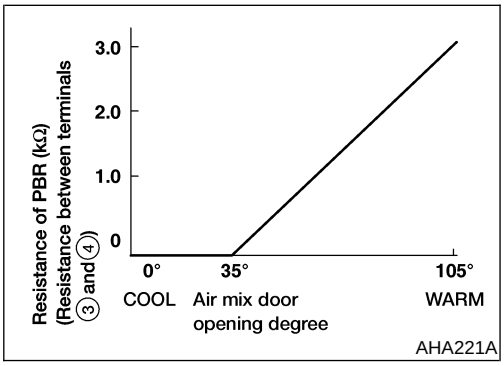
NDHA0221S02

The air mix door motor is attached to the bottom of the heater unit. It rotates so that the air mix door is opened to a position set by the EATC unit. Motor rotation is then conveyed through a rod and air mix door position is then fed back to the EATC unit by PBR built-in air mix door motor.



AHA217A

1	2	Air mix door operation	Direction of lever movement
+	−	WARM → COOL	Clockwise
—	—	STOP	STOP
−	+	COOL → WARM	Counterclockwise



AHA221A

PBR Characteristics

NDHA0221S03

Measure resistance between terminals **3** and **4** at vehicle harness side.

AIR MIX DOOR MOTOR CIRCUIT (EATC SELF-DIAGNOSIS CODE 20 , 22 , OR 28)

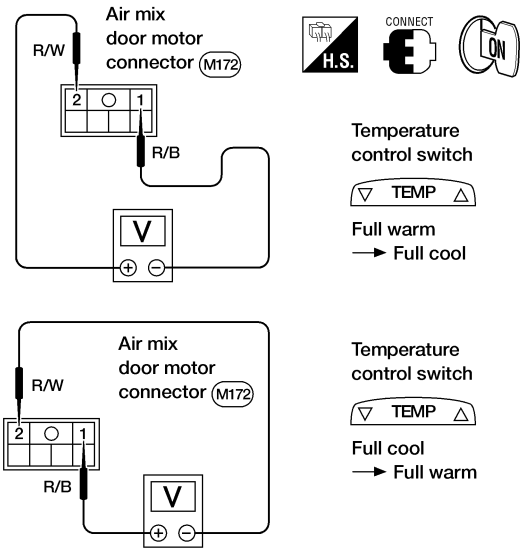
=NDHA0222

SYMPTOM:

- **Air mix door does not operate normally. (20 , 22 , or 28 is indicated on the EATC unit as a result of conducting Self-diagnosis).**

1	CHECK PBR OPERATION	
Perform Self-diagnosis, HA-39. **Does code 26 or 27 occur?**		
Yes	▶	Check PBR circuit. Go to Air Mix Door Motor Circuit (EATC Self-diagnosis Code 26 or 27). Refer to HA-51.
No	▶	GO TO 2.

2	CHECK FOR OUTPUT OF EATC UNIT	
Do approximately 10.5 volts exist between air mix door motor harness terminals 2 and 1 when you press temperature control switch from full cool to full warm or when you press temperature control switch from full warm to full cool?		
Yes	▶	Replace air mix door motor.
No	▶	GO TO 3.



AHA222A

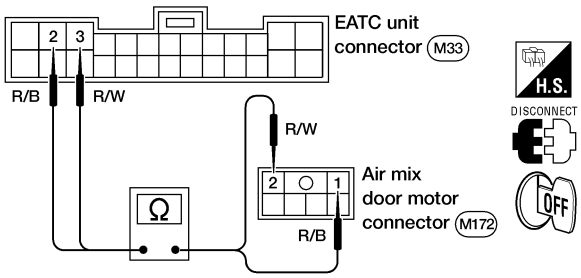
Temp control switch position	Terminal No. 2	Terminal No. 1	Voltage V
Full cool → Full warm	⊖	⊕	Approx. 10.5
Full warm → Full cool	⊕	⊖	

AHA225A

Yes or No

3	CHECK CIRCUIT

1. Disconnect EATC unit and air mix door motor harness connectors.
2. Check circuit continuity between EATC unit harness terminal 2 (3) and air mix door harness terminal 1 (2).



AHA223A

Continuity should exist.

3. Also, check harness for short.

OK or NG

OK	▶	Replace EATC unit.
NG	▶	Repair harness or connector.

AIR MIX DOOR MOTOR CIRCUIT (EATC SELF-DIAGNOSIS CODE 26 OR 27)

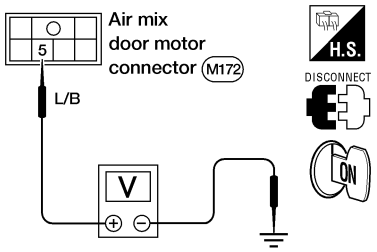
=NDHA0223

SYMPTOM:

- **Air mix door motor PBR circuit is open or shorted. (26 or 27 is indicated on the EATC unit as a result of conducting Self-diagnosis).**

1	CHECK PBR CIRCUIT BETWEEN AIR MIX DOOR MOTOR AND EATC UNIT

1. Disconnect air mix door motor harness connector.
2. Do approximately 5 volts exist between air mix door motor harness terminal 5 and ground?



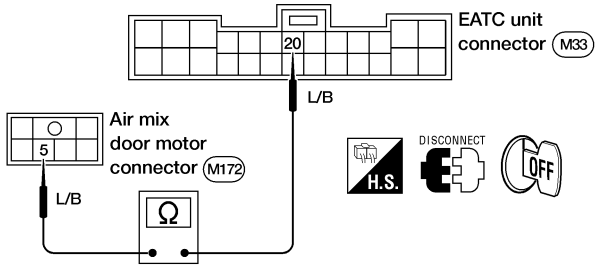
AHA224A

Yes or No

Yes	▶	GO TO 3.
No	▶	GO TO 2.

2	CHECK PBR VOLTAGE REFERENCE CIRCUIT

1. Disconnect EATC unit harness connector.
2. Check circuit continuity between air mix door motor harness terminal 5 and EATC unit harness terminal 20.



AHA226A

Continuity should exist.

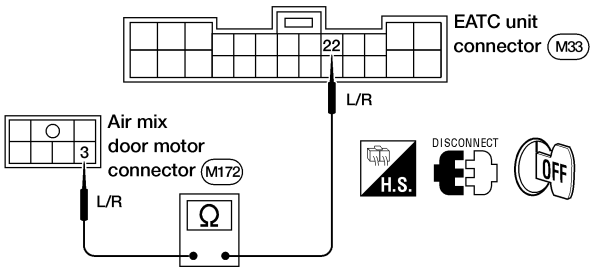
3. Also, check harness for short.

OK or NG

OK	▶	Replace EATC unit.
NG	▶	Repair harness or connector.

3	CHECK PBR GROUND REFERENCE CIRCUIT

1. Disconnect EATC unit harness connector.
2. Check circuit continuity between air mix door motor harness terminal 3 and EATC unit harness terminal 22.



AHA227A

Continuity should exist.

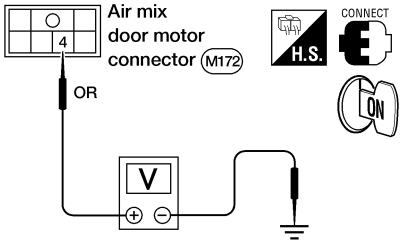
3. Also, check harness for short.

OK or NG

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

4	CHECK PBR CIRCUIT BETWEEN AIR MIX DOOR MOTOR AND EATC UNIT

1. Reconnect EATC unit harness connector and air mix door motor harness connector.
2. Set temperature control switch to full warm.
   Do approximately 5 volts exist between air mix door motor harness terminal 4 and ground?
3. Set temperature control switch to full cool.
   Do approximately 0 volts exist between air mix door motor harness terminal 4 and ground?



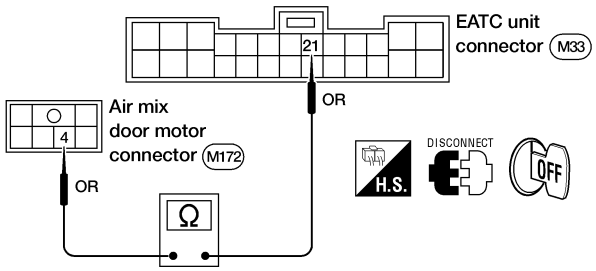
AHA228A

Yes or No

Yes	▶	GO TO 6.
No	▶	GO TO 5.

5	CHECK PBR CIRCUIT

1. Disconnect EATC unit and air mix door motor harness connectors.
2. Check circuit continuity between air mix door motor harness terminal 4 and EATC unit harness terminal 21.



AHA229A

Continuity should exist.

3. Also, check harness for short.

OK or NG

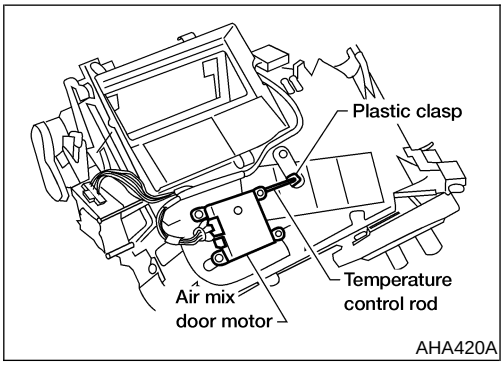
OK	▶	Replace EATC unit.
NG	▶	Repair harness or connector.

6	CHECK PBR

Refer to HA-48.

OK or NG

OK	▶	Replace EATC unit.
NG	▶	Replace air mix door motor (PBR).



AHA420A

CONTROL LINKAGE ADJUSTMENT

NDHA0224

Air Mix Door

NDHA0224S01

Before adjusting, push temperature control rod fully forward to front of vehicle. Note position of clasp.

1) Install air mix door motor on heater unit and connect it to the air mix door motor harness.
2) Turn ignition switch ON.
3) Press the temperature control switch until 16°C (60°F) is displayed.
4) Move the air mix door by hand to maximum cold position (door completely covers heater core) and hold it.
5) While holding the air mix door, adjust the length of temperature control rod and connect it to the air mix door lever.
6) Check that air mix door operates properly when temperature control switch is set from 16 to 32°C (60 to 90°F).

Intake Door

TROUBLE DIAGNOSIS PROCEDURE FOR INTAKE DOOR MOTOR

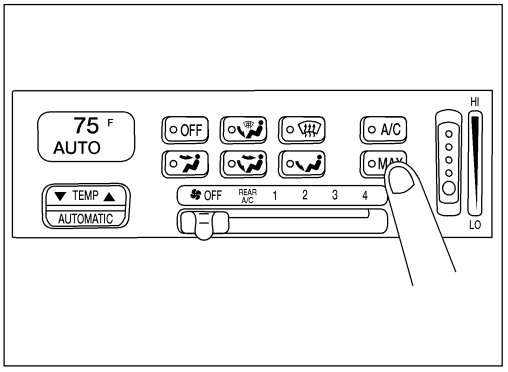
=NDHA0113

Symptom:

- **Intake door does not operate normally.**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Recirculation

1) Press MAX A/C (recirculation) switch. MAX A/C (REC) indicator should illuminate.
2) Listen for intake door position change (you should hear sound change slightly).

NOTE:
Confirm that the MAX A/C (REC) switch is canceled in the DEF ( ) and F/D ( ) modes.

If OK (symptom cannot be duplicated), perform complete operational check (*4).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

3. Check intake door motor circuit [EATC Self-diagnosis Code 80, 82 or 88 (*1) or 86 or 87 (*2)].

OK

4. If the symptom still exists, perform “Self-diagnosis” (*3) and a complete “Operational Check” (*4) and check for other codes and symptoms.
[Refer to “Malfunction Code/Symptom Chart”, (*5).]
Does another code or symptom exist?

Yes → Go to Trouble Diagnosis for related code or symptom.

[Another code or symptom exists.]

No

5. Replace EATC unit.

INSPECTION END.

WHA011

*1: HA-58
*2: HA-60
*3: HA-39
*4: HA-36
*5: HA-40

CONTROL SYSTEM OUTPUT COMPONENTS

NDHA0115

Intake Door Control (Automatic Temperature Control)

NDHA0115S03

Component Parts

NDHA0115S0301

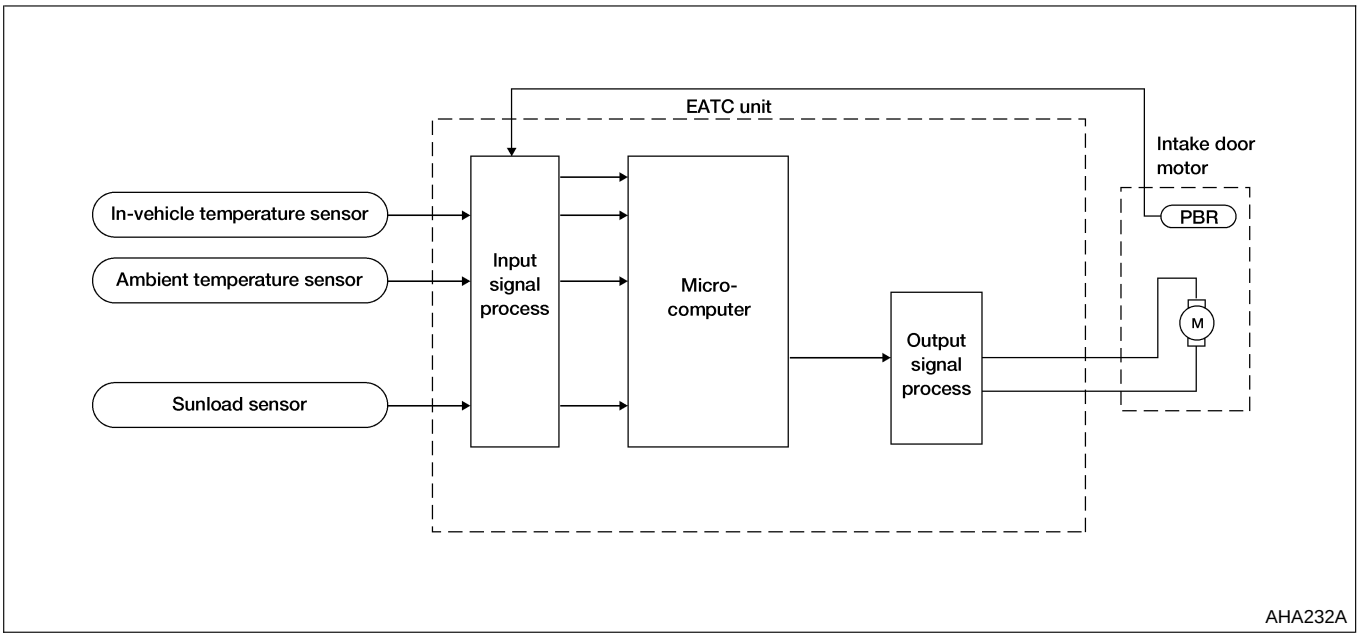
Intake door control system components are:

1) EATC unit
2) Intake door motor
3) PBR
4) In-vehicle temperature sensor
5) Ambient temperature sensor
6) Sunload sensor.

System Operation

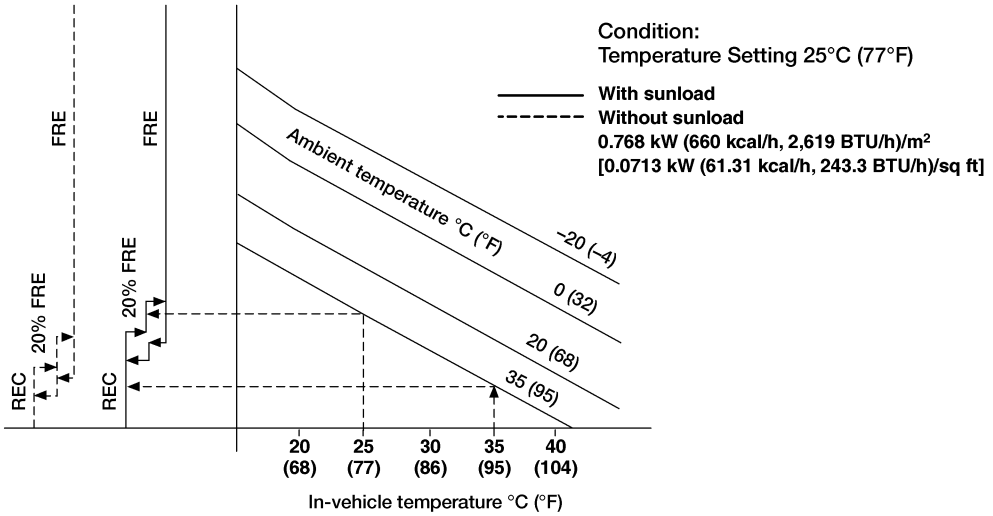
NDHA0115S0302

When AUTOMATIC mode is selected, the EATC unit determines intake door position based on the ambient temperature, in-vehicle temperature and sunload. When the DEF ( ) or F/D ( ) switch is pushed, the EATC unit sets the intake door to the FRESH position.



Intake Door Control Specification

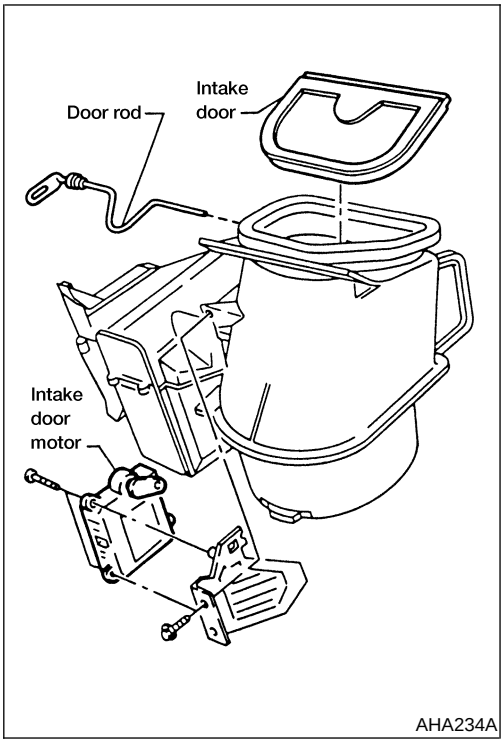
NDHA0115S0303



Example:

- **If temperature setting is set at 25°C (77°F) under no sunload condition when ambient and in-vehicle temperatures are 35°C (95°F), intake door is set automatically at MAX A/C (REC) position to make in-vehicle temperature cool down efficiently.**
- **In-vehicle temperature will lower and when 25°C (77°F) is reached, intake door will shift to 20% FRE position.**

AHA233A

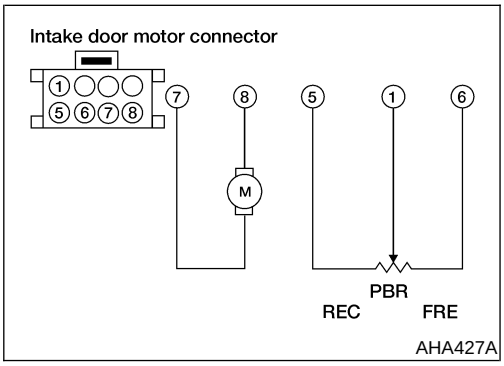


AHA234A

Intake Door Motor

NDHA0115S01

The intake door motor is attached to the intake unit. It rotates so that air is drawn from inlets set by the EATC unit. Motor rotation is conveyed to a rod which activates the intake door.

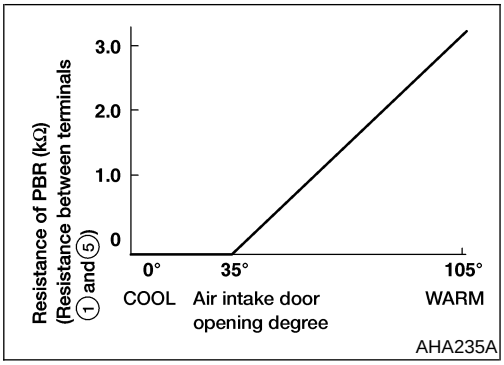


AHA427A

Intake Door Motor Operation

NDHA0115S0101

8	7	Intake door operation	Movement of link rotation
+	–	REC → FRE	Counterclockwise
—	—	STOP	STOP
–	+	FRE → REC	Clockwise



PBR Characteristics

NDHA0115S02

Measure resistance between terminals **1** and **5** at vehicle harness side.

INTAKE DOOR MOTOR CIRCUIT (EATC SELF-DIAGNOSIS CODE 80, 82, OR 88)

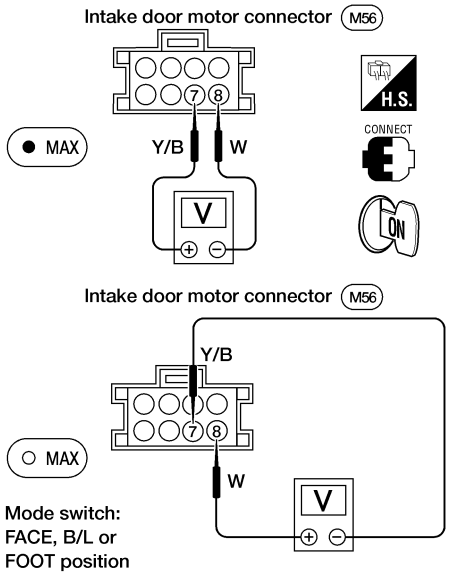
=NDHA0037

SYMPTOM:

- **Intake door does not operate normally. (80, 82, or 88 is indicated on the EATC unit as a result of conducting Self-diagnosis).**

1	CHECK PBR OPERATION	
Perform Self-diagnosis, HA-39. **Does code 86 or 87 occur?**		
Yes	▶	Check PBR circuit. Go to Intake Door Motor Circuit (EATC Self-Diagnosis Code 86 or 87). Refer to HA-60
No	▶	GO TO 2.

2	CHECK FOR OUTPUT OF EATC UNIT	
Do approximately 10.5 volts exist between intake door motor harness terminals 7 and 8 when you press MAX A/C switch ON or OFF?		
Yes	▶	Replace intake door motor.
No	▶	GO TO 3.



AHA236A

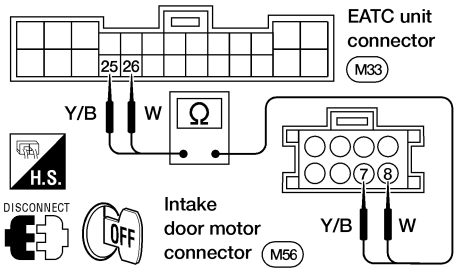
MAX A/C switch position	Terminal No.		Voltage V
	7	8	
ON	⊕	⊖	Approx. 10.5
OFF	⊖	⊕	

AHA237A

Yes or No

3	CHECK CIRCUIT

1. Disconnect EATC unit and intake door motor harness connectors.
2. Check circuit continuity between EATC unit harness terminal 25 (26) and intake door motor harness terminal 7 (8).



AHA238A

Continuity should exist.

3. Also, check harness for short.

OK or NG

OK	▶	Replace EATC unit.
NG	▶	Repair harness or connector.

INTAKE DOOR MOTOR CIRCUIT (EATC SELF-DIAGNOSIS CODE 86 OR 87)

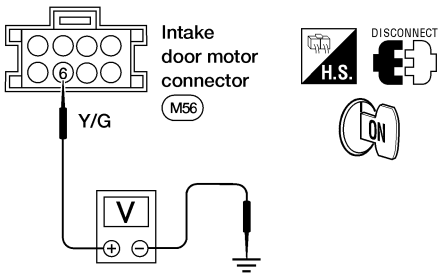
=NDHA0225

SYMPTOM:

- **Intake door motor PBR circuit is open or shorted. (86 or 87 is indicated on the EATC unit as a result of conducting Self-diagnosis).**

1	CHECK PBR CIRCUIT BETWEEN INTAKE DOOR MOTOR AND EATC UNIT

1. Disconnect intake door motor harness connector.
2. Do approximately 5 volts exist between intake door motor harness terminal 6 and ground.



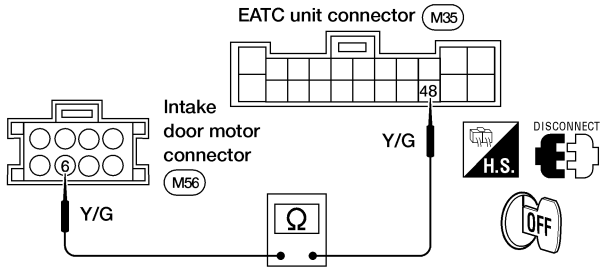
AHA239A

Yes or No

Yes	▶	GO TO 3.
No	▶	GO TO 2.

2	CHECK PBR VOLTAGE REFERENCE CIRCUIT

1. Disconnect EATC unit harness connector.
2. Check circuit continuity between intake door motor harness terminal 6 and EATC unit harness terminal 48.



AHA240A

Continuity should exist.

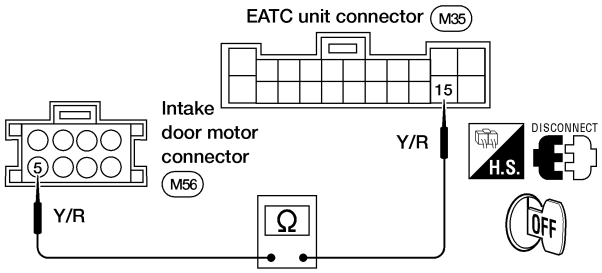
3. Also, check harness for short.

OK or NG

OK	▶	Replace EATC unit.
NG	▶	Repair harness or connector.

3	CHECK PBR GROUND REFERENCE CIRCUIT

1. Disconnect EATC unit harness connector.
2. Check circuit continuity between intake door motor harness terminal 5 and EATC unit harness terminal 15.



AHA241A

Continuity should exist.

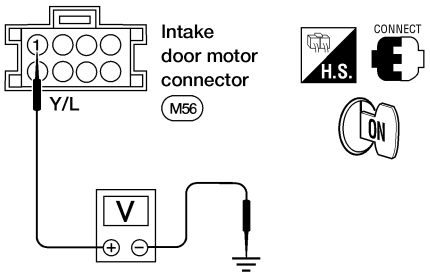
3. Also, check harness for short.

OK or NG

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

4	CHECK PBR CIRCUIT BETWEEN INTAKE DOOR MOTOR AND EATC UNIT

1. Reconnect EATC unit harness connector and intake door motor harness connector.
2. Press MAX A/C switch ON.
   Do approximately 5 volts exist between intake door motor harness terminal 1 and ground?
3. Press MAX A/C switch OFF.
   Do approximately 0 volts exist between intake door motor harness terminal 1 and ground?



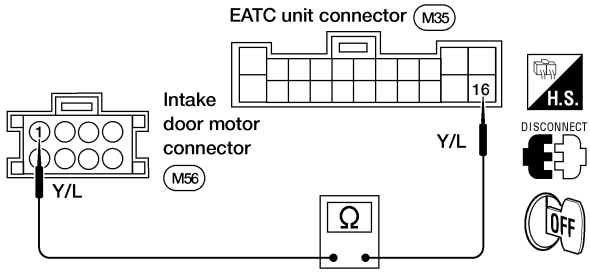
AHA242A

Yes or No

Yes	▶	GO TO 6.
No	▶	GO TO 5.

5	CHECK PBR CIRCUIT

1. Disconnect EATC unit harness connector.
2. Check circuit continuity between intake door motor harness terminal 1 and EATC unit harness terminal 16.



AHA243A

Continuity should exist.

3. Also, check harness for short.

OK or NG

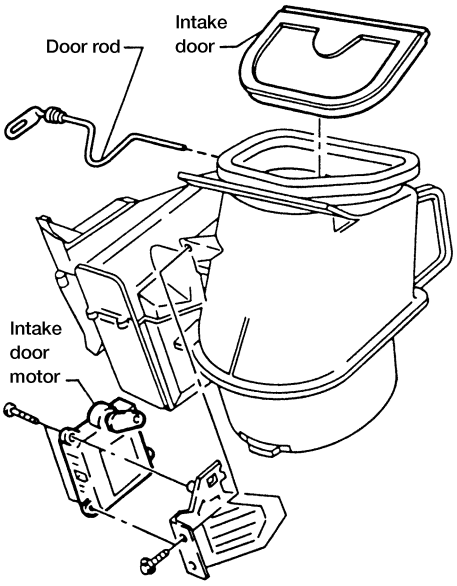
OK	▶	Replace EATC unit.
NG	▶	Repair harness or connector.

6	CHECK PBR

Refer to HA-57.

OK or NG

OK	▶	Replace EATC unit.
NG	▶	Replace intake door motor (PBR).



AHA234A

CONTROL LINKAGE ADJUSTMENT

NDHA0129

Intake Door

NDHA0129S02

1. Connect the intake door motor harness connector before installing the intake door motor.
2. Turn ignition switch to ON.
3. Select MAX A/C (REC) mode.
4. Install the intake door lever and the intake door motor.
5. Set the intake door rod in MAX A/C (REC) position and fasten door rod to holder.
6. Check that intake door operates properly when MAX A/C (REC) mode is selected.

Mode Door Motor

TROUBLE DIAGNOSIS PROCEDURE FOR MODE DOOR MOTOR

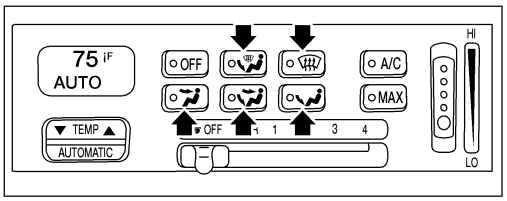
=NDHA0226

Symptom:

- **Mode door does not operate normally.**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Discharge air

1) Press mode switches.

Discharge air flow

Mode control knob	Air outlet/distribution		
	Face	Foot	Defroster
	94%	6%	-
	48%	52%	-
	-	75%	25%
	-	55%	45%
	-	9%	91%

2) Confirm that discharge air comes out according to the air distribution table at left.
Refer to "Discharge Air Flow" in "DESCRIPTION" (*6).

If OK (symptom cannot be duplicated), perform complete operational check (*4).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

3. Check mode door motor circuit [EATC Self-diagnosis Code 90, 92 or 98 (*1)] or mode switch button [EATC Self-diagnosis Code 60 (*2)].

OK

4. If the symptom still exists, perform ÒSelf-diagnosisÓ (*3) and a complete ÒOperational CheckÓ (*4) and check for other codes and symptoms.
[Refer to ÒMalfunction Code/Symptom ChartÓ, (*5).]
Does another code or symptom exist?

Yes → Go to Trouble Diagnosis for related code or symptom.

[Another code or symptom exists.]

No

5. Replace EATC unit.

INSPECTION END.

WHA012

*1: HA-66
*2: HA-70
*3: HA-39
*4: HA-36
*5: HA-40
*6: HA-26

CONTROL SYSTEM OUTPUT COMPONENTS

NDHA0256

Mode Door Control (Automatic Temperature Control)

NDHA0256S01

Component Parts

NDHA0256S0101

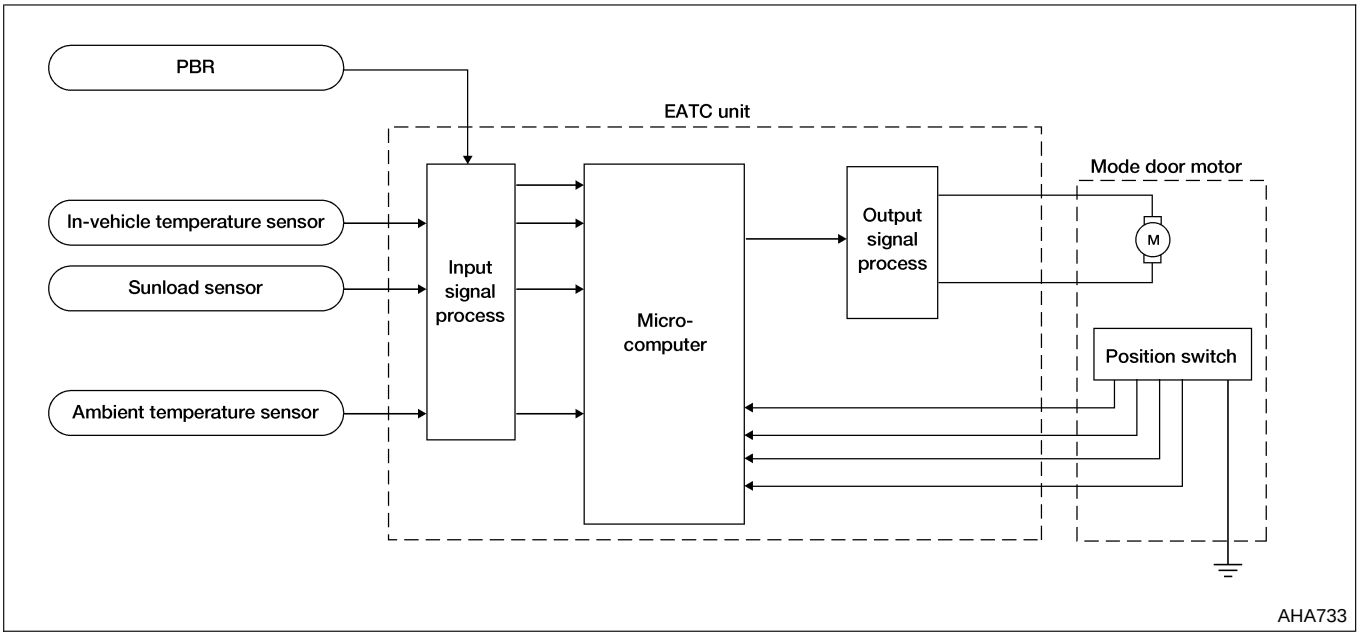
Mode door control system components are:

1) EATC unit
2) Mode door motor
3) PBR
4) In-vehicle temperature sensor
5) Ambient temperature sensor
6) Sunload sensor

System Operation

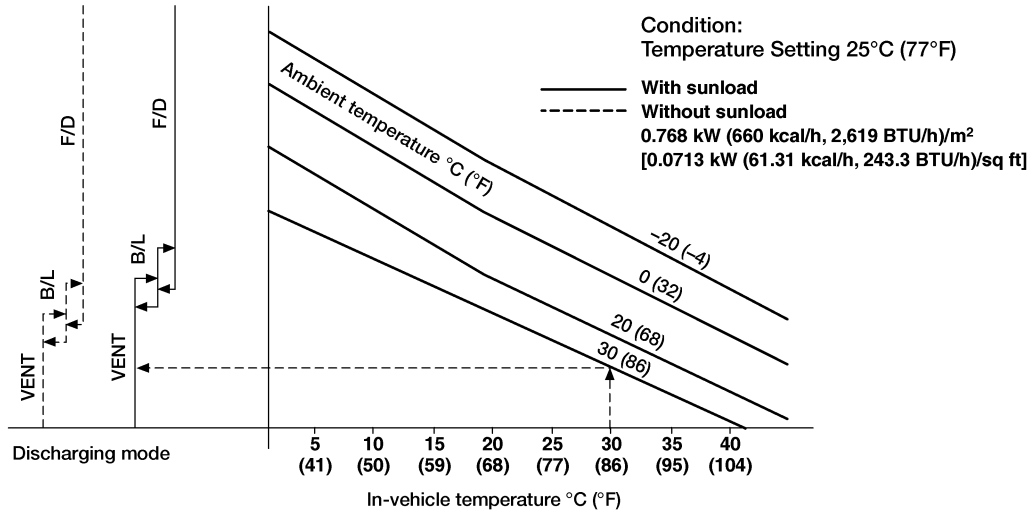
NDHA0256S0102

The EATC unit computes the air discharge conditions according to the ambient temperature and the in-vehicle temperature. The computed discharge conditions are then corrected for sunload to determine through which outlets air will flow into the passenger compartment.



Mode Door Control Specification

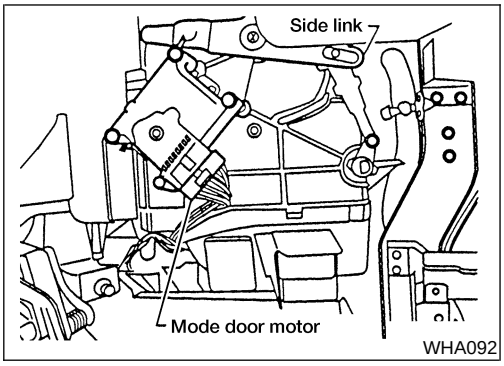
NDHA0256S0103



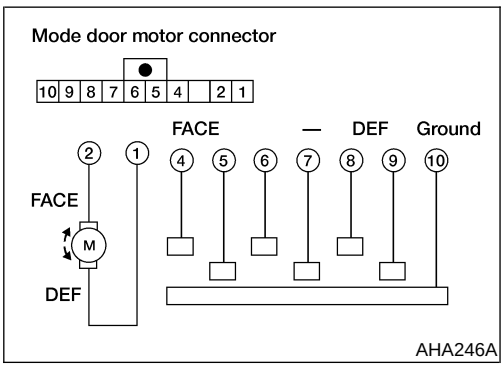
Example:

- **If temperature setting is set at 25°C (77°F) under no sunload condition when ambient and in-vehicle temperatures are 30°C (86°F), mode door is set automatically at VENT position.**

AHA245A



WHA092



AHA246A

Mode Door Motor

NDHA0256S02

The mode door motor is attached to the heater unit. It rotates so that air is discharged from the outlet set by the EATC unit. Motor rotation is conveyed to a link which activates the mode door.

Mode Door Motor Operation

NDHA0256S0201

1	2	Mode door operation	Movement of link rotation
+	–	FACE → DEF	Clockwise
—	—	STOP	STOP
–	+	DEF → FACE	Counterclockwise

MODE DOOR MOTOR CIRCUIT (EATC SELF-DIAGNOSIS CODE 90, 92, OR 98)

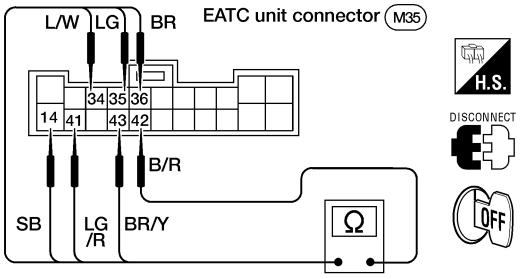
=NDHA0257

SYMPTOM:

- **Mode door does not operate normally. (90, 92, or 98 is indicated on the EATC unit as a result of conducting Self-diagnosis).**

1	CHECK MODE DOOR MOTOR POSITION SWITCH CIRCUIT-1

1. Press FACE ( ) switch ON with ignition switch at ON position.
2. Turn ignition switch OFF.
   Disconnect EATC unit connector.
3. Check if continuity exists between terminal 35 or 41 and 42 of EATC unit harness connector.



AHA247A

4. Using above procedures, check for continuity in any other mode, as indicated in chart.

Mode switch	Terminal No. ⊕	Terminal No. ⊖	Continuity
FACE	35 or 41	42	Yes
B/L	14 or 41		
FOOT	14 or 36		
F/D	36 or 43		
DEF	34 or 43		

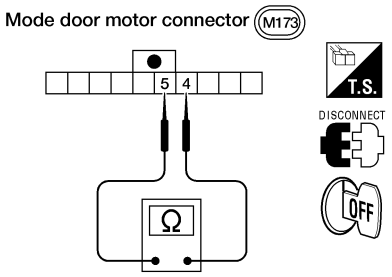
AHA248A

OK or NG

OK	▶	GO TO 6.
NG	▶	GO TO 2.

2	CHECK MODE DOOR MOTOR POSITION SWITCH

1. Press FACE ( ) switch ON with ignition switch at ON position.
2. Turn ignition switch OFF.
   Disconnect mode door motor connector.
3. Check if continuity exists between terminals 4 or 5 and 10 of mode door motor connector.



AHA435A

4. Using above procedures, check for continuity in any other mode, as indicated in chart.

Mode switch	Terminal No. ⊕	Terminal No. ⊖	Continuity
FACE	4 or 5	10	Yes
B/L	5 or 6		
FOOT	6 or 7		
F/D	7 or 8		
DEF	8 or 9		

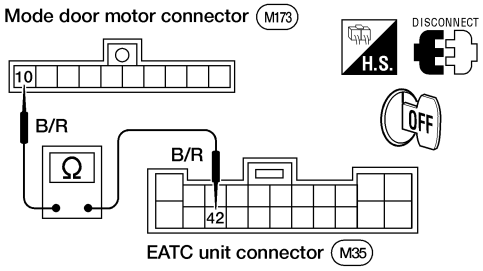
AHA436A

OK or NG

OK	▶	GO TO 3.
NG	▶	GO TO 5.

3	CHECK GROUND CIRCUIT FOR MODE DOOR MOTOR

1. Disconnect mode door motor harness connector.
2. Check circuit continuity between mode door motor harness terminal 10 and EATC unit harness terminal 42.



AHA249A

Continuity should exist.

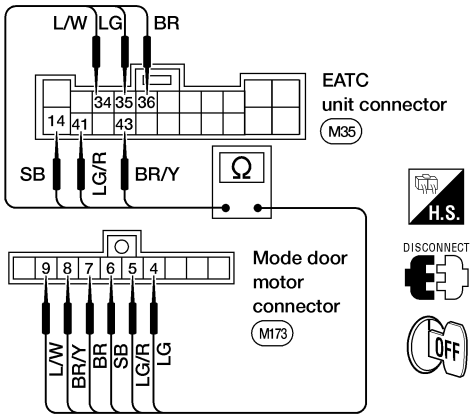
3. Also, check harness for short.

OK or NG

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

4	CHECK MODE DOOR MOTOR POSITION SWITCH CIRCUIT-2

1. Check circuit continuity between each terminal on EATC unit and mode door motor.



AHA250A

Terminal No.		Continuity
⊕	⊖	
EATC unit	Mode door motor	
35	4	Yes
41	5	
14	6	
36	7	
43	8	
34	9	

AHA251A

Continuity should exist.

2. Also, check harness for short.

OK or NG

OK	▶	Check intermittent incident. Refer to "Incident Simulation Test", in GI section.
NG	▶	Repair harness or connector.

5	CHECK MODE DOOR LINKAGE

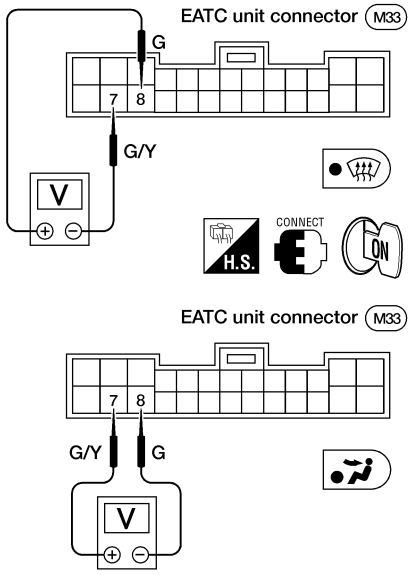
Refer to HA-71.

OK or NG

OK	▶	Replace mode door motor.
NG	▶	Repair/adjust as necessary.

6	CHECK FOR OUTPUT OF EATC UNIT

1. Reconnect EATC unit harness connector.
2. Do approximately 12 volts exist between EATC unit harness terminal 7 and 8 when mode is switched from FACE ( ) to DEF ( ) or when mode is switched from DEF ( ) to FACE ( ).



AHA252A

Terminal No.		Mode door motor	
7	8	Mode door operation	Voltage V
—	—	Stop	—
⊖	⊕	FACE → DEF	12
⊕	⊖	DEF → FACE	12

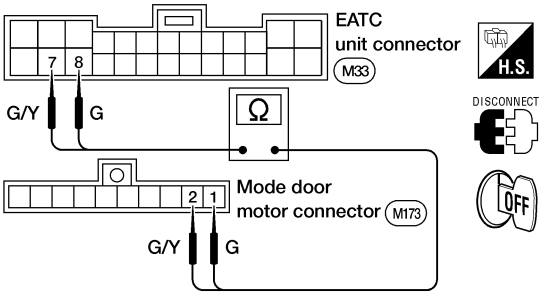
AHA253A

Yes or No

Yes	▶	Replace mode door motor.
No	▶	GO TO 7.

7	CHECK OUTPUT CIRCUIT OF EATC UNIT

Check circuit continuity between EATC unit harness terminal 7 (8) and mode door motor harness terminal 2 (1).



AHA437A

Continuity should exist.

OK or NG

OK	▶	Replace EATC unit.
NG	▶	Repair harness or connectors.

MODE SWITCH BUTTON (EATC SELF-DIAGNOSIS CODE 60)

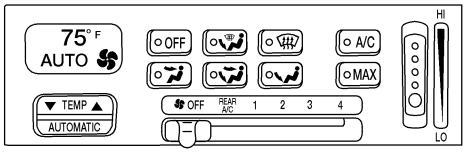
NDHA0258

SYMPTOM:

- **Mode switch button is stuck. (60 is indicated on the EATC unit as a result of conducting Self-diagnosis.**

1	CHECK MODE SWITCH BUTTON

Check that each mode switch does not stick when pressed.



WHA065

OK or NG

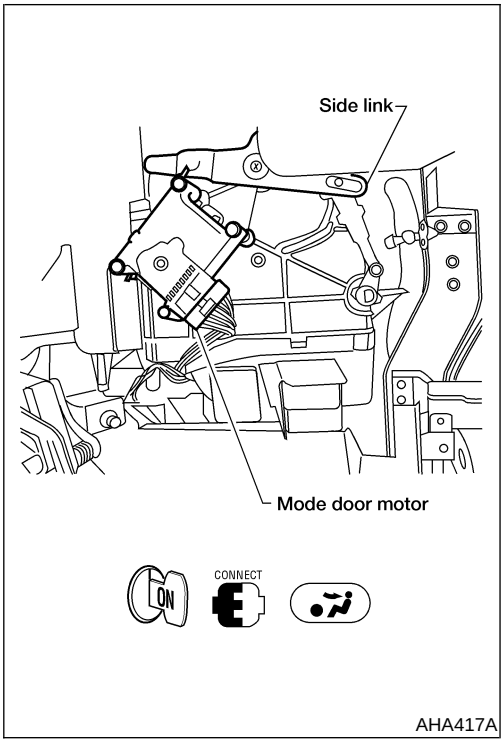
OK	▶	GO TO 2.
NG	▶	Replace EATC unit.

2	REPEAT SELF-DIAGNOSIS

1. Erase malfunction code.
2. Perform Self-diagnosis. Refer to HA-39.

Does code 60 occur?

Yes	▶	Replace EATC unit.
No	▶	**INSPECTION END**



CONTROL LINKAGE ADJUSTMENT

=NDHA0259

Mode Control Cable

NDHA0259S01

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 body harness.
3. Turn ignition switch ON.
4. Select DEF ( ) mode.
5. Attach mode door motor rod to side link rod holder.
6. Select FACE ( ) mode. Check that side link operates at the fully-open position. Then select DEF ( ) mode and check that side link operates at the fully-open position.

Front Blower Motor

TROUBLE DIAGNOSIS PROCEDURE FOR FRONT BLOWER MOTOR

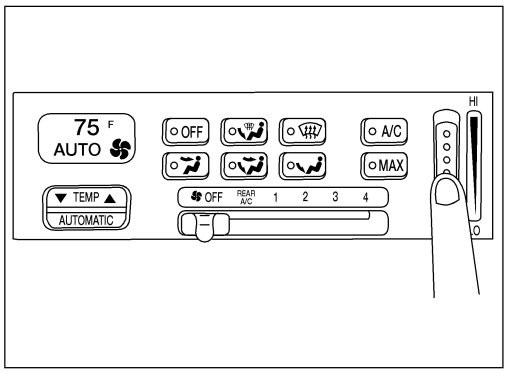
=NDHA0117

Symptom:

- **Front blower motor does not rotate.**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Front blower motor

1) Press any mode switch except OFF.
2) Rotate the front fan switch up and check for blower operation.
3) Continue checking that blower speed increases as the front fan switch is rotated up.

If OK (symptom cannot be duplicated), perform complete operational check (*2).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

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

OK

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

Yes → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

No

5. Replace EATC unit.

INSPECTION END.

WHA013

*1: HA-76 *2: HA-36 *3: HA-41

CONTROL SYSTEM OUTPUT COMPONENTS

=NDHA0118

Front Fan Speed Control

NDHA0118S06

Component Parts

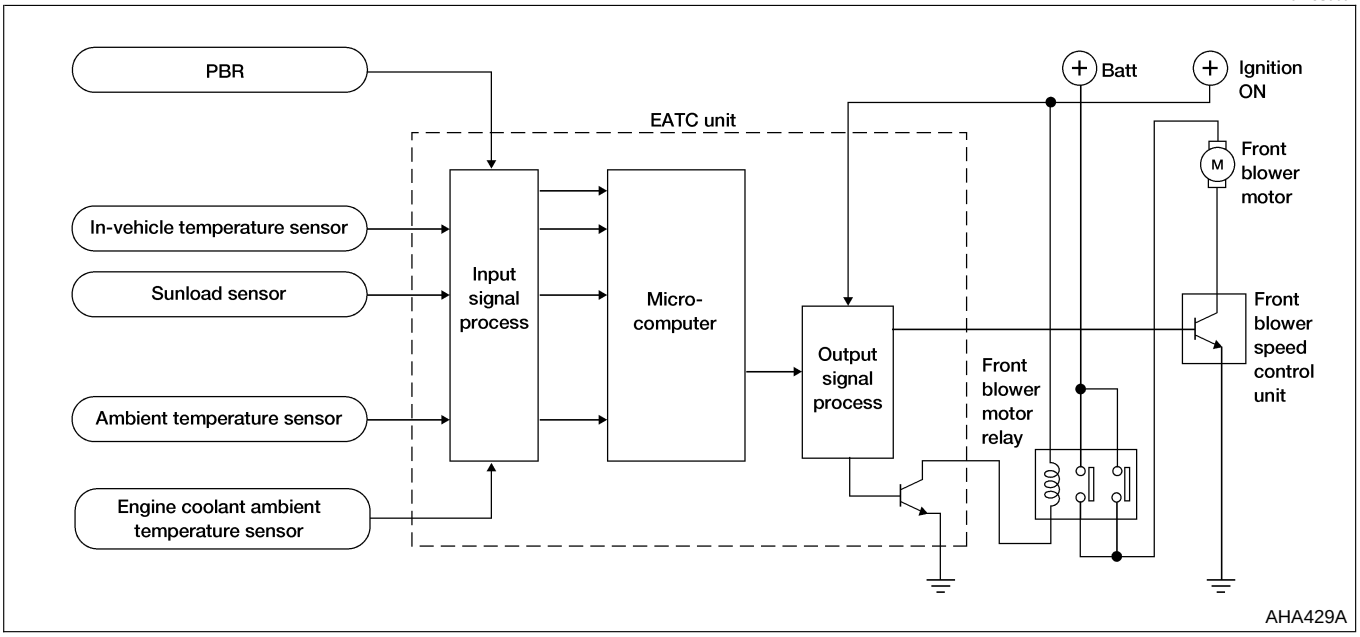
NDHA0118S0601

Front fan speed control system components are:

1) EATC unit
2) Front blower speed control unit
3) PBR
4) In-vehicle temperature sensor
5) Ambient temperature sensor
6) Sunload sensor
7) Front blower motor relay
8) Engine coolant ambient temperature sensor
9) Front blower motor

System Operation

NDHA0118S0602



Automatic Mode

NDHA0118S02

In the automatic mode, the front blower motor speed is calculated by the EATC unit based on inputs from the PBR, in-vehicle temperature sensor, sunload sensor, ambient temperature sensor, and engine coolant ambient temperature sensor. The blower motor applied voltage ranges from approximately 4.5 volts (lowest speed) to 12 volts (highest speed).

To control blower speed, the EATC unit supplies a signal to the front blower speed control unit. Based on this signal, the front blower speed control unit controls the current flow from the blower motor to ground.

Starting Fan Speed Control

NDHA0118S03

Start Up From "COLD SOAK" Condition (Automatic Mode)

NDHA0118S0301

When the engine coolant temperature is below 50°C (122°F), the front blower will operate at a minimum voltage of (6V) and the DEF mode will be selected by the EATC unit. This operating mode will continue approximately 180 seconds under low ambient conditions. When engine coolant temperature reaches 50°C (122°F) the system goes to FOOT mode and the blower speed slowly increases to the required speed based on coolant temperature.

Start Up From Normal or "HOT SOAK" Condition (Automatic Mode)

NDHA0118S0303

The EATC unit should remain at the same setting as it was when the ignition switch is turned OFF. The front blower will begin operation momentarily after the AUTOMATIC button is pushed. The blower speed will gradually rise to the objective speed over a time period of 5 seconds or less (actual time depends on the objective blower speed).

Blower Speed Compensation

NDHA0118S05

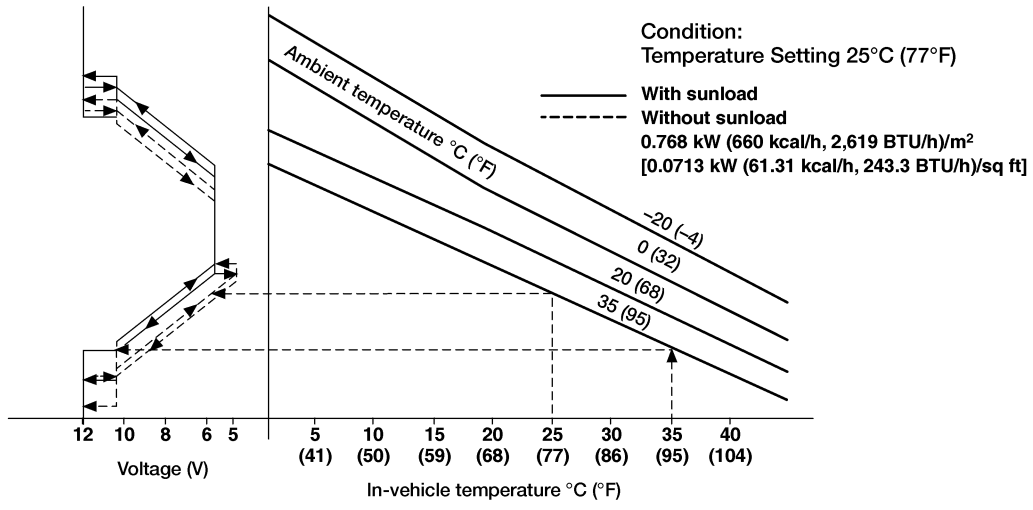
Sunload

NDHA0118S0501

When the in-vehicle temperature and the set temperature are very close, the front blower will operate at low speed. The low speed varies depending on the sunload. During conditions of high sunload, the front blower low speed is "normal" low speed (approx. 5.5V). During lesser sunload conditions, the low speed will drop to low speed (approx. 4.5V).

Fan Speed Control Specification

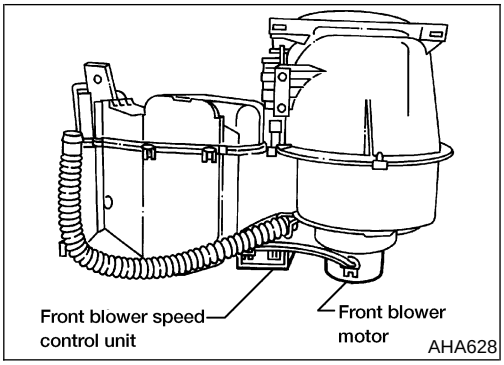
NDHA0118S0502



Example:

- **If temperature setting is set at 25°C (77°F) under no sunload condition when ambient and in-vehicle temperatures are 35°C (95°F), blower motor voltage is approx. 10.5 volts.**
- **When ambient temperature is 35°C (95°F) and in-vehicle temperature is reduced to 25°C (77°F) under the same condition above, blower motor voltage is approx. 6 volts.**

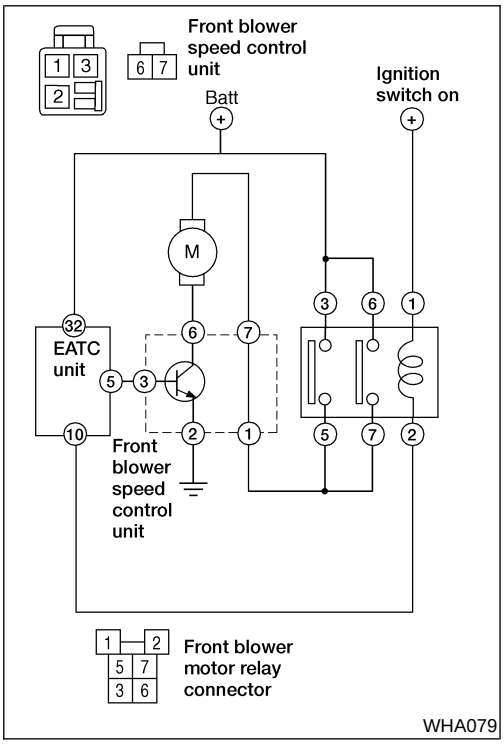
AHA256A



Front Blower Speed Control Unit

NDHA0118S04

The front blower speed control unit is located on the cooling unit. It amplifies a 11-step base current flowing from the EATC unit to change the blower speed within the range of 4.5V to 12V.



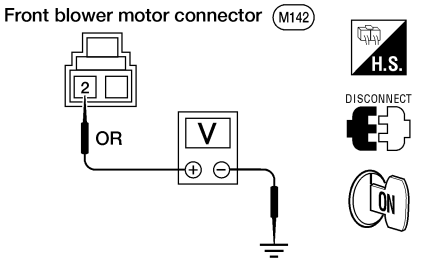
FRONT BLOWER MOTOR CIRCUIT

=NDHA0033

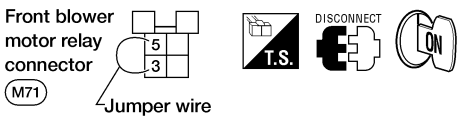
Symptom:

- **Front blower motor does not rotate.**

1	CHECK FUSES
Check 20A fuse (No. 28, located in the fuse block) and 20A fuse (No. 31, located in the fuse block). For fuse layout, refer to ***EL-10*** "POWER SUPPLY ROUTING".	
Are fuses OK?	
Yes ▶	GO TO 2.
No ▶	GO TO 7.

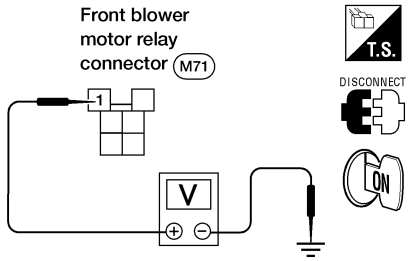
2	CHECK FRONT BLOWER MOTOR POWER SUPPLY CIRCUIT
1. Disconnect front blower motor harness connector. 2. Press any mode switch except OFF. 3. Set the fan switch to HI. 4. Check voltage between front blower motor harness terminal 2 and ground.	
 AHA262A	
Does battery voltage exist?	
Yes ▶	GO TO 13.
No ▶	GO TO 3.

3	CHECK FRONT BLOWER MOTOR RELAY
Refer to HA-83.	
OK or NG	
OK ▶	GO TO 4.
NG ▶	Replace front blower motor relay.

4	CHECK FRONT BLOWER MOTOR SYSTEM
1. Reconnect front blower motor harness connector. 2. Turn the ignition key ON and press any mode switch except OFF. 3. Set the fan switch to HI. 4. Momentarily (no more than 4 seconds) connect a jumper wire between front blower motor relay connector M71 (body side) terminals 3 and 5.	
 AHA257A	
Does front blower motor rotate?	
Yes ▶	GO TO 5.
No ▶	GO TO 9.

5	CHECK FRONT BLOWER MOTOR RELAY (COIL SIDE) POWER SUPPLY CIRCUIT

Do approximately 12 volts exist between front blower motor relay connector M71 (body side) terminal 1 and ground when ignition switch is turned ON?



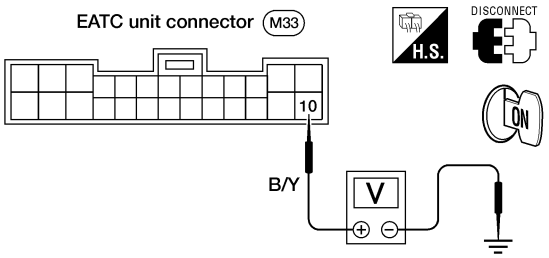
AHA259A

Yes or No

Yes	▶	GO TO 6.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M71 ● Harness for open or short between front blower motor relay and ignition switch

6	CHECK RELAY CONTROL POWER SUPPLY CIRCUIT

1. Reconnect front blower motor relay.
2. Disconnect EATC unit harness connector.
3. Check voltage between EATC unit harness terminal 10 and ground.



AHA258A

Does battery voltage exist when ignition switch is turned ON?

Yes	▶	Replace EATC unit.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M33 ● Harness for open or short between front blower motor relay and EATC unit

7	REPLACE FUSES

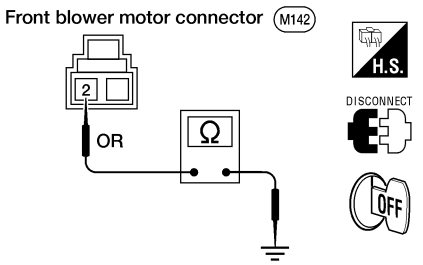
1. Replace fuses.
2. Activate the front blower motor system.

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

Yes	▶	GO TO 8.
No	▶	**INSPECTION END**

8	CHECK FRONT BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

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



AHA261A

Continuity should not exist.

Does continuity exist?

Yes	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M57, M141, and M142 ● Harness for open or short between front blower speed control unit and front blower motor or fuses
No	▶	Check front blower motor. Refer to HA-83. If necessary, clear intake unit. If OK, replace front blower motor.

9	CHECK FUSIBLE LINK

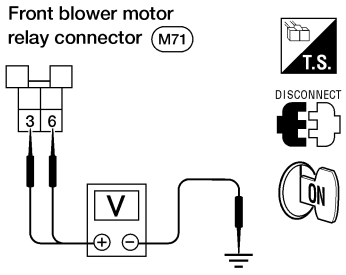
Check 65A fusible link (letter **c**, located in the fuse and fusible link box). For fusible link layout, refer to "POWER SUPPLY ROUTING", ***EL-12***.

Is fusible link OK?

Yes	▶	GO TO 10.
No	▶	GO TO 18.

10	CHECK FRONT BLOWER MOTOR RELAY (SWITCH SIDE) POWER SUPPLY CIRCUIT

Check voltage between front blower motor relay connector M71 (body side) terminals 3, 6 and ground.



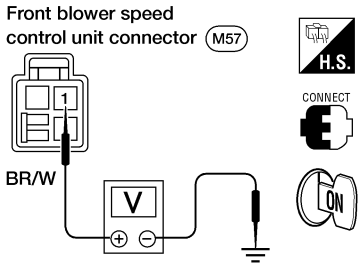
AHA264A

Does battery voltage exist?

Yes	▶	GO TO 11.
No	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connector M71 ● Harness for open or short between front blower motor relay and fusible link

11	CHECK FRONT BLOWER SPEED CONTROL UNIT POWER SUPPLY CIRCUIT

1. Disconnect front blower speed control unit harness connector.
2. Press any mode switch except OFF.



AHA263A

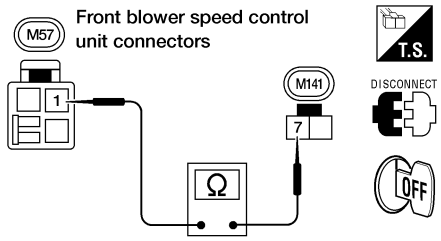
3. Check voltage between front blower speed control unit harness terminal 1 and ground.

Does battery voltage exist?

Yes	▶	GO TO 12.
No	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors M57 and M71 ● Harness for open or short between front blower motor relay and front blower speed control unit

12	CHECK FRONT BLOWER SPEED CONTROL UNIT CIRCUIT (INTERNAL)

Check circuit continuity between front blower speed control unit terminals 1 and 7.



AHA260A

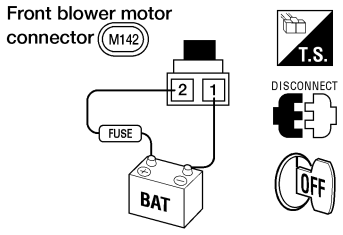
Continuity should exist.

OK or NG

OK	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors M141 and M142 ● Harness for open or short between front blower speed control unit and front blower motor
NG	▶	Replace front blower speed control unit

13	CHECK FRONT BLOWER MOTOR

Does front blower motor rotate when 12 volts is applied to terminal 2 and ground to terminal 1?



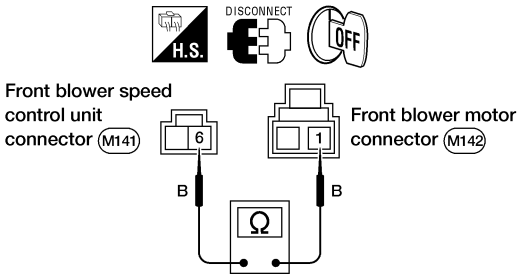
AHA265A

Yes or No

Yes	▶	GO TO 14.
No	▶	Replace front blower motor.

14	CHECK FRONT BLOWER MOTOR GROUND CIRCUIT

1. Disconnect front blower speed control unit harness connector.
2. Check circuit continuity between front blower motor harness terminal 1 and front blower speed control unit harness terminal 6.



AHA296A

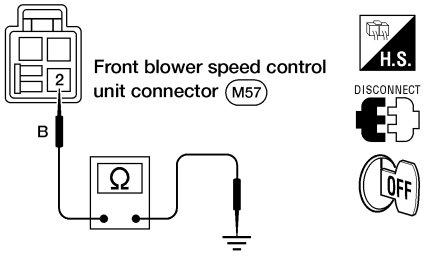
Continuity should exist.

OK or NG

OK	▶	GO TO 15.
NG	▶	Repair harness or connectors.

15	CHECK FRONT BLOWER SPEED CONTROL UNIT GROUND

Check circuit continuity between front blower speed control unit harness terminal 2 and ground.



AHA297A

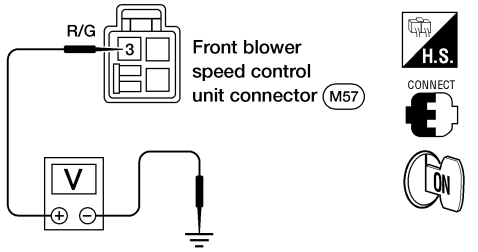
Continuity should exist.

OK or NG

OK	▶	GO TO 16.
NG	▶	Repair harness or connector.

16 **CHECK FOR EATC UNIT OUTPUT**

1. Reconnect front blower motor relay, front blower motor harness connector and front blower speed control unit harness connector.
2. Press any mode switch except OFF.
3. Check voltage between front blower speed control unit harness terminal 3 and ground.



AHA298A

Fan speed	Terminal No.		Voltage
	⊕	⊖	
Low-high	3	Ground	Approx. 1 - 3V

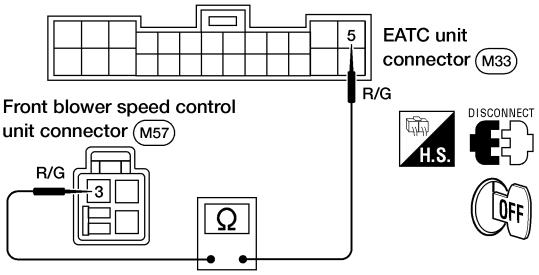
AHA299A

OK or NG

OK	▶	Replace front blower speed control unit.
NG	▶	GO TO 17.

17 **CHECK EATC UNIT OUTPUT CIRCUIT**

1. Disconnect EATC unit and front blower speed control unit connectors.
2. Check circuit continuity between EATC unit harness terminal 5 and front blower speed control unit harness terminal 3.



AHA300A

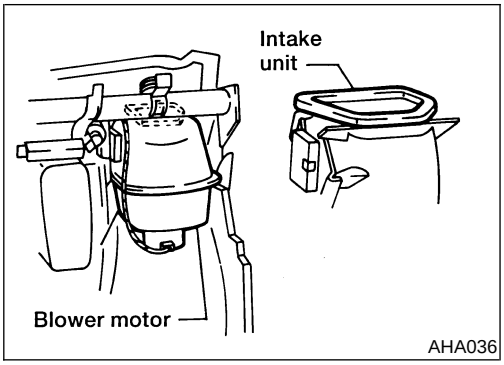
Continuity should exist.

3. Also, check harness for short.

OK or NG

OK	▶	Replace EATC unit.
NG	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors M33 and M57 ● Harness for open or short between front blower speed control unit and EATC unit

18	REPLACE FUSIBLE LINK	
Replace fusible link. Does fusible link blow when the front blower motor system is activated? **Yes or No**		
Yes	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors E102 and M2 ● Harness for open or short between front blower motor relay and fusible link
No	▶	**INSPECTION END**



ELECTRICAL COMPONENTS INSPECTION

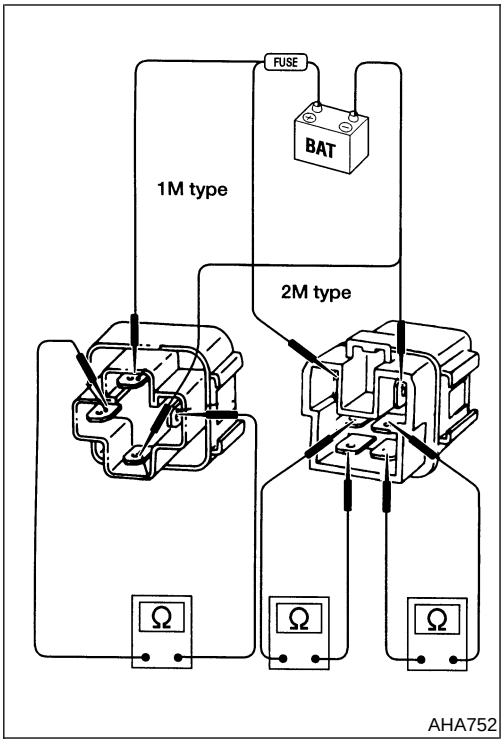
=NDHA0042

Front Blower Motor

NDHA0042S02

Confirm smooth rotation of the front blower motor.

- Check that there are no foreign particles inside the intake unit.
- Check cabin air filter. Refer to "Cabin Air Filter", HA-140.



Relays

NDHA0042S03

Check circuit continuity between terminals by supplying 12 volts and ground to coil side terminals of relays.

Memory Function

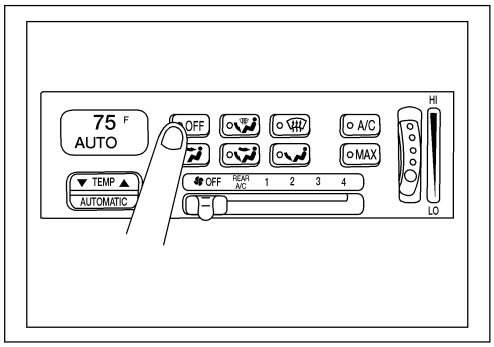
TROUBLE DIAGNOSIS PROCEDURE FOR MEMORY FUNCTION

=NDHA0273

SYMPTOM

- Memory Function does not operate.

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK - Memory function

1) Set the temperature 75°F or 25°C.
2) Press OFF switch.
3) Turn the ignition off.
4) Turn the ignition on.
5) Press the AUTOMATIC switch.
6) Confirm that the set temperature remains at previous temperature.
7) Press OFF switch.

If OK (symptom cannot be duplicated), perform complete operational check (*2).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

3. Check main power supply and ground circuit. (*1)

OK

4. Check self-diagnosis. (*3)

OK

5. Replace auto amp.

6. FINAL CHECK
   Go to self-diagnosis and perform self-diagnosis procedure.
   Confirm that 88 and all symbols are displayed.

WHA014

*1 HA-44 *3 HA-43 *4 HA-43
*2 HA-36

Rear Blower Motor

TROUBLE DIAGNOSIS PROCEDURE FOR REAR FAN SWITCH (FRONT)

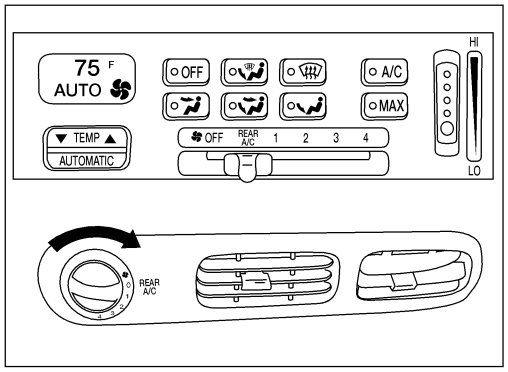
=NDHA0228

Symptom:

- **Rear blower motor does not rotate when rear fan switch (front) is set to REAR position.**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Rear blower motor

1) Press any mode switch except OFF.
2) Set the rear fan switch (front) to REAR position.
3) Turn the rear fan switch (rear) and check for rear blower operation.
4) Continue checking that rear blower speed increases as the rear fan switch (rear) is rotated clockwise.

If OK (symptom cannot be duplicated), perform complete operational check (*2).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

3. Check rear fan switch (front) circuit. (*1)

OK

4. If the symptom still exists, perform a complete "Operational Check" (*2) and check for other symptoms. [Refer to "SYMPTOM CHART", (*3).] Does another symptom exist?

Yes → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

No

INSPECTION END.

WHA015

*1 HA-87 *2 HA-36 *3 HA-41

FAN SPEED CONTROL

=NDHA0268

Component Parts

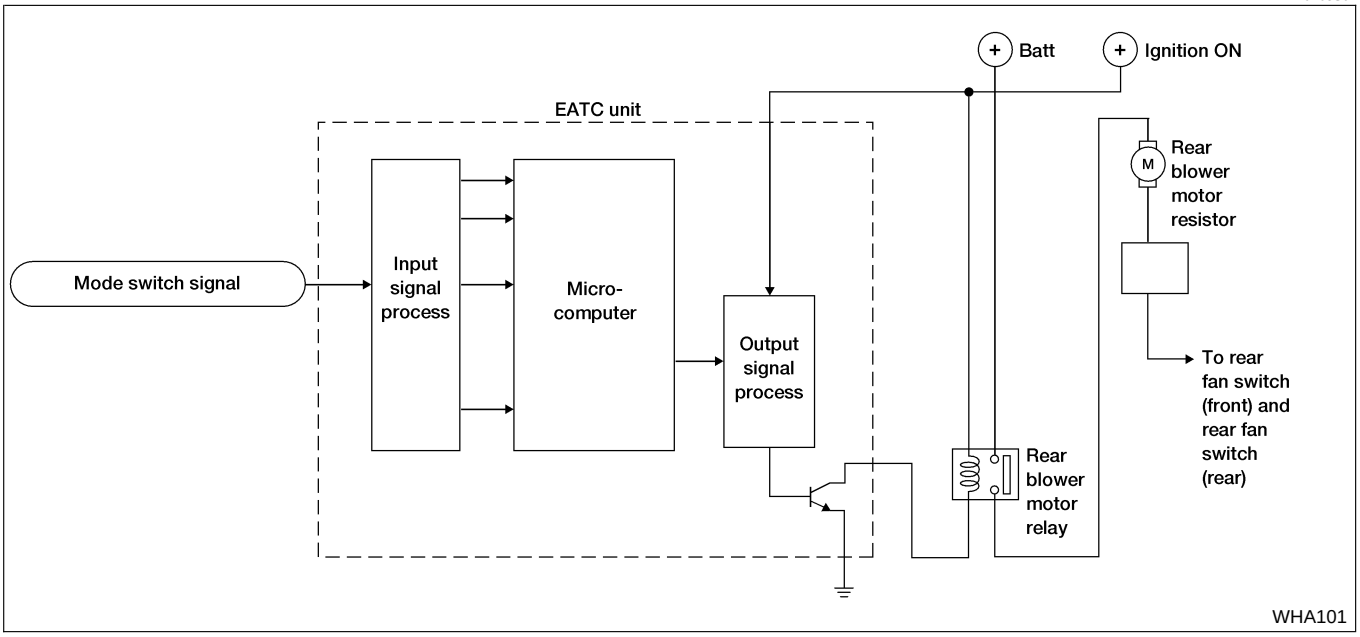
NDHA0268S01

Rear fan speed control system components are:

1) EATC unit
2) Rear fan switch (front)
3) Rear fan switch (rear)
4) Rear blower motor resistor
5) Rear blower motor
6) Rear blower motor relay

System Operation

NDHA0268S02



REAR FAN SWITCH (FRONT) CIRCUIT

=NDHA0229

Symptom:

- **Rear blower motor does not rotate when rear fan switch (front) is set to REAR position.**

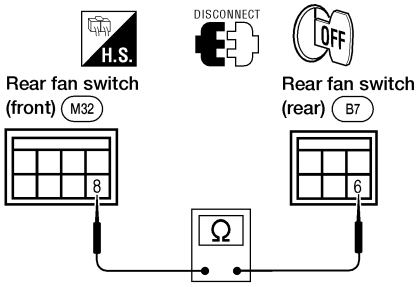
1	CHECK REAR BLOWER MOTOR OPERATION	
Does rear blower motor rotate normally when rear fan switch (front) is set at 1 - 4 speed?		
Yes or No		
Yes	▶	GO TO 2.
No	▶	Go to "Trouble Diagnosis Procedure for Rear Blower Motor (1 - 4 Speed)", HA-88.

2	CHECK REAR FAN SWITCH (FRONT)	
Refer to HA-96.		
OK or NG		
OK	▶	GO TO 3.
NG	▶	Replace rear fan switch (front).

3	CHECK REAR FAN SWITCH (REAR)	
Refer to HA-96.		
OK or NG		
OK	▶	GO TO 4.
NG	▶	Replace rear fan switch (rear).

4	CHECK CIRCUIT CONTINUITY	

1. Check continuity between rear fan switch (front) harness terminal 8 and rear fan switch (rear) terminal 6.



LHA098

Continuity should exist.

2. Also, check harness for short.

OK or NG		
OK	▶	**INSPECTION END**
NG	▶	Repair harness or connectors.

TROUBLE DIAGNOSIS PROCEDURE FOR REAR BLOWER MOTOR (1-4 SPEED)

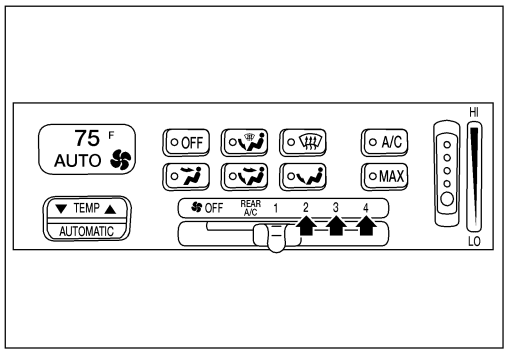
=NDHA0230

Symptom:

- **Rear blower motor does not rotate when rear fan switch (front) is set at 1- 4 speed.**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Rear blower motor

1) Press any mode switch except OFF.
2) Set the rear fan switch (front) to rear blower speed position 1 and check for rear blower operation.
3) Continue checking that rear blower speed increases as the rear fan switch (front) is set to rear blower speed positions 2-4 .

If OK (symptom cannot be duplicated), perform complete operational check (*2).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

3. Check rear blower motor (1-4 speed) circuit. (*1)

OK

4. If the symptom still exists, perform a complete "Operational Check" (*2) and check for other symptoms. [Refer to "SYMPTOM CHART", (*3).] Does another symptom exist?

Yes → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

No

INSPECTION END.

WHA016

*1 HA-89 *2 HA-36 *3 HA-41

REAR BLOWER MOTOR (1 - 4 SPEED) CIRCUIT

=NDHA0231

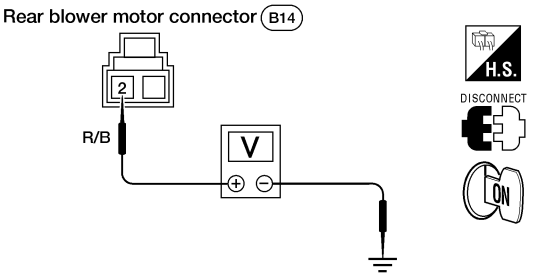
Symptom:

- **Rear blower motor does not rotate when rear fan switch (front) is set at 1 - 4 speed.**

1	DIAGNOSTIC PROCEDURE	
Check if rear blower motor rotates properly at each fan speed.		
Does not rotate at any speed	▶	GO TO 2.
Does not rotate at 1 - 3 speed	▶	GO TO 14.
Does not rotate at 4 speed	▶	GO TO 18.

2	CHECK FUSES	
Check 15A fuse (No. 24, located in the fuse block) and 15A fuse (No. 25, located in the fuse block). For fuse layout, refer to "POWER SUPPLY ROUTING", ***EL-10***.		
Are fuses OK?		
Yes	▶	GO TO 3.
No	▶	GO TO 8.

3	CHECK REAR BLOWER MOTOR POWER SUPPLY CIRCUIT	
1. Disconnect rear blower motor harness connector. 2. Press any mode switch except OFF. 3. Check voltage between rear blower motor harness terminal 2 and ground.		



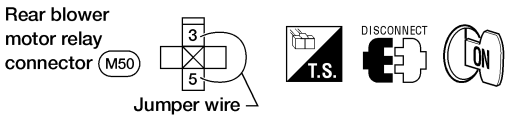
AHA395A

Does battery voltage exist?		
Yes	▶	GO TO 11.
No	▶	GO TO 4.

4	CHECK REAR BLOWER MOTOR RELAY	
Refer to "ELECTRICAL COMPONENTS INSPECTION", HA-96.		
OK or NG		
OK	▶	GO TO 5.
NG	▶	Replace rear blower motor relay.

5	CHECK REAR BLOWER MOTOR SYSTEM

1. Reconnect rear blower motor harness connector.
2. Turn the ignition key ON and press any mode switch except OFF.
3. Set rear fan switch (front) to any position except OFF, REAR or 4-speed.
4. Momentarily (no more than 4 seconds), connect a jumper wire between rear blower motor relay connector M50 (body side) terminals 3 and 5.



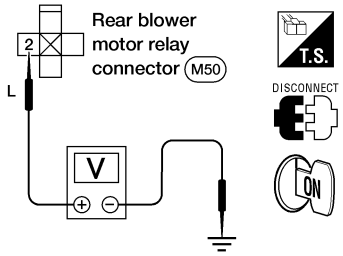
AHA306A

Does rear blower motor rotate?

Yes	▶	GO TO 6.
No	▶	GO TO 10.

6	CHECK REAR BLOWER MOTOR RELAY (COIL SIDE) POWER SUPPLY CIRCUIT

Do approx. 12 volts exist between rear blower motor relay connector M50 (body side) terminal 2 and ground when ignition switch is turned ON?



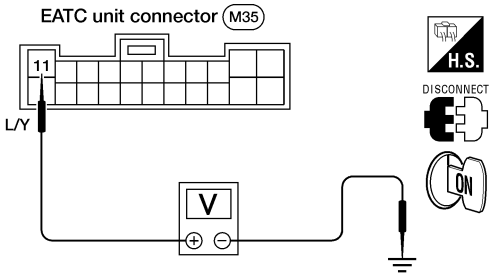
AHA307A

Yes or No

Yes	▶	GO TO 7.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M50 ● Harness for open or short between rear blower motor relay and fuses

7	CHECK RELAY CONTROL POWER SUPPLY CIRCUIT

1. Reconnect rear blower motor relay.
2. Disconnect EATC unit harness connector.
3. Check voltage between EATC unit harness terminal 11 and ground.



AHA308A

Does battery voltage exist when ignition switch is turned ON?

Yes	▶	Replace EATC unit.
No	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors M35 and M50 ● Harness for open or short between rear blower motor relay and EATC unit

8	REPLACE FUSE

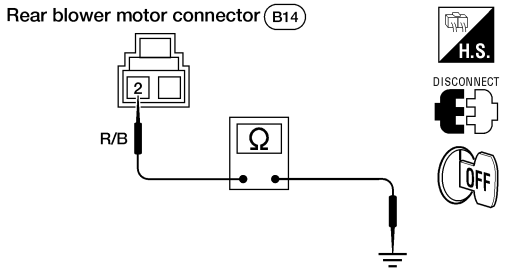
Replace fuse.

Does fuse blow when the rear blower motor is activated?

Yes	▶	GO TO 9.
No	▶	**INSPECTION END**

9	CHECK REAR BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

1. Disconnect battery cable and rear blower motor harness connector.
2. Check continuity between rear blower motor harness terminal 2 and ground.



AHA309A

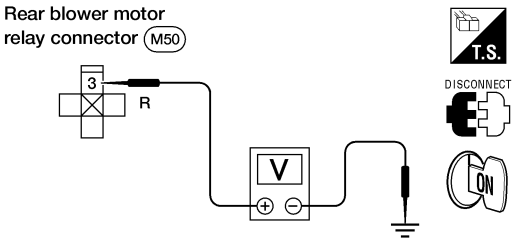
Continuity should not exist.

Does continuity exist?

Yes	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector B14 ● Harness for open or short between rear blower motor and rear blower motor relay
No	▶	Check rear blower motor. Refer to HA-96. If necessary, clear intake unit. If OK, replace rear blower motor

10	CHECK REAR BLOWER MOTOR RELAY (SWITCH SIDE) POWER SUPPLY CIRCUIT

Check voltage between rear blower motor relay connector M50 (body side) terminal 3 and ground.



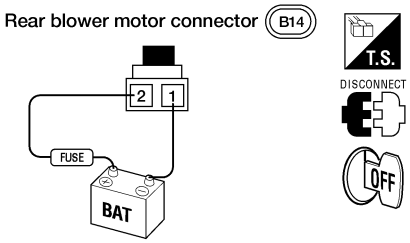
AHA310A

Does battery voltage exist?

Yes	▶	**Check the following.** If NG, repair harness or connectors ● Harness connectors B14 and M50 ● Harness for open or short between rear blower motor relay and rear blower motor
No	▶	**Check the following.** If NG, repair harness or connectors ● Harness connector M50 ● Harness for open or short between rear blower motor relay and fuses

11	CHECK REAR BLOWER MOTOR

Does rear blower motor rotate when 12 volts is applied to terminal 2 and ground to terminal 1?



AHA396A

Yes or No

Yes	▶	GO TO 12.
No	▶	Replace rear blower motor.

12	CHECK REAR FAN SWITCH (FRONT)

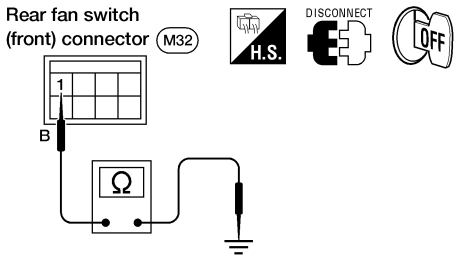
Refer to HA-96.

OK or NG

OK	▶	GO TO 13.
NG	▶	Replace rear fan switch (front).

13	CHECK REAR FAN SWITCH (FRONT) GROUND CIRCUIT

Check circuit continuity between rear fan switch (front) harness terminal 1 and ground.



AHA311A

Continuity should exist

OK or NG

OK	▶	**INSPECTION END**
NG	▶	Repair harness or connector.

14	CHECK REAR BLOWER MOTOR RESISTOR

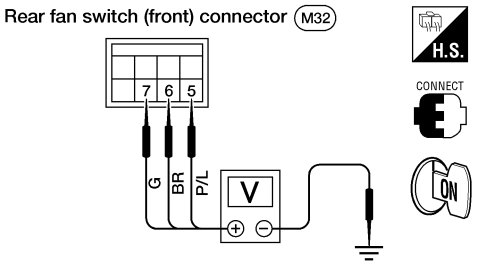
Refer to HA-97.

OK or NG

OK	▶	GO TO 15.
NG	▶	Replace rear blower motor resistor.

15	CHECK REAR FAN SWITCH (FRONT) CIRCUIT

1. Reconnect rear blower motor resistor harness connector.
2. Do approx. 12 volts exist between each rear fan switch (front) harness terminal and ground?



AHA312A

Terminal No.		Voltage
⊕	⊖	
5	Ground	Approx. 12V
6		
7		

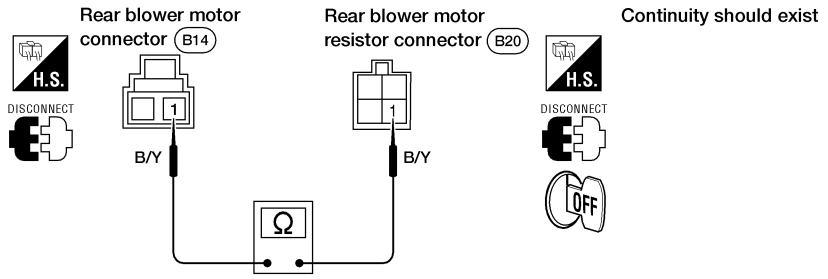
AHA313A

Yes or No

Yes	▶	GO TO 19.
No	▶	GO TO 16.

16	CHECK REAR BLOWER MOTOR GROUND CIRCUIT TO REAR BLOWER MOTOR RESISTOR

1. Disconnect rear blower motor and rear blower motor resistor harness connectors.
2. Check circuit continuity between rear blower motor harness terminal 1 and rear blower motor resistor harness terminal 4.



WHA080

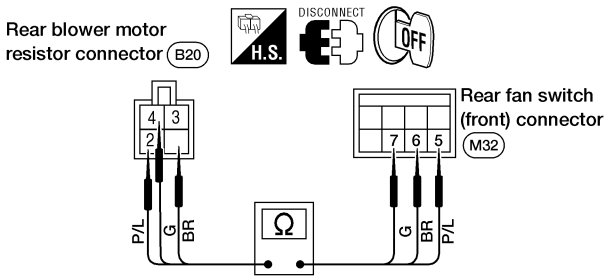
3. Also, check harness for short.

OK or NG

OK	▶	GO TO 17.
NG	▶	Repair harness or connectors.

17	CHECK CIRCUITS

1. Disconnect rear fan switch (front) harness connector.
2. Check circuit continuity between rear fan switch (front) harness terminals and rear blower motor resistor harness terminals.



Terminal No.		Continuity
Rear fan switch (front)	Rear blower motor resistor	
5	2	Yes
6	3	
7	4	

Continuity should exist

WHA081

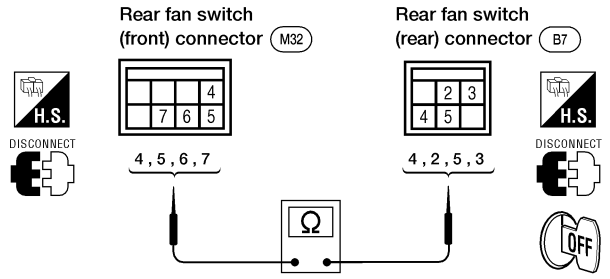
3. Also, check harness for short.

OK or NG

OK	▶	**INSPECTION END**
NG	▶	Repair harness or connector.

18	CHECK CIRCUIT CONTINUITY

1. Disconnect rear fan switch (front) and rear fan switch (rear) harness connectors.
2. Check circuit continuity between rear fan switch (front) connector M32 terminals and rear fan switch (rear) connector B7 terminals.



Rear fan switch (front) connector terminal	Rear fan switch (rear) connector terminal	Continuity
4	4	Yes
5	2	Yes
6	5	Yes
7	3	Yes

LHA102

Yes or No

Yes	▶	GO TO 19.
No	▶	Repair harness or connectors.

19	CHECK REAR FAN SWITCH (FRONT)

Refer to HA-96.

OK or NG

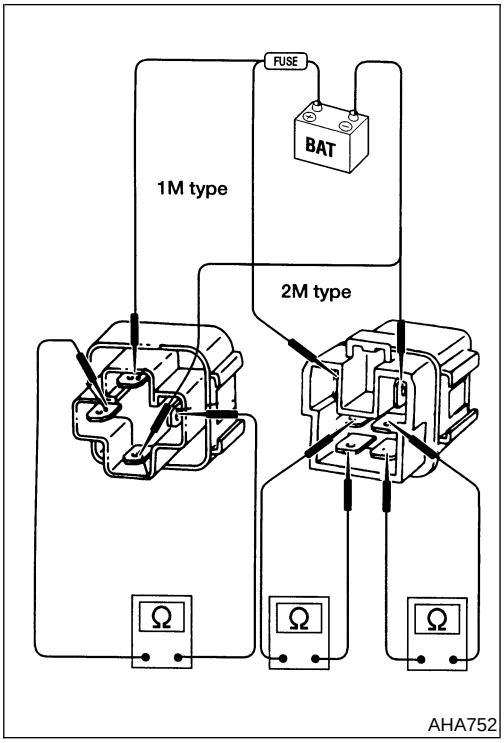
OK	▶	GO TO 20.
NG	▶	Replace rear fan switch (front).

20	CHECK REAR FAN SWITCH (REAR)

Refer to HA-96.

OK or NG

OK	▶	**INSPECTION END**
NG	▶	Replace rear fan switch (rear).



AHA752

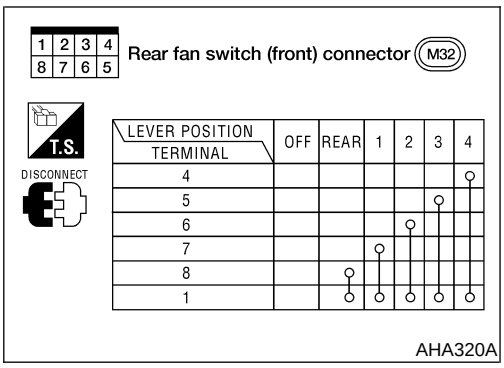
ELECTRICAL COMPONENTS INSPECTION

NDHA0234

Relays

NDHA0234S01

Check circuit continuity between terminals by supplying 12 volts and ground to coil side terminals of relays.



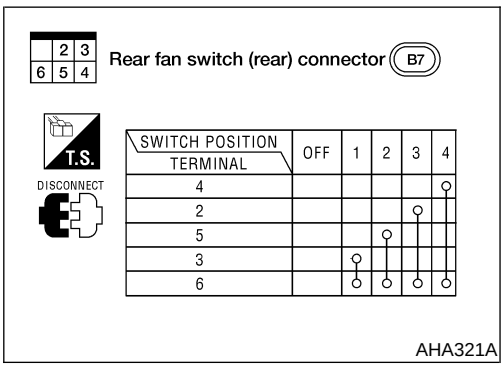
LEVER POSITION / TERMINAL	OFF	REAR	1	2	3	4
4						○
5					○	
6				○		
7			○			
8		○				
1		○	○	○	○	○

AHA320A

Rear Fan Switch (Front)

NDHA0234S02

Check continuity between terminals at each position.



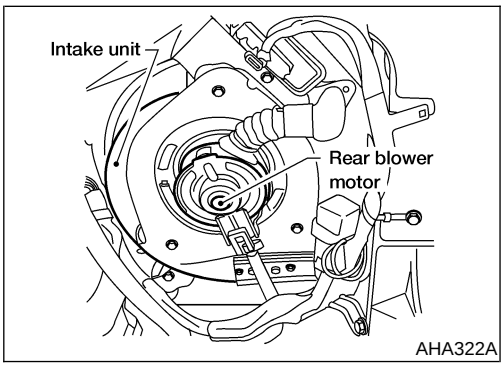
SWITCH POSITION / TERMINAL	OFF	1	2	3	4
4					○
2				○	
5			○		
3		○			
6		○	○	○	○

AHA321A

Rear Fan Switch (Rear)

NDHA0234S03

Check continuity between terminals at each position.



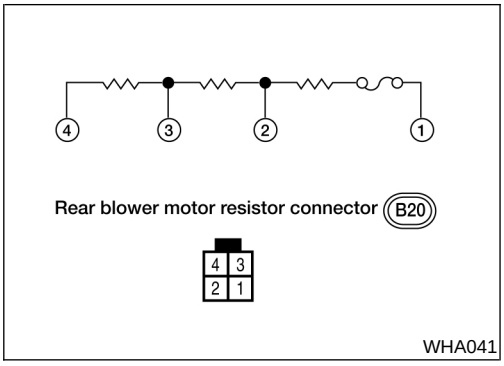
AHA322A

Rear Blower Motor

NDHA0234S04

Confirm smooth rotation of the rear blower motor.

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



Rear Blower Motor Resistor

NDHA0234S05

Check continuity between terminals.

Magnet Clutch

TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH

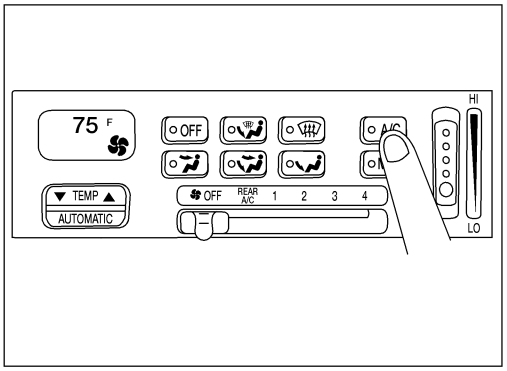
=NDHA0121

Symptom:

- **Magnet clutch does not engage.**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – A/C switch

1) Press any mode switch except OFF.
2) Press air conditioner switch to turn ON air conditioner.
   Indicator light will come on when air conditioner is ON.

If OK (symptom cannot be duplicated), perform complete operational check (*3).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

3. Check compressor belt tension. Refer to MA section ("Checking Drive Belts", "ENGINE MAINTENANCE").

NG → Adjust or replace compressor belt.

OK

4. Check refrigerant. Connect manifold gauge and check system pressure.

NG → Check for refrigerant leaks. Refer to (*1).

OK

5. Check magnet clutch circuit. (*2)

OK

6. If the symptom still exists, perform a complete "Operational Check" (*3) and check for other symptoms. [Refer to "SYMPTOM CHART", (*4).] Does another symptom exist?

Yes → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

No

INSPECTION END.

WHA017

*1: HA-135
*2: HA-99
*3: HA-36
*4: HA-41

CONTROL SYSTEM OUTPUT COMPONENTS

NDHA0122

Magnet Clutch Control

NDHA0122S01

Under normal operating conditions, when the A/C is switched on, the compressor runs continuously, and the evaporator pressure, and therefore temperature, is controlled by the V-6 variable displacement compressor to prevent freeze up.

Acceleration Cut Control

NDHA0122S0101

The ECM will turn the compressor ON or OFF based on the signal from the throttle position sensor.

MAGNET CLUTCH CIRCUIT

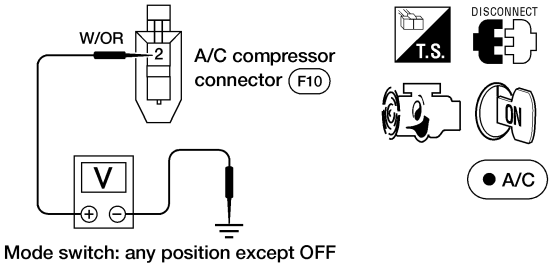
=NDHA0038

SYMPTOM:

- **Magnet clutch does not engage.**

1	CHECK A/C COMPRESSOR POWER SUPPLY CIRCUIT

1. Press the A/C mode switch ON.
2. Disconnect A/C compressor harness connector.
3. Do approx. 12 volts exist between A/C compressor connector F10 (body side) terminal 2 and ground?



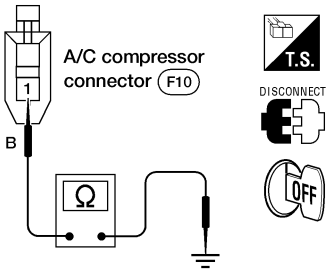
AHA325A

Yes or No

Yes	▶	GO TO 2.
No	▶	GO TO 3.

2	CHECK A/C COMPRESSOR GROUND CIRCUIT

Check circuit continuity between A/C compressor connector F10 (body side) terminal 1 and ground.



AHA328A

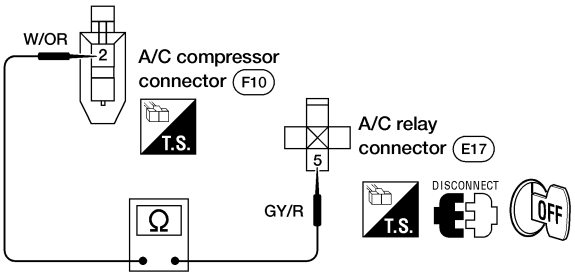
Continuity should exist.

OK or NG

OK	▶	Check magnet clutch coil. If OK, replace magnet clutch. Refer to HA-130.
NG	▶	Repair harness or connector.

3	CHECK CIRCUIT CONTINUITY

1. Disconnect A/C relay.
2. Check circuit continuity between A/C relay connector E17 (body side) terminal 5 and A/C compressor connector F10 (body side) terminal 2.



AHA326A

Continuity should exist.

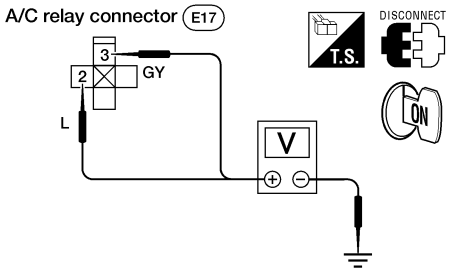
3. Also, check harness for short.

OK or NG

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

4	CHECK A/C RELAY POWER SUPPLY CIRCUITS

1. Disconnect A/C relay.
2. Do approx. 12 volts exist between A/C relay connector E17 (body side) terminals 2, 3 and ground?



AHA327A

Yes or No

Yes	▶	GO TO 5.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector E17 ● Harness for open or short between A/C relay and fuses

5	CHECK A/C RELAY

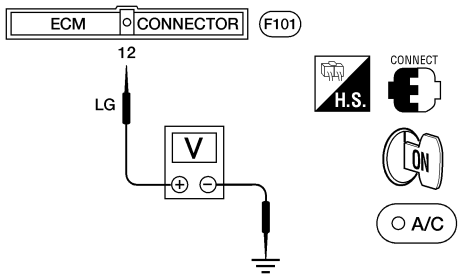
Refer to HA-103.

OK or NG

OK	▶	GO TO 6.
NG	▶	Replace A/C relay.

6	CHECK RELAY CONTROL POWER SUPPLY CIRCUIT

1. Reconnect A/C relay.
2. Do approx. 12 volts exist between ECM harness terminal 12 and ground with A/C switch OFF?



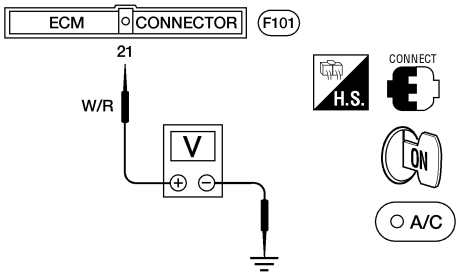
AHA329A

Yes or No

Yes	▶	GO TO 7.
No	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors E17 and F101 ● Harness for open or short between A/C relay and ECM

7	CHECK ECM OUTPUT VOLTAGE

Do approx. 12 volts exist between ECM harness terminal 21 and ground?



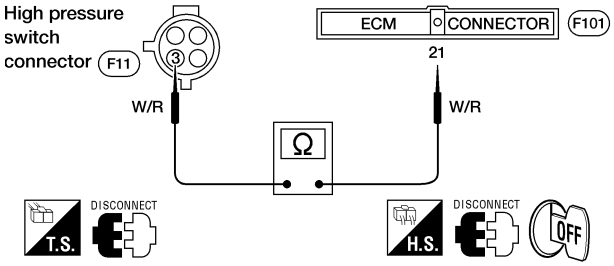
AHA330A

Yes or No

Yes	▶	GO TO 8.
No	▶	GO TO 13.

8	CHECK CIRCUIT CONTINUITY

1. Disconnect ECM harness connector and high pressure switch harness connector.
2. Check the circuit continuity between ECM harness terminal 21 and high pressure switch connector F11 (body side) terminal 3.



AHA331A

Continuity should exist.

3. Also, check harness for short.

OK or NG

OK	▶	GO TO 9.
NG	▶	Repair harness or connector.

9	CHECK HIGH PRESSURE SWITCH

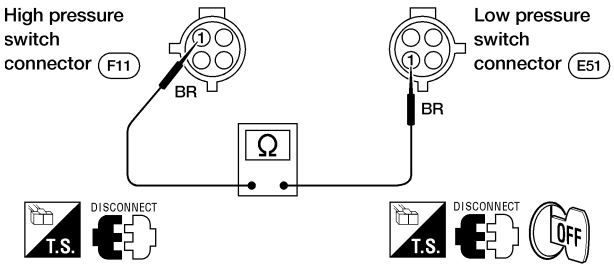
Refer to HA-104.

OK or NG

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

10	CHECK CIRCUIT CONTINUITY

1. Disconnect low pressure switch harness connector.
2. Check circuit continuity between high pressure switch connector F11 (body side) terminal 1 and low pressure switch connector E51 (body side) terminal 1.



AHA332A

Continuity should exist.

3. Also, check harness for short.

OK or NG

OK	▶	GO TO 11.
NG	▶	Repair harness or connector.

11	CHECK LOW PRESSURE SWITCH

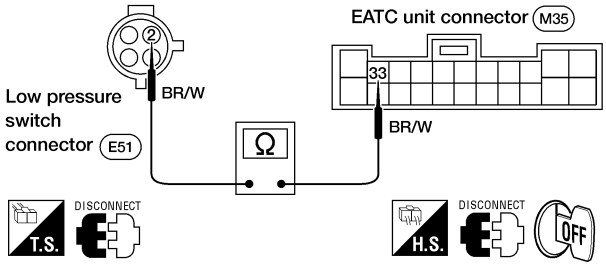
Refer to "Low Pressure Switch", HA-103.

OK or NG

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

12	CHECK CIRCUIT CONTINUITY

1. Disconnect EATC unit harness connector.
2. Check circuit continuity between low pressure switch connector E51 (body side) terminal 2 and EATC unit harness terminal 33.



AHA333A

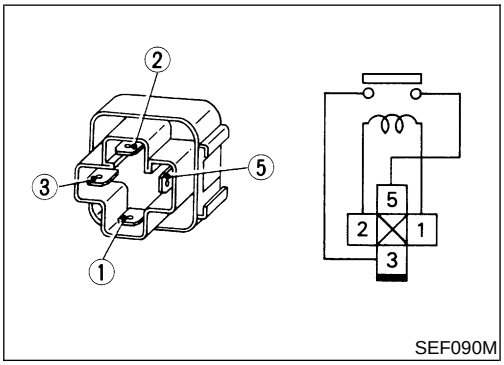
Continuity should exist.

3. Also, check harness for short.

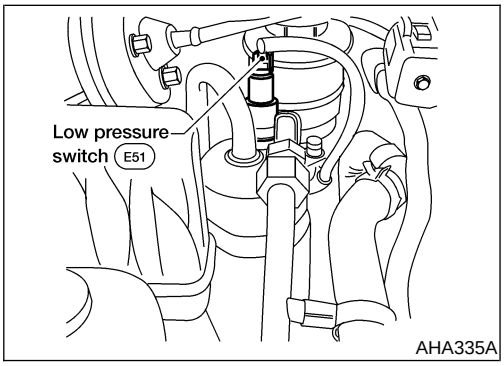
OK or NG

OK	▶	Replace EATC unit.
NG	▶	Repair harness or connectors.

13	CHECK ECM
Refer to EC section.	
▶	**INSPECTION END**



SEF090M



AHA335A

ELECTRICAL COMPONENTS INSPECTION

A/C Relay

NDHA0123

NDHA0123S02

Check continuity between terminals 3 and 5.

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

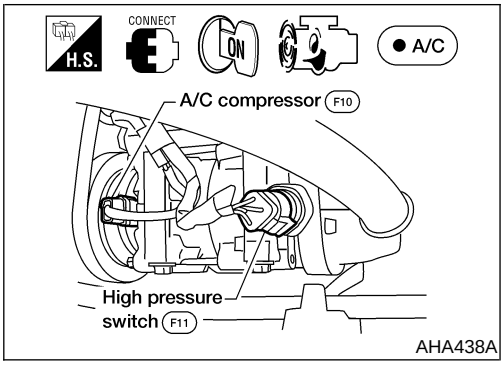
If NG, replace relay.

Low Pressure Switch

NDHA0123S04

Check continuity between terminals.

Low pressure side line pressure kPa (kg/cm^2, psi)	Clutch operation	Continuity
Decreasing to 159 (1.6, 23)	Turn OFF	Does not exist
Increasing to 324 (3.3, 47)	Turn ON	Exists
Tightening torque	1.4 - 5.4 N·m (0.13 - 0.55 kg-m, 11.3 - 48 in-lb)	



High Pressure Switch

NDHA0123S05

Check continuity between terminals 1 and 3.

High pressure side line pressure kPa (kg/cm^2, psi)	Clutch operation	Continuity
Increasing to 2,785 (28.4, 404)	Turn OFF	Does not exist
Decreasing to 1,569 (16.0, 228)	Turn ON	Exists
Tightening torque	6.8 - 12.2 N·m (0.69 - 1.24 kg-m, 60 - 108 in-lb)	

Insufficient Cooling

TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT COOLING

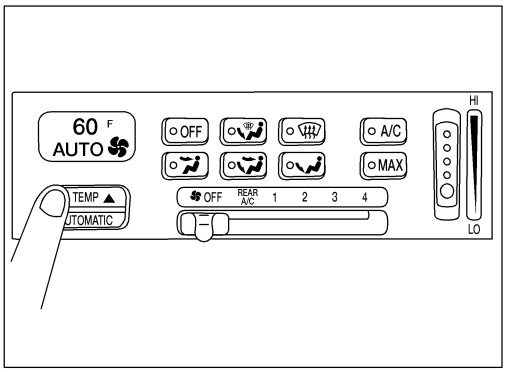
=NDHA0145

Symptom:

- **Insufficient cooling**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Temperature decrease

1) Press temperature control switch until [16°C (60°F)] is displayed.
2) Check for cold air at discharge air outlets.

If OK (symptom cannot be duplicated), perform complete operational check (*5).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

3. Check compressor belt tension. Refer to MA section ("Checking Drive Belts", "ENGINE MAINTENANCE").

NG → Adjust or replace compressor belt.

OK

4. Check air mix door mechanism. (*1)

NG → Adjust or replace air mix door.

OK

5. Check cooling fan motor operation.

NG → Refer to EC section.

OK

6. Check refrigeration cycle pressure with manifold gauge connected. Refer to (*2).

NG → Perform Performance Test Diagnoses. Refer to (*3).

OK

7. Check for evaporator coil freeze up.

NG (Freeze up.) → Replace compressor. (*4)

(Does not freeze up.)

OK

8. Check ducts for air leaks.

NG → Repair air leaks.

OK

9. If the symptom still exists, perform a complete "Operational Check" (*5) and check for other symptoms.
[Refer to "SYMPTOM CHART", (*6).]
Does another symptom exist?

Yes → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

No

INSPECTION END.

WHA018

*1: HA-53
*2: HA-106
*3: HA-106
*4: HA-127
*5: HA-36
*6: HA-41

PERFORMANCE TEST DIAGNOSES

=NDHA0146

This A/C system is different from other Nissan A/C systems. The typical Nissan A/C system uses a thermal expansion valve to provide a restriction which causes a pressure change and also controls refrigerant flow through the evaporator.

This system uses a Fixed Orifice Tube (FOT) to cause a pressure change, by restricting the flow of refrigerant to the evaporator. The flow of refrigerant is controlled by engaging and disengaging the compressor clutch based on low side pressure. Therefore, it is critical to consider clutch engagement and disengagement times for proper diagnosis.

The refrigerant flow is regulated by a fixed orifice tube for the front evaporator and a thermal expansion valve for the rear evaporator.

The best way to diagnose a condition in the refrigerant system is to note the system pressures (shown by the manifold gauges) and the clutch cycle rate and times. Then, compare the findings to the charts.

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

Important — Test Conditions

NDHA0146S01

The following test conditions must be established to obtain accurate clutch cycle rate and cycle time readings

- run engine at 1,500 rpm for 10 minutes
- operate A/C system on MAX A/C (recirculating air)
- run blower at maximum speed
- stabilize in vehicle temperature at 21°C to 27°C (70°F to 80°F).

The following procedure is recommended for achieving accurate diagnosis results in the least amount of time.

1) Connect a manifold gauge set to the system. **The test conditions specified must be met to obtain accurate test results.**
2) Start the engine and run at 1,500 rpm.
3) Turn A/C system ON (with rear A/C off, if equipped).
4) As soon as the system is stabilized, record the high- and low-pressures as shown by the manifold gauges. The low side should cycle between approximately 168.9 kPa (1.723 kg/cm^2, 24.5 psi) and 276 to 324 kPa (2.81 to 3.30 kg/cm^2, 40 to 47 psi). (As low pressure drops, high pressure should rise.) When the clutch disengages, the low side should rise and the high side should drop.
5) Determine the clutch cycle rate per minute (clutch on time plus off time is a cycle).
6) Record clutch OFF time in seconds.
7) Record clutch ON time in seconds.
8) Record center register discharge temperature.
9) Determine and record ambient temperature.
10) Compare test readings with applicable chart.

- Plot a vertical line for recorded ambient temperature from scale at bottom of each chart to top of each chart.
- Plot a horizontal line for each of the other test readings from scale at LH side of appropriate chart.

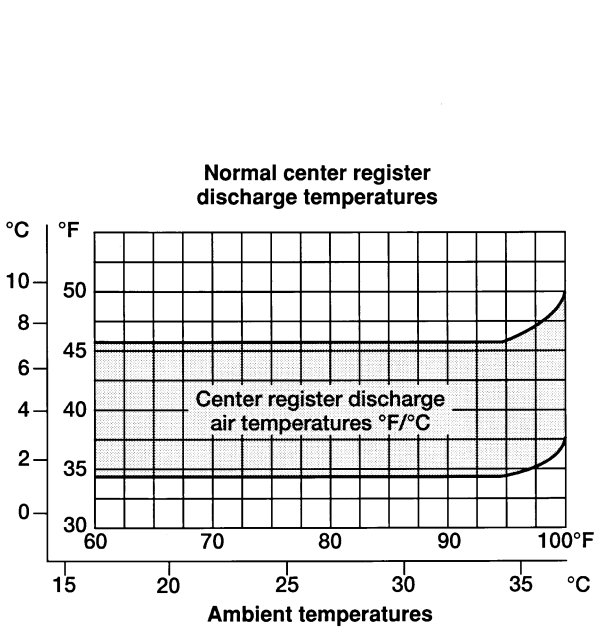
At the bottom of chart (HA-108), additional cause components are listed for poor compressor operation or a damaged compressor condition.

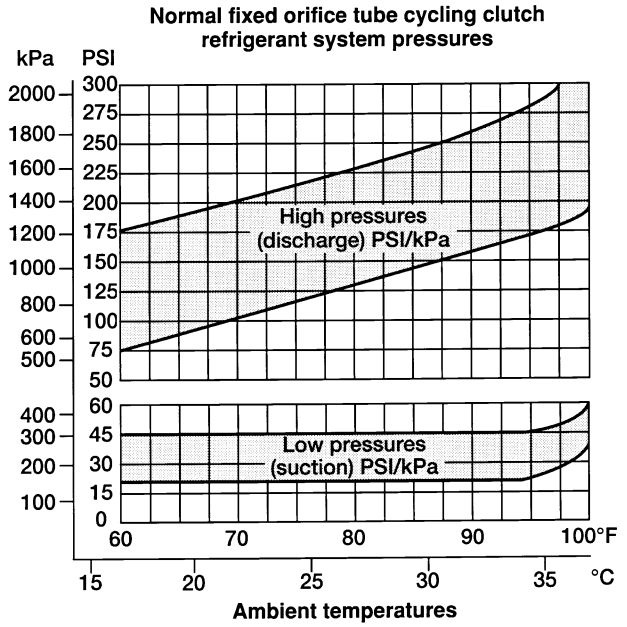
The diagnosis charts provide the most direct and sure way to determine the cause of any concern in a poorly performing refrigerant system. However, poor performance of the front or rear system may not cause abnormal pressures or clutch cycle time. In this case, poor performance may indicate a restriction of refrigerant flow to that system, or an evaporator problem.

After servicing and correcting a refrigerant system concern, take additional pressure readings and observe the clutch cycle rate while meeting the conditional requirements (HA-108) to ensure the concern has been corrected.

Normal Fixed Orifice Tube Refrigerant System Pressure/Temperature Relationships

NDHA0146S02

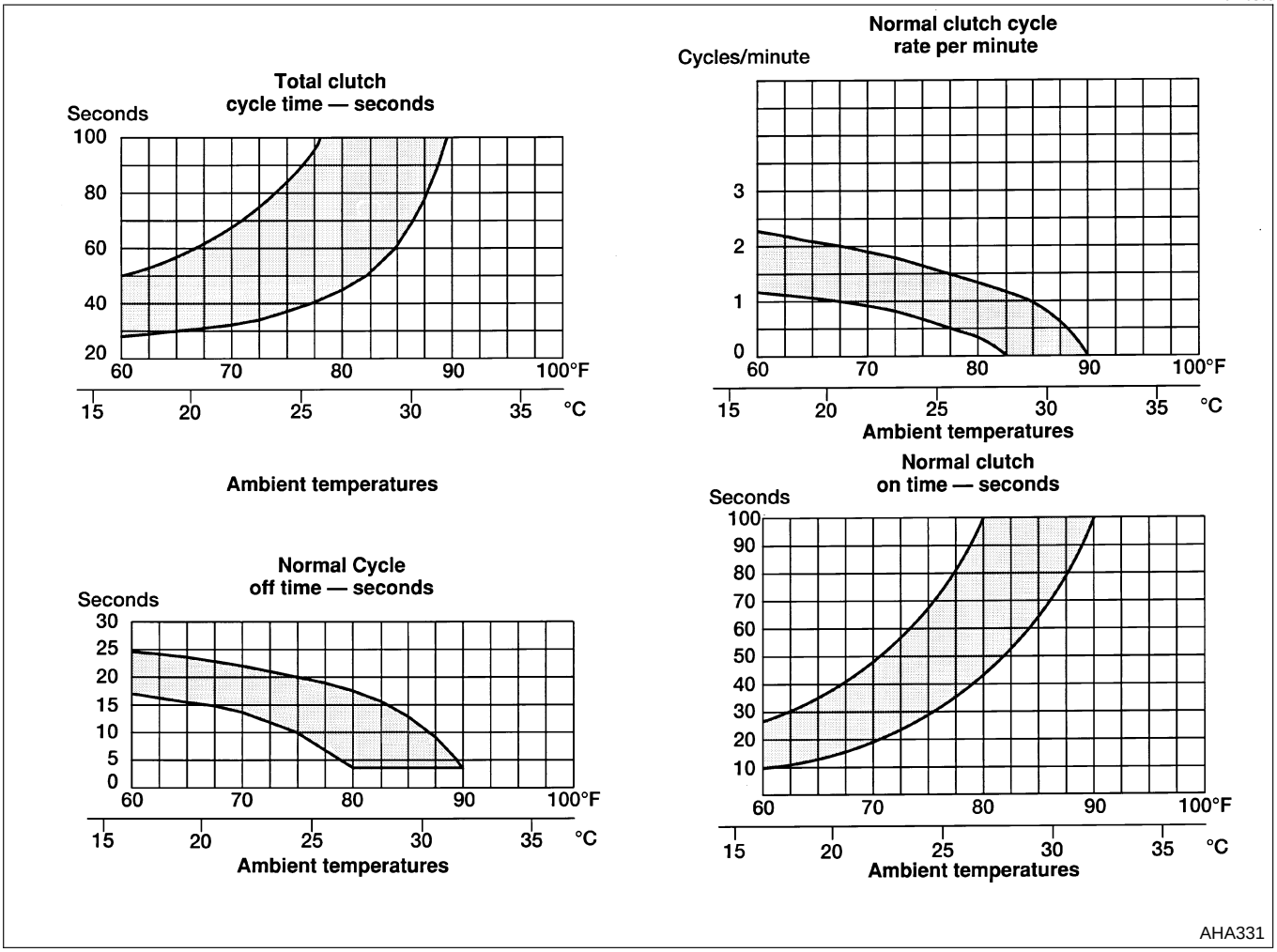




AHA168

Normal Fixed Orifice Tube Refrigerant System Clutch Cycle Timing Rates

NDHA0146S03



AHA331

Refrigerant System Pressure and Clutch Cycle Timing Evaluation Chart for Fixed Orifice Tube Cycling Clutch Systems

NDHA0146S04

System test conditions must be met to obtain accurate test readings for evaluation. Refer to the normal refrigerant system pressure/temperature and the normal clutch cycle rate and time charts on HA-107, 108.

HIGH (DISCHARGE) PRESSURE	LOW (SUCTION) PRESSURE	CLUTCH CYCLE TIME			COMPONENT — CAUSE
		RATE	ON	OFF	
HIGH	HIGH	CONTINUOUS RUN			CONDENSER — Inadequate Airflow
HIGH	NORMAL TO HIGH				ENGINE OVERHEATING
NORMAL TO HIGH	NORMAL				REFRIGERANT OVERCHARGE (1) AIR IN REFRIGERANT HUMIDITY OR AMBIENT TEMP VERY HIGH (2)
NORMAL	HIGH				FIXED ORIFICE TUBE — Missing O-rings Leaking/Missing
NORMAL TO HIGH	NORMAL TO HIGH	SLOW OR NO CYCLE	LONG OR CONTINUOUS	NORMAL OR NO CYCLE	MOISTURE IN REFRIGERANT SYSTEM EXCESSIVE REFRIGERANT LUBRICANT
NORMAL	LOW	SLOW	LONG	LON	LOW PRESSURE SWITCH — Low Cut-Out

HIGH (DISCHARGE) PRESSURE	LOW (SUCTION) PRESSURE	CLUTCH CYCLE TIME			COMPONENT — CAUSE
		RATE	ON	OFF	
NORMAL TO LOW	HIGH	CONTINUOUS RUN			COMPRESSOR — Low Performance
NORMAL TO LOW	NORMAL TO HIGH				A/C SUCTION LINE — Partially Restricted or Plugged (3)
NORMAL TO LOW	NORMAL	FAST	SHORT	NORMAL	EVAPORATOR — Low or Restricted Airflow
			SHORT TO VERY SHORT	NORMAL TO LONG	CONDENSER FIXED ORIFICE TUBE OR A/C LIQUID LINE — Partially Restricted or Plugged
			SHORT TO VERY SHORT	SHORT TO VERY SHORT	LOW REFRIGERANT CHARGE
			SHORT TO VERY SHORT	LONG	EVAPORATOR CORE — Partially Restricted or Plugged
NORMAL TO LOW	LOW	CONTINUOUS RUN			A/C SUCTION LINE — Partially Restricted or Plugged (4) LOW PRESSURE SWITCH — Sticking Closed
—	—	ERRATIC OPERATION OR COMPRESSOR NOT RUNNING			LOW PRESSURE SWITCH — Dirty Contacts or Sticking Open POOR CONNECTION AT A/C CLUTCH CONNECTOR OR CLUTCH CYCLING SWITCH CONNECTOR A/C ELECTRICAL CIRCUIT ERRATIC

ADDITIONAL POSSIBLE CAUSE COMPONENTS
ASSOCIATED WITH INADEQUATE COMPRESSOR OPERATION

- COMPRESSOR DRIVE BELT — Loose
- COMPRESSOR CLUTCH — Slipping
- CLUTCH COIL Open — Shorted or Loose Mounting
- A/C RELAY — Dirty Contacts or Sticking Open
- CLUTCH WIRING CIRCUIT — High Resistance, Open or Blown Fuse
- COMPRESSOR OPERATION INTERRUPTED BY ECM

ADDITIONAL POSSIBLE CAUSE COMPONENTS
ASSOCIATED WITH A DAMAGED COMPRESSOR

- LOW PRESSURE SWITCH — Sticking Closed or Compressor Clutch Seized
- ACCUMULATOR — Lubricant Bleed Hole Plugged
- REFRIGERANT LEAKS

(1) Compressor may make noise on initial run. This is slugging condition caused by excessive liquid refrigerant.

(2) Compressor clutch may not cycle in ambient temperatures above 27°C (80°F) depending on humidity conditions.

(3) Low pressure reading will be normal to high if pressure is taken at accumulator and if restriction is downstream of service valve.

(4) Low pressure reading will be low if pressure is taken near the compressor and restriction is upstream of service valve.

- Fixed orifice tube operation can be checked by touching the line on each side of the locating crimp. One side should be warm the other should be cold.
- If the compressor is repaired due to the noise or seizure, we recommend replacing the fixed orifice tube, accumulator and the rear evaporator inlet filter.

Insufficient Heating

TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT HEATING

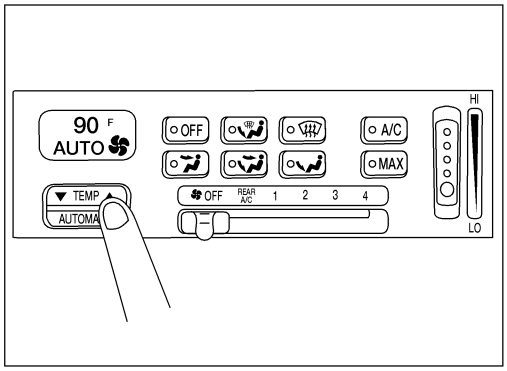
=NDHA0152

Symptom:

- **Insufficient heating**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Temperature increase

1) Press temperature control switch until [32°C (90°F)] is displayed.
2) Check for hot air at discharge air outlets.

If OK (symptom cannot be duplicated), perform complete operational check (*2).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.
   - OK → 3. Check the following:
     - Engine coolant level (Refer to MA section).
     - Hoses for leaks or kinks.
     - Radiator cap. Refer to LC section (“ENGINE COOLING SYSTEM”).
     - Air in cooling system.
   - NG → Repair/replace as necessary.

3. OK → 4. Check air mix door mechanism. (*1)
   - NG → Adjust or replace air mix door.

4. OK → 5. Check ducts for airleaks.
   - NG → Repair leaks.

5. OK → 6. Check the heater inlet and outlet hose temperatures by carefully touching.

6. Hot inlet, Warm outlet → 7. Check thermostat installation. (Refer to LC section.)
   - NG → Repair or replace as necessary. Retest.

7. OK → 8. Replace thermostat. Refer to LC section (“Thermostat”, “ENGINE COOLING SYSTEM”). Retest.

8. Hot inlet, Warm outlet → 9. System OK

6. Both hoses warm → 7. Check heater hoses for proper installation.
   - NG → Repair or replace as necessary. Retest.

7. OK → 8. Back flush heater core, drain and refill coolant. (Refer to MA section.) Retest.

8. Hot inlet, Warm outlet → 9. System OK

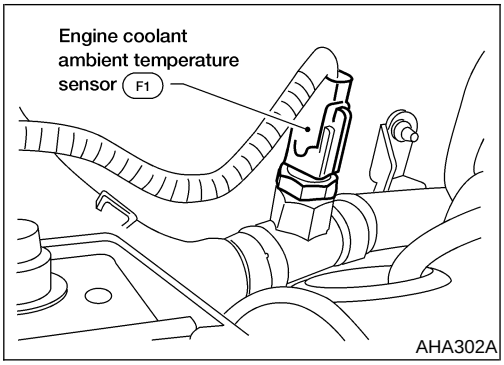
8. Both hoses warm → Replace heater core. Refill engine coolant. (Refer to MA section.) Retest.

Replace heater core. Refill engine coolant. (Refer to MA section.) Retest. → Hot inlet, Warm outlet → 9. System OK

9. System OK → 10. If the symptom still exists, perform a complete “Operational Check” (*2) and check for other symptoms. [Refer to “SYMPTOM CHART”, (*3).] Does another symptom exist?
   - Yes → Go to Trouble Diagnosis for related symptom. **[Another symptom exists.]**
   - No → INSPECTION END.

WHA019

*1: HA-53 *2: HA-36 *3: HA-41



CONTROL SYSTEM INPUT COMPONENTS

NDHA0269

Engine Coolant Ambient Temperature Sensor

NDHA0269S01

The engine coolant ambient temperature sensor is located on the heater inlet line between the engine and the heater core. It detects coolant temperature and converts it into a resistance value which is then input to the EATC unit. After disconnecting engine coolant ambient temperature sensor harness connector, measure resistance between sensor terminals **1** and **2**, using the table below.

Temperature °C (°F)	Resistance kΩ
10 to 20 (50 to 68)	37 to 50
20 to 30 (68 to 88)	24 to 37
30 to 40 (88 to 104)	16 to 24

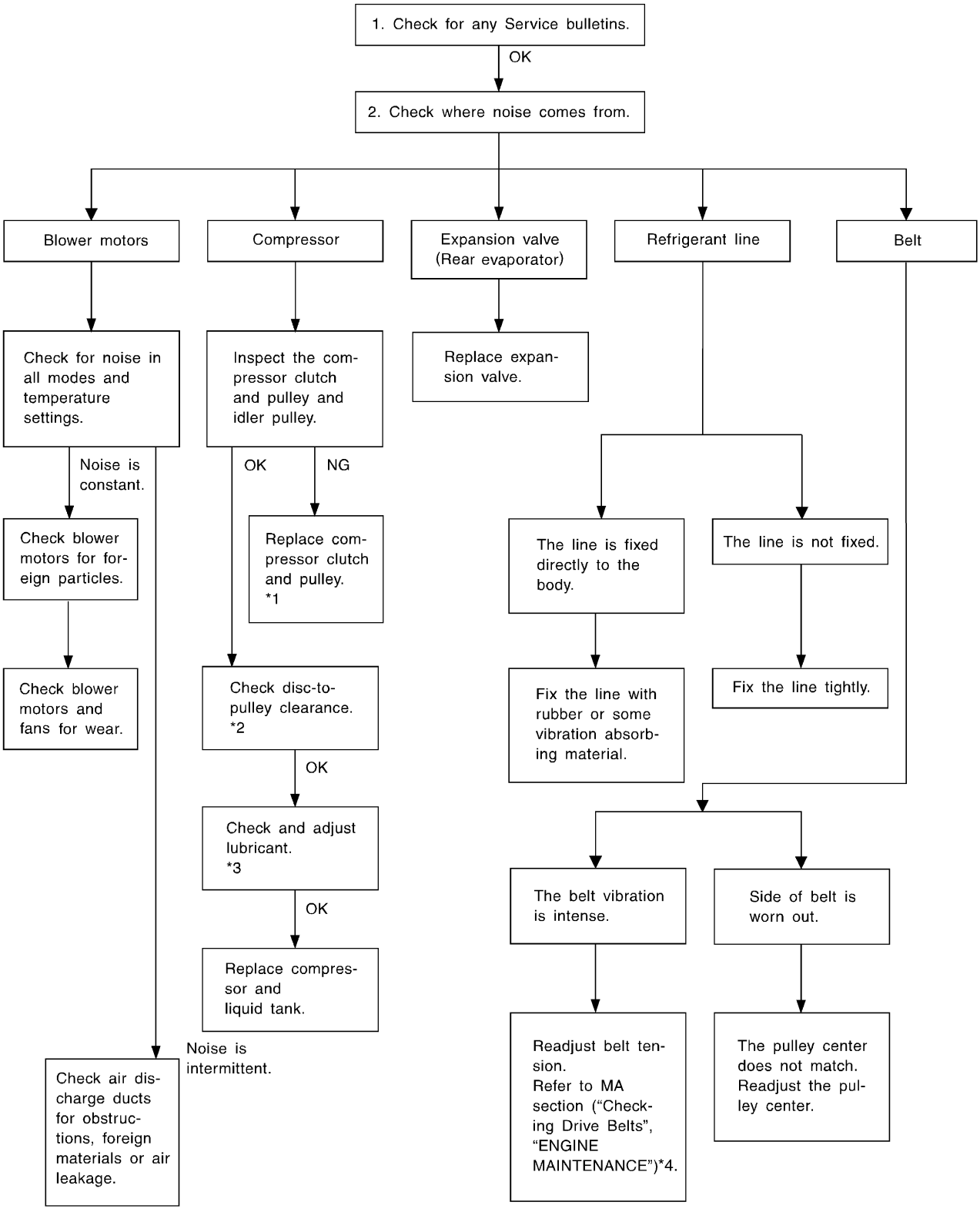
Noise

TROUBLE DIAGNOSIS PROCEDURE FOR NOISE

=NDHA0026

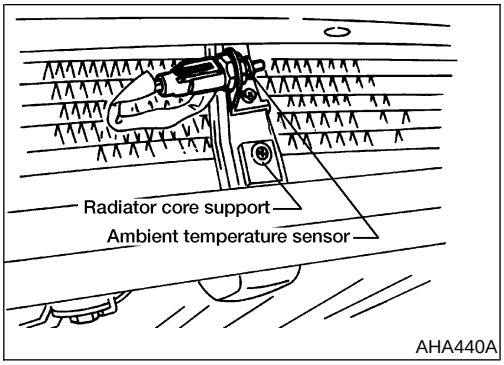
Symptom: ● Noise

Inspection Flow



WHA088

*1: HA-128
*2: HA-129
*3: HA-124
*4: ***MA-13***



Ambient Temperature Sensor

CONTROL SYSTEM INPUT COMPONENTS

NDHA0130

Ambient Temperature Sensor

NDHA0130S01

The ambient temperature sensor is located on the radiator core support. It detects ambient temperature and converts it into a resistance value, which is then input to the EATC unit.

Ambient Temperature Input Process

NDHA0130S02

The EATC unit includes a processing circuit for the ambient temperature sensor input. When a temperature increase less than 12°C (20°F) is detected by the ambient temperature sensor, the processing circuit allows the EATC unit to recognize the temperature increase after 80 seconds. When the temperature increase is greater than 12°C (20°F), 5 minutes is required.

As an example, consider stopping for a cup of coffee after high speed driving. Even though the actual ambient temperature has not changed, the temperature detected by the ambient temperature sensor will increase because the heat radiated from the engine compartment can radiate to the front grille area where the ambient temperature sensor is located.

TROUBLE DIAGNOSIS PROCEDURE FOR AMBIENT TEMPERATURE SENSOR CIRCUIT

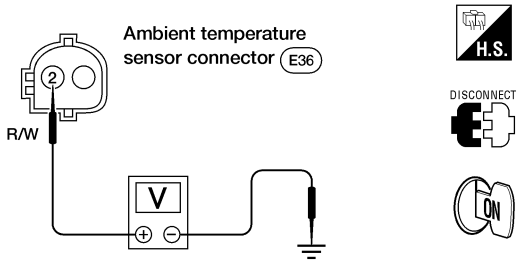
=NDHA0039

SYMPTOM:

- **Ambient temperature sensor circuit is open or shorted (40, 41, 42, or 43 is indicated on the EATC unit as a result of conducting Self-diagnosis).**

1	CHECK AMBIENT TEMPERATURE SENSOR CIRCUIT BETWEEN AMBIENT TEMPERATURE SENSOR AND EATC UNIT

1. Disconnect ambient temperature sensor harness connector.
2. Do approx. 5 volts exist between ambient temperature sensor harness terminal 2 and ground?



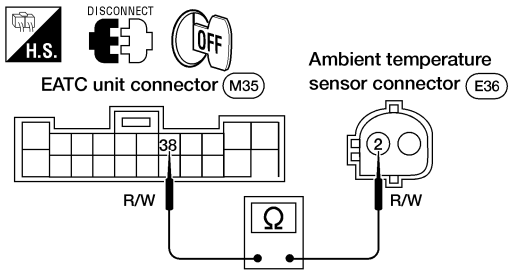
AHA338A

Yes or No

Yes	▶	GO TO 3.
No	▶	GO TO 2.

2	CHECK AMBIENT TEMPERATURE SENSOR SIGNAL CIRCUIT

1. Disconnect EATC unit harness connector.
2. Check circuit continuity between EATC unit harness terminal 38 and ambient temperature sensor harness terminal 2.



AHA339A

Continuity should exist.

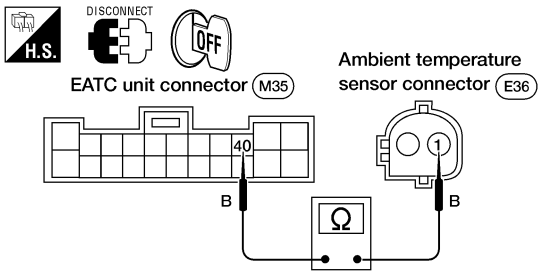
3. Also, check harness for short.

OK or NG

OK	▶	Replace EATC unit.
NG	▶	Repair harness or connectors.

3	CHECK AMBIENT TEMPERATURE SENSOR GROUND CIRCUIT

1. Disconnect EATC unit harness connector.
2. Check circuit continuity between EATC unit harness terminal 40 and ambient temperature sensor harness terminal 1.



AHA340A

Continuity should exist.

3. Also, check harness for short.

OK or NG

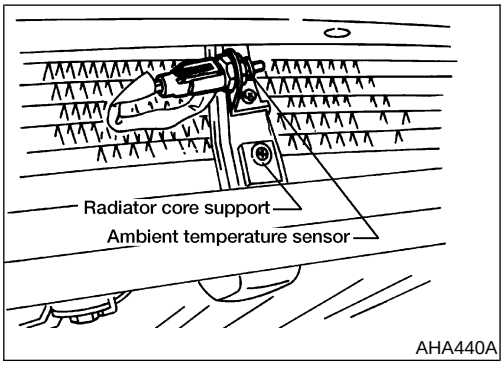
OK	▶	GO TO 4.
NG	▶	Repair harness or connectors.

4	CHECK AMBIENT TEMPERATURE SENSOR

Refer to HA-115.

OK or NG

OK	▶	Replace EATC unit.
NG	▶	Replace ambient temperature sensor.



AHA440A

ELECTRICAL COMPONENT INSPECTION

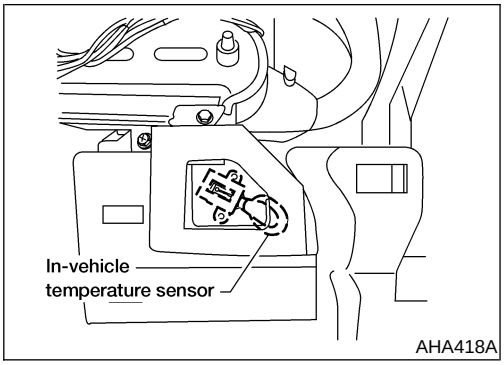
NDHA0147

Ambient Temperature Sensor

NDHA0147S01

After disconnecting ambient temperature sensor harness connector, measure resistance between sensor terminals 1 and 2, using the table below.

Temperature °C (°F)	Resistance kΩ
−40 (–40)	925.02
−20 (4)	276.96
0 (32)	95.85
20 (68)	37.34
40 (104)	16.11
60 (140)	7.55
100 (212)	2.08
120 (248)	1.19



In-vehicle Temperature Sensor

CONTROL SYSTEM INPUT COMPONENTS

NDHA0131

In-vehicle Temperature Sensor

NDHA0131S01

The in-vehicle temperature sensor is attached to the instrument panel. It converts variations in the temperature of the compartment air drawn in by the blower motor into a resistance value, which is then input to the EATC unit.

TROUBLE DIAGNOSIS PROCEDURE FOR IN-VEHICLE TEMPERATURE SENSOR CIRCUIT

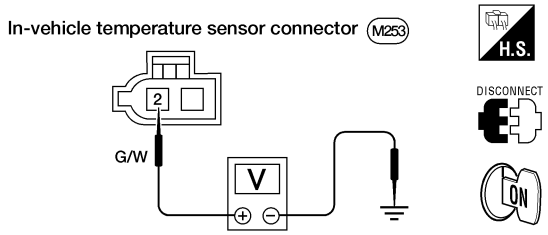
=NDHA0040

SYMPTOM:

- **In-vehicle temperature sensor circuit is open or shorted (30 or 31 is indicated on the EATC unit as a result of conducting Self-diagnosis).**

1	CHECK IN-VEHICLE TEMPERATURE SENSOR CIRCUIT BETWEEN IN-VEHICLE TEMPERATURE SENSOR AND EATC UNIT

1. Disconnect in-vehicle temperature sensor harness connector.
2. Do approx. 5 volts exist between in-vehicle temperature sensor harness terminal 2 and ground?



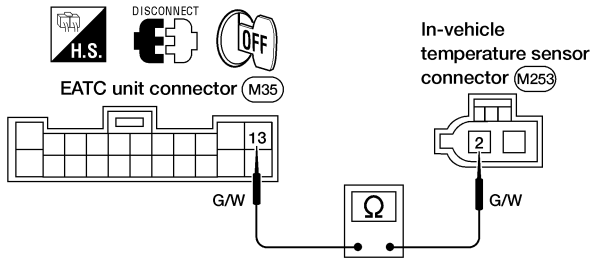
AHA342A

Yes or No

Yes	▶	GO TO 3.
No	▶	GO TO 2.

2	CHECK IN-VEHICLE TEMPERATURE SENSOR CIRCUIT

1. Disconnect EATC unit harness connector.
2. Check circuit continuity between EATC unit harness terminal 13 and in-vehicle temperature sensor harness terminal 2.



AHA343A

Continuity should exist.

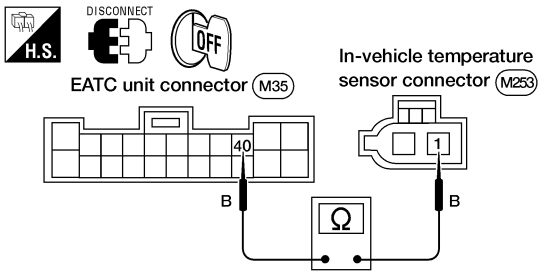
3. Also, check harness for short.

OK or NG

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

3	CHECK IN-VEHICLE TEMPERATURE SENSOR GROUND CIRCUIT

1. Disconnect EATC unit harness connector.
2. Check circuit continuity between EATC unit terminal 40 and in-vehicle temperature sensor harness terminal 1.



AHA341A

Continuity should exist.

3. Also, check harness for short.

OK or NG

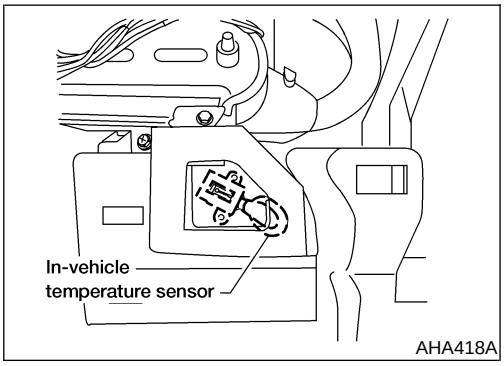
OK	▶	GO TO 4.
NG	▶	Repair harness or connectors.

4	CHECK IN-VEHICLE TEMPERATURE SENSOR

Refer to HA-118.

OK or NG

OK	▶	Replace EATC unit.
NG	▶	Replace in-vehicle temperature sensor.



AHA418A

ELECTRICAL COMPONENT INSPECTION

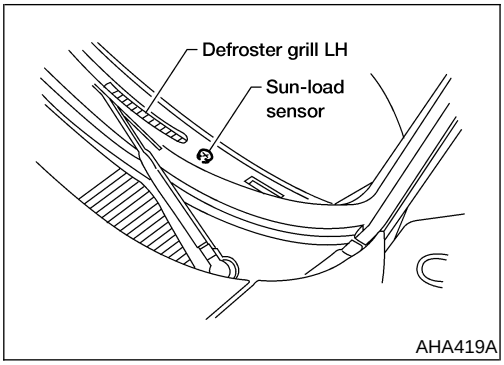
NDHA0148

In-vehicle Temperature Sensor

NDHA0148S01

After disconnecting in-vehicle temperature sensor harness connector, measure resistance between sensor terminals 1 and 2 using the table below.

Temperature °C (°F)	Resistance kΩ
−40 (–40)	925.02
−20 (4)	276.96
0 (32)	95.85
20 (68)	37.34
40 (104)	16.11
60 (140)	7.55
100 (212)	2.08
120 (248)	1.19



Sunload Sensor

CONTROL SYSTEM INPUT COMPONENTS

NDHA0128

Sunload Sensor

NDHA0128S01

The sunload sensor is located on the left defroster grille. It detects sunload entering through the windshield by means of a photo diode and converts it into a current value which is then input to the EATC unit.

Sunload Input Process

NDHA0128S02

The EATC unit includes a processing circuit to “average” variations in detected sunload over a period of time. This prevents drastic swings in the EATC system operation due to small or quick variations in detected sunload.

For example, consider driving along a road bordered by an occasional group of large trees. The sunload detected by the sunload sensor will vary whenever the trees obstruct the sunlight. The processing circuit averages the detected sunload over a period of time. The (insignificant) effect of the trees momentarily obstructing the sunlight does not cause any change in the EATC system operation. On the other hand, shortly after entering a long tunnel, the system will recognize the change in sunload, and the system will react accordingly.

TROUBLE DIAGNOSIS PROCEDURE FOR SUNLOAD SENSOR CIRCUIT

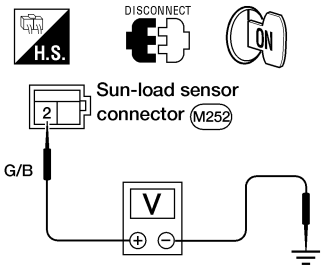
=NDHA0041

SYMPTOM:

- **Sunload sensor circuit is shorted (50 or 52 is indicated on the EATC unit as a result of conducting Self-diagnosis).**

1	CHECK SUNLOAD SENSOR CIRCUIT BETWEEN SUNLOAD SENSOR AND EATC UNIT

1. Disconnect sunload sensor harness connector.
2. Do approx. 5 volts exist between sunload sensor harness terminal 2 and ground?



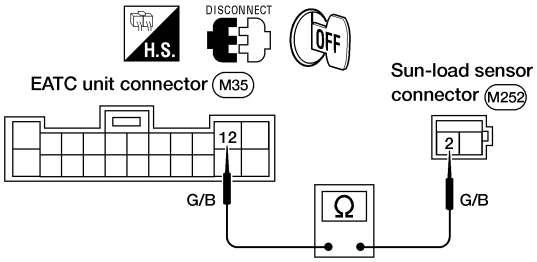
AHA345A

Yes or No

Yes	▶	GO TO 3.
No	▶	GO TO 2.

2	CHECK SUNLOAD SENSOR SIGNAL CIRCUIT

1. Disconnect EATC unit harness connector.
2. Check circuit continuity between EATC unit harness terminal 12 and sunload sensor harness terminal 2.



AHA346A

Continuity should exist.

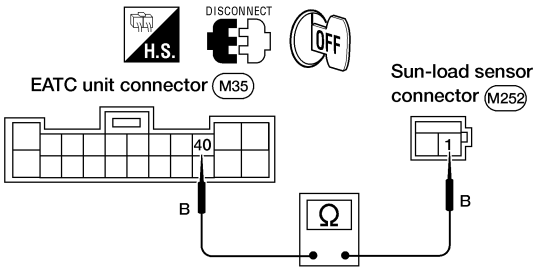
3. Also, check harness for short.

OK or NG

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

3	CHECK SUNLOAD SENSOR GROUND CIRCUIT

1. Disconnect EATC unit harness connector.
2. Check circuit continuity between EATC unit harness terminal 40 and sunload sensor harness terminal 1.



AHA347A

Continuity should exist.

3. Also, check harness for short.

OK or NG

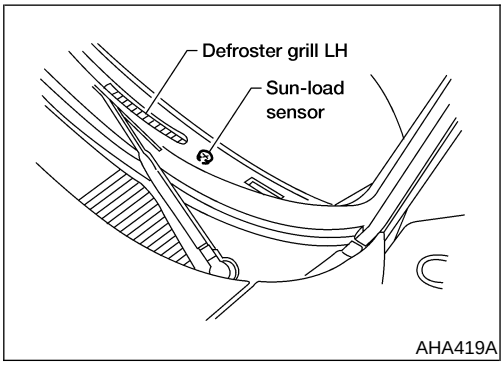
OK	▶	GO TO 4.
NG	▶	Repair harness or connectors.

4	CHECK SUNLOAD SENSOR

Refer to HA-121.

OK or NG

OK	▶	Replace EATC unit.
NG	▶	Replace sunload sensor.



AHA419A

ELECTRICAL COMPONENT INSPECTION

NDHA0149

Sunload Sensor

NDHA0149S01

After disconnecting sunload sensor harness connector, measure resistance between sensor terminals 1 and 2. The resistance should be greater than 0 ohms depending on the amount of sunlight.

- **When checking sunload sensor, select a place where sun shines directly on it.**

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

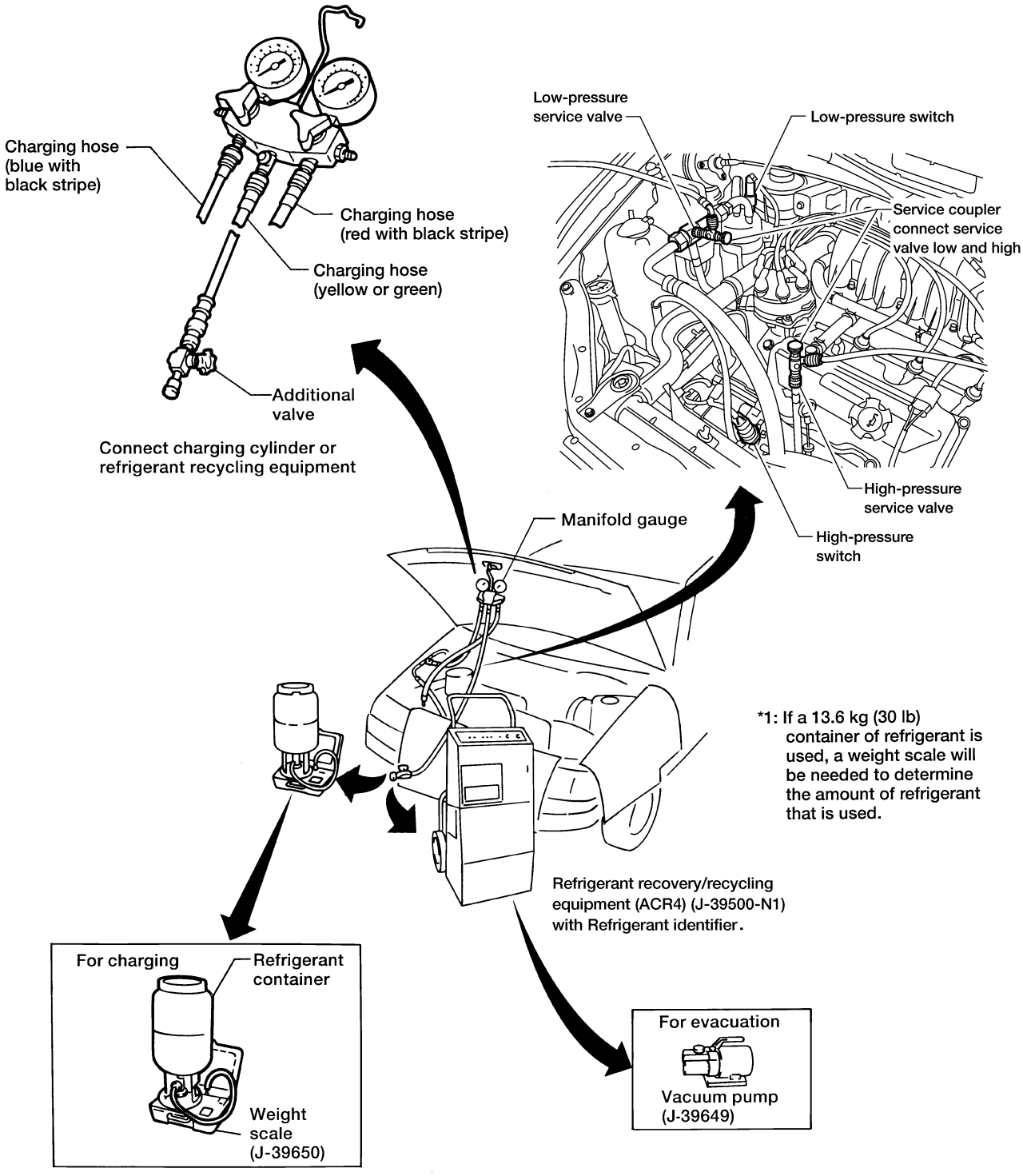
NDHA0182

SETTING OF SERVICE TOOLS AND EQUIPMENT

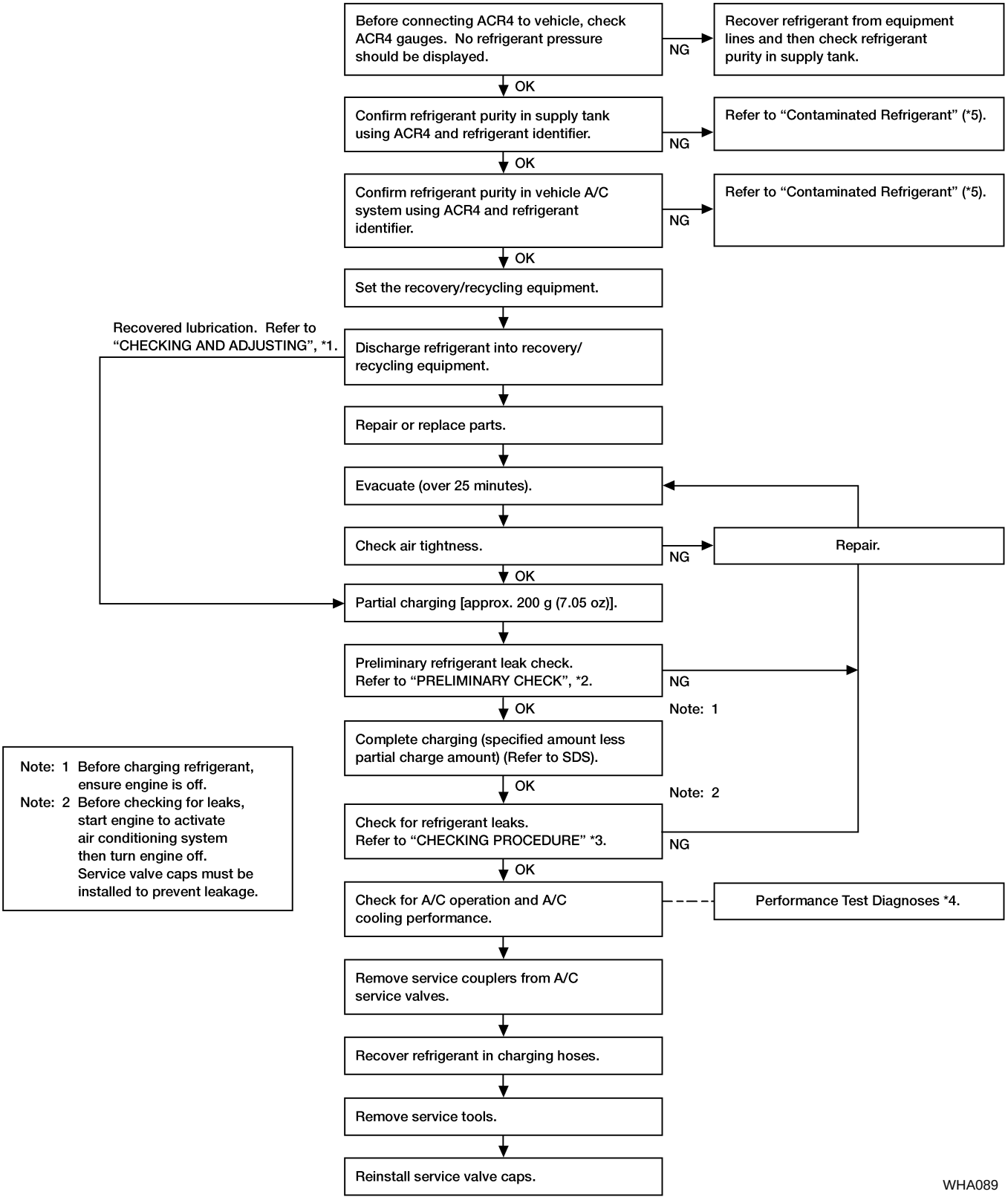
NDHA0182S01

Discharging, Evacuating and Charging Refrigerant

NDHA0182S0101



AHA283A



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

*1: HA-124
*2: HA-135
*3: HA-136
*4: HA-106

Maintenance of Lubricant Quantity in Compressor

NDHA0183

The lubricant in the compressor circulates through the system with the refrigerant. Add lubricant to compressor when replacing any component or after a large gas leakage occurred. It is important to maintain the specified amount.
If lubricant quantity is not maintained properly, the following malfunctions may result:

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

LUBRICANT

NDHA0183S01

Name: Nissan A/C System Oil Type F
Part numbers*: KLH00-PAGQU and KLH00-PAGQF
*: Always check with the Parts Department for the latest parts information

CHECKING AND ADJUSTING

NDHA0183S02

Adjust the lubricant quantity according to the flowchart shown below.

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

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

3	CHECK COMPRESSOR	
Should the compressor be replaced?		
Yes or No		
Yes	▶	Refer to “Lubricant Adjusting Procedure for Compressor Replacement”, HA-126.
No	▶	GO TO 4.

4	CHECK ANY PART	
Is there any part to be replaced? (Evaporator, condenser, liquid tank or in case there is evidence of a large amount of lubricant leakage.)		
Yes or No		
Yes	▶	Refer to "Lubricant Adjusting Procedure for Components Replacement Except Compressor", HA-126.
No	▶	Carry out the A/C performance test.

Lubricant Adjusting Procedure for Components Replacement Except Compressor

=NDHA0183S0201

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

Amount of lubricant to be added

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

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

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

Lubricant Adjusting Procedure for Compressor Replacement

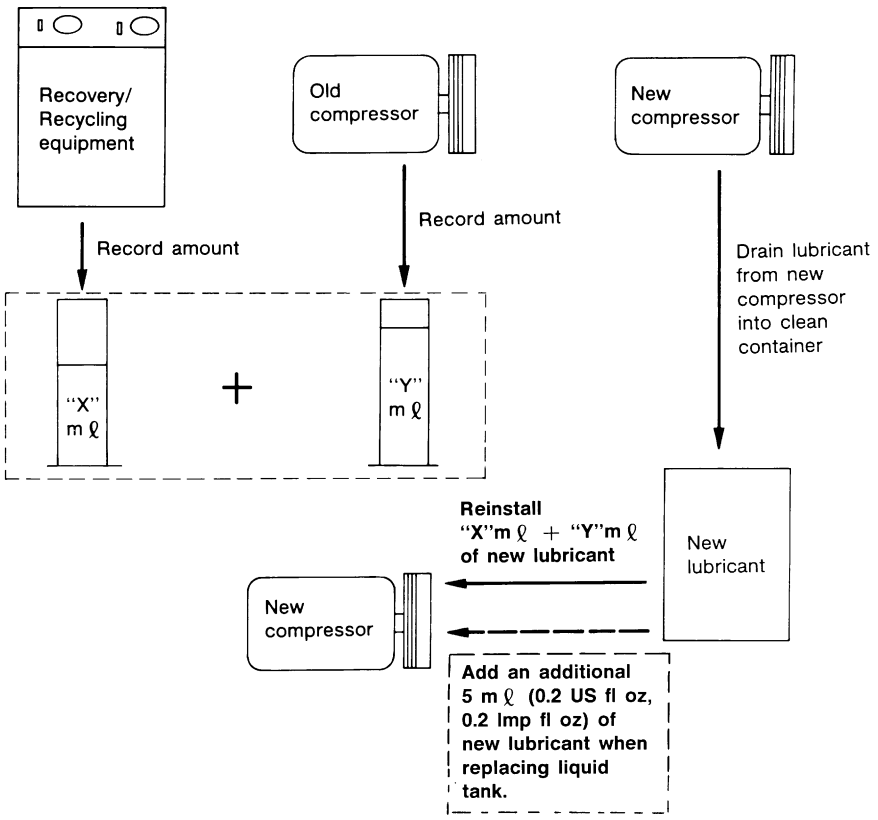
NDHA0183S0202

1) Before connecting ACR4 to vehicle, check ACR4 gauges. No refrigerant pressure should be displayed, recover refrigerant from equipment lines and then check refrigerant purity.
2) Confirm refrigerant purity in supply tank using ACR4 and refrigerant identifier. If NG, Refer to HA-4 "Contaminated Refrigerant"
3) Confirm refrigerant purity in vehicle A/C system using ACR4 and refrigerant identifier. If NG, Refer to HA-4 "Contaminated Refrigerant"
4) Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure lubricant discharged into the recovery/recycling equipment.
5) Remove the drain plug of the "old" (removed) compressor. Drain the lubricant into a graduated container and record the amount of drained lubricant.
6) Remove the drain plug and drain the lubricant from the "new" compressor into a separate, clean container.
7) Measure an amount of new lubricant installed equal to amount drained from "old" compressor. Add this lubricant to "new" compressor through the suction port opening.
8) Measure an amount of new lubricant equal to the amount recovered during discharging. Add this lubricant to "new" compressor through the suction port opening.
9) Torque the drain plug.

   Ford Model FS10 compressor:

   18 - 19 N·m (1.8 - 1.9 kg-m, 13 - 14 ft-lb)
10) If the accumulator also needs to be replaced, add an additional 5 mℓ (0.2 US fl oz, 0.2 Imp fl oz) of lubricant at this time.
    Do not add this 5 mℓ (0.2 US fl oz, 0.2 Imp fl oz) of lubricant if only replacing the compressor.

Lubricant adjusting procedure for compressor replacement



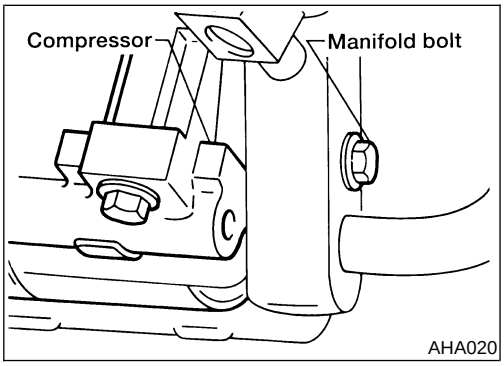
RHA065DD

Compressor

REMOVAL

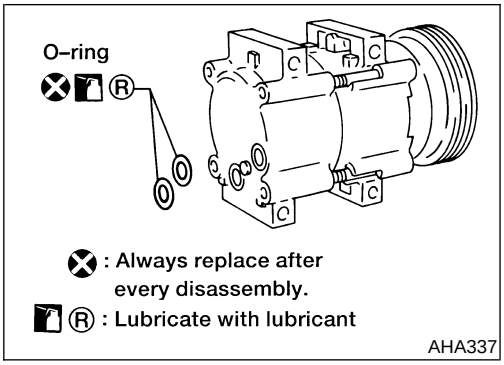
NDHA0184

1. Disconnect battery cable.
2. Discharge refrigerant into refrigerant recycling equipment. Refer to "HFC-134a (R-134a) Service Procedure"HA-122.



AHA020

3. Remove manifold bolt.
4. Remove manifold and inlet/outlet compressor cap.
5. Loosen idler pulley adjusting bolt.
6. Remove compressor drive belt.
7. Disconnect compressor harness connectors.
8. Remove four compressor fixing bolts.
9. Remove compressor.



10. Remove manifold O-rings from compressor housing.

INSTALLATION

NDHA0185

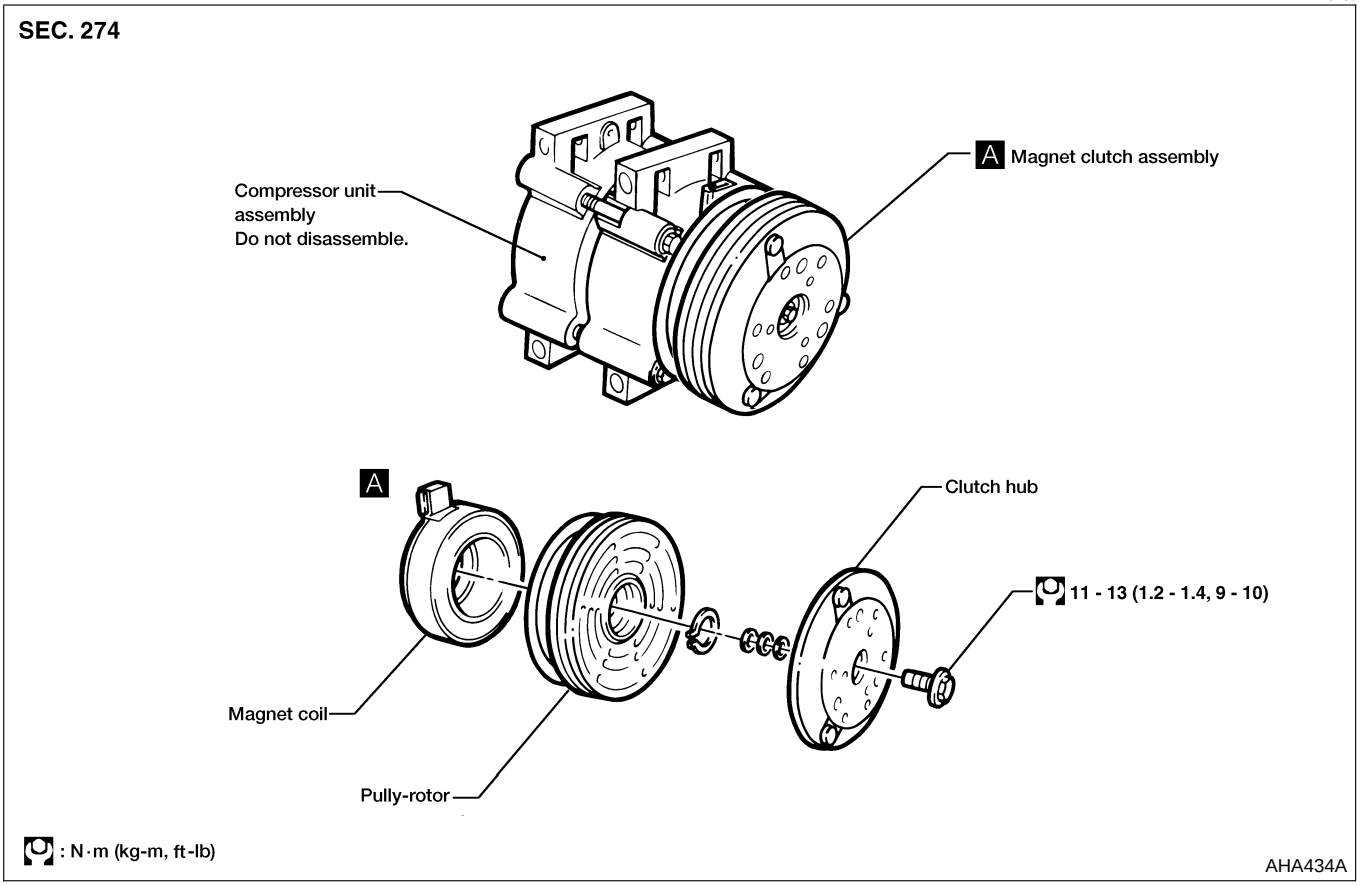
Installation is the reverse order of removal.

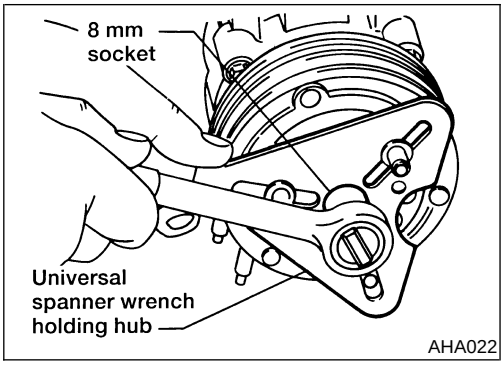
Compressor Clutch

REMOVAL

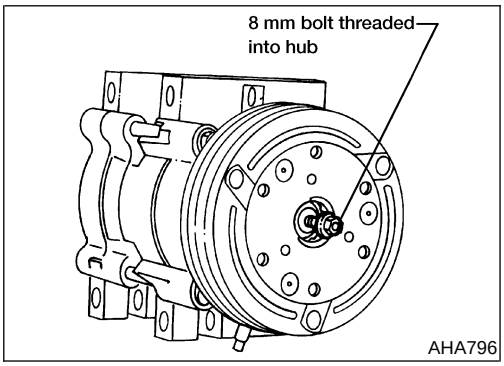
NDHA0186

SEC. 274

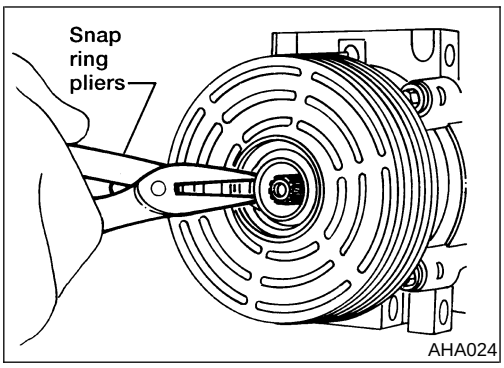




1. Remove the clutch hub retaining bolt. Use Spanner Wrench or equivalent.



2. Remove clutch hub and shims from compressor shaft. If hub cannot be removed from compressor shaft. If hub cannot be removed from compressor shaft, screw an 8 mm bolt into the shaft hole of the clutch hub to force the hub from the shaft.



3. Remove pulley retaining snap ring.
4. Remove the pulley and bearing assembly from compressor.

INSTALLATION

NDHA0187

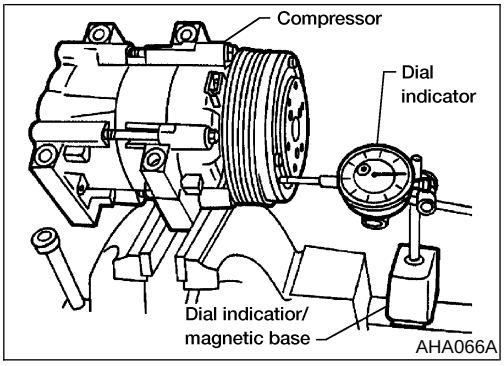
CAUTION:

Do not use air tools.

1. Clean pulley bearing surface of compressor head to remove any dirt or corrosion.
2. Install pulley and bearing assembly on compressor. The bearing is a slip fit on the compressor head and, if properly aligned, it should slip on easily.
3. Install pulley retaining snap ring with bevel side of snap ring out.
4. Install clutch hub onto compressor shaft, together with original shim(s).
5. Thread a new hub retaining bolt into end of compressor shaft.

   Tighten hub retaining bolt:

   11 to 14N·m (1.1 to 1.4 kg-m, 8 to 10 ft-lb).
6. When installing a new clutch, cycle it ten times at idle to burnish the clutch and prevent slippage.



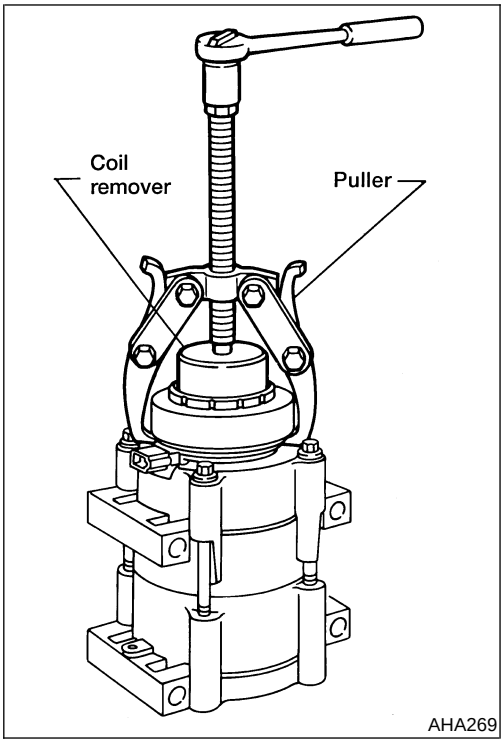
Clutch Air Gap Adjustment

NDHA0188

1. Remove the compressor.
2. Place compressor in a vise.
3. Install dial indicator and set to zero. Make sure the plunger of the dial indicator contacts the A/C compressor clutch disc.
4. Measure A/C compressor clutch disc to pulley clearance using jumper wires to energize the A/C compressor clutch disc.

   Disc to pulley clearance:

   0.45–0.85 mm (0.020–0.033 in)
5. If the specified clearance cannot be obtained, add or remove shims as required.



Magnet Clutch

REMOVAL

NDHA0189

The magnet clutch coil is pressed on the front head of the compressor. Special service tools are required to remove and install the coil.

CAUTION:

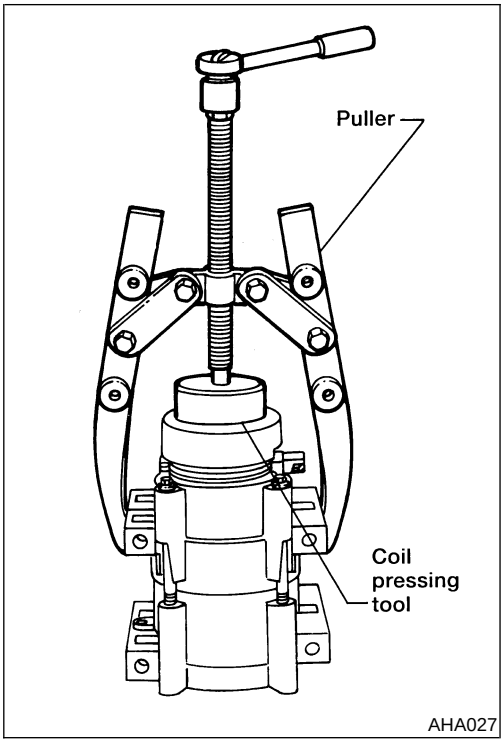
Do not use air tools.

1. Install coil remover Tool on the nose opening of the compressor.
2. Install a puller on the compressor. Place the tip of the puller forcing screw in the center pilot of the coil remover Tool and the jaws of the puller around the back edge of the field coil.

NOTE:

Note the electrical connector location prior to coil removal. There are two possible locations and it is important to align the coil in the correct position during assembly.

3. Tighten the pulley forcing screw to pull the coil from the compressor head.



INSTALLATION

NDHA0190

CAUTION:

Do not use air tools.

1. Clean the coil mounting surface on the front head to remove any dirt or corrosion.
2. With the compressor in a vertical position (nose up), place the magnet coil in position on the compressor front head.
   Check to ensure that the coil electrical connector is positioned correctly.
3. Place the coil pressing (installer) Tool in position over the compressor nose and to the inner radius of the field coil.
4. Position 2–jaw puller Tool on the compressor and the coil pressing Tool as shown in the figure. The jaws of the puller should be firmly engaged with the rear side of the compressor front mounts. The forcing screw must be piloted on the center mark of the pressing tool.
5. Tighten the forcing screw with a hand wrench until the coil is pressed on the compressor front head.
   Check to ensure that the magnet coil bottoms against the head at all points around the coil diameter.
6. Install the clutch pulley and hub on the compressor as outlined. Adjust the air gap, as necessary. Refer to HA-130.

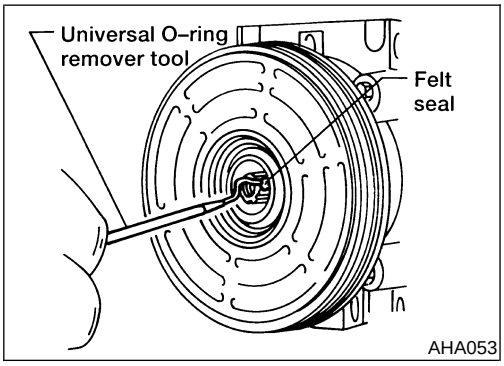
Shaft Seal

NDHA0191

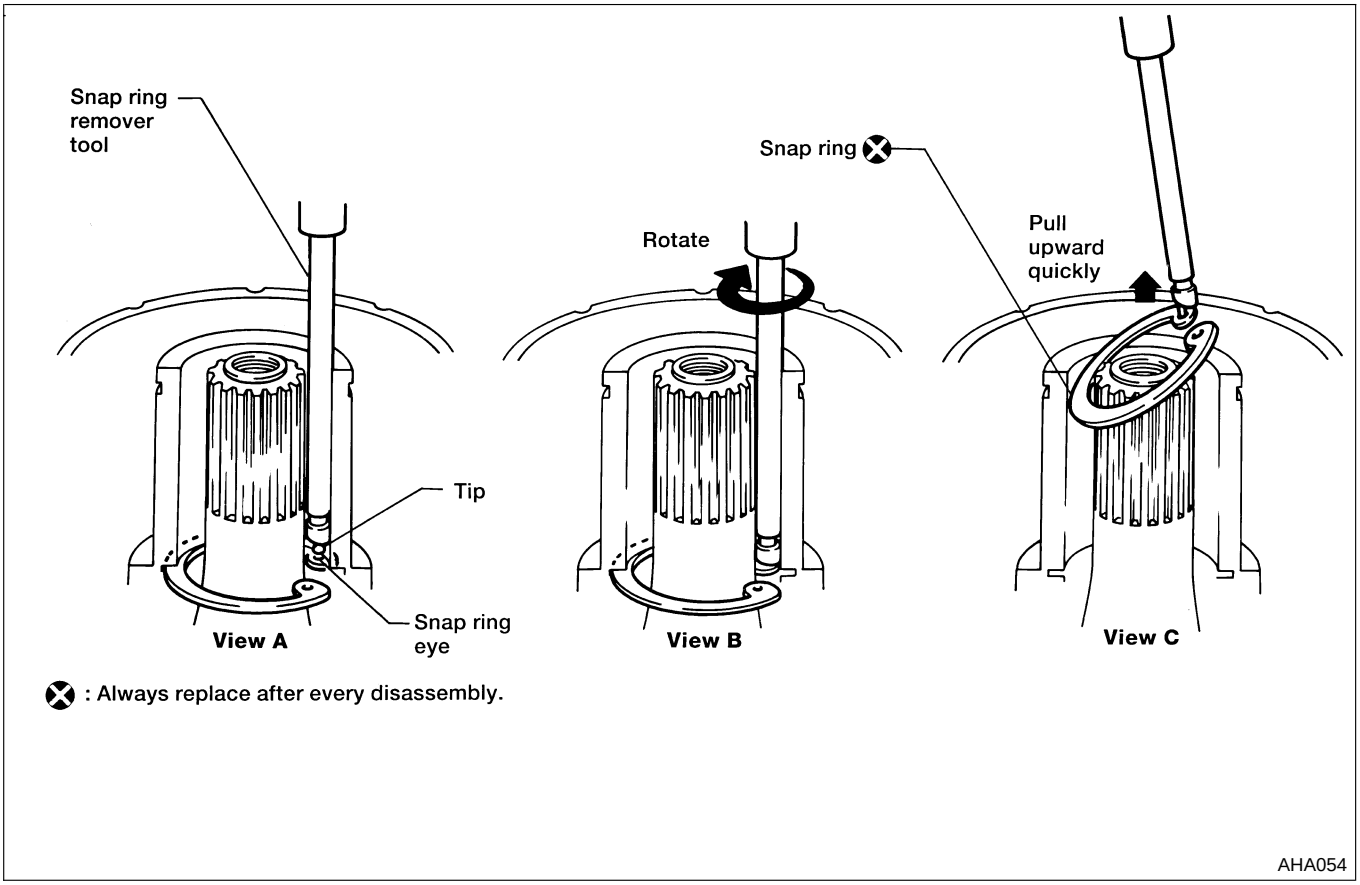
REMOVAL

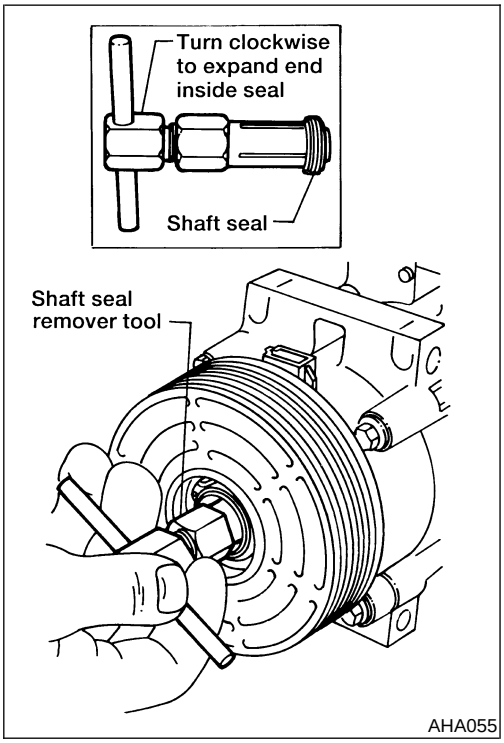
NDHA0191S01

1. Discharge the A/C system. Refer to HA-122.
2. Remove the compressor from the vehicle. Refer to HA-127.
3. Remove the magnet clutch. Refer to HA-130.

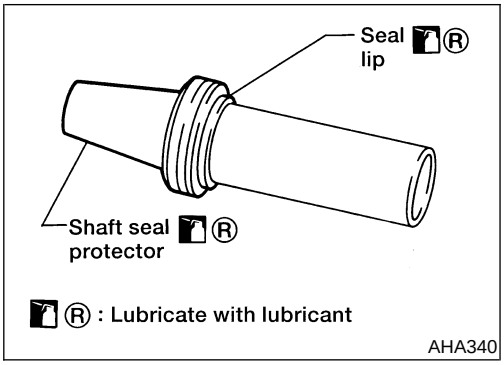


4. Remove the shaft seal felt with universal O-ring remover tool.
5. Remove shaft seal snap ring with snap ring remover.





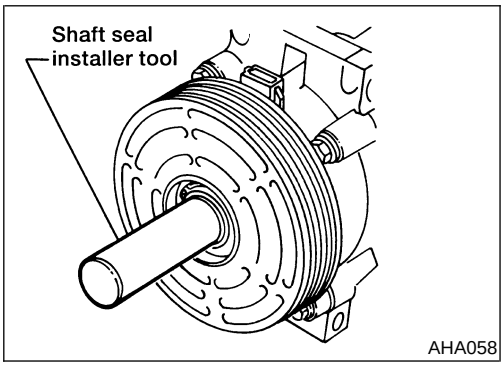
6. Insert end of shaft seal remover tool into nose of compressor. Hold the hex base and turn handle clockwise to expand tool.
7. Remove the shaft seal.



INSTALLATION

NDHA0191S02

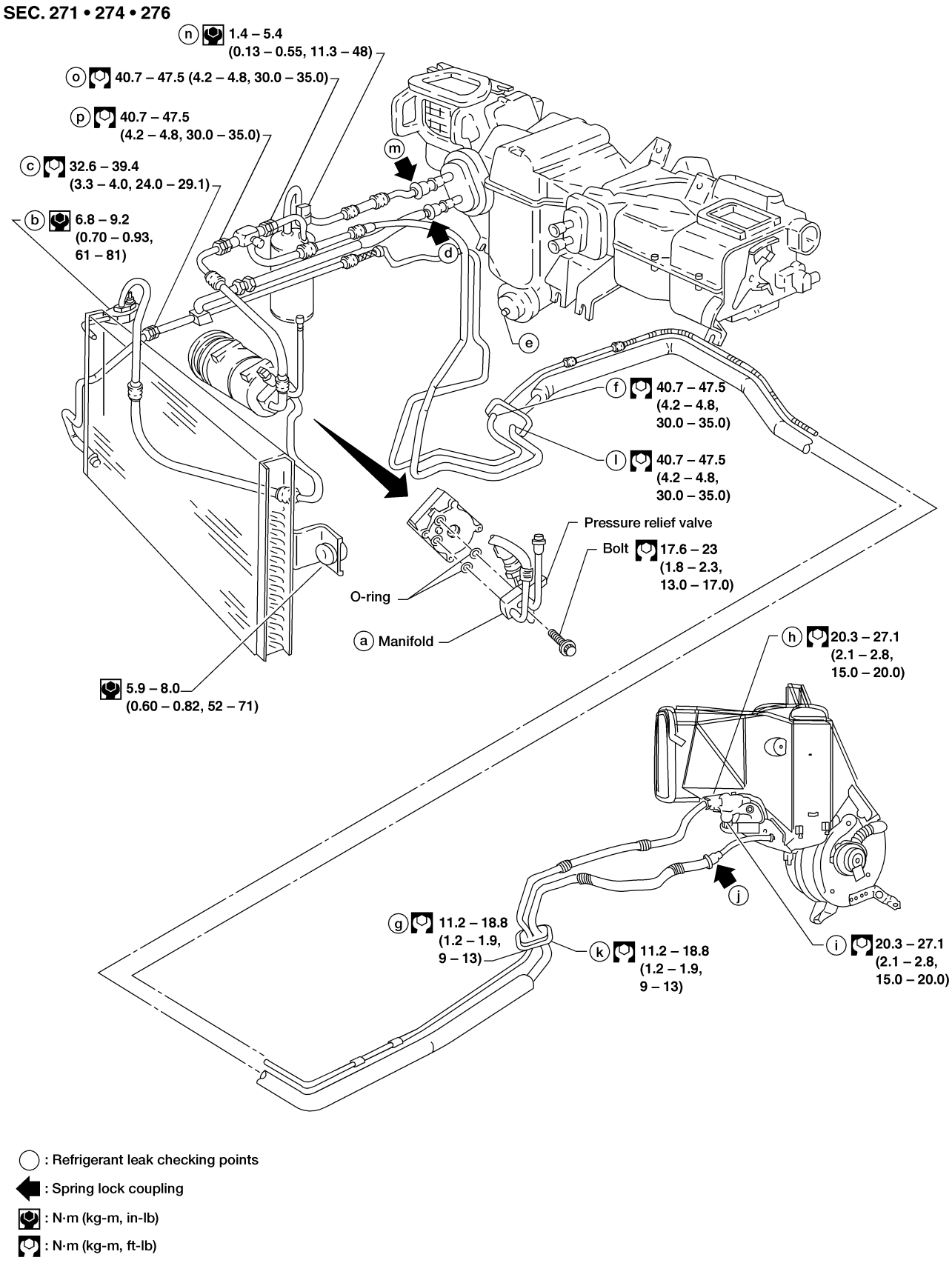
1. Dip shaft seal and shaft seal protector in refrigerant lubricant. Install shaft seal on protector with lip of seal facing large end of protector.
2. Install shaft seal protector and shaft seal over end of compressor shaft.



3. Slowly push shaft seal down protector into compressor shaft with shaft seal installer. Be careful that shaft seal is seated properly.
4. Remove shaft seal installer and shaft seal protector from compressor shaft.
5. Install shaft seal snap ring. Be careful that snap ring is correctly seated.
6. Install shaft seal felt in compressor nose.
7. Install clutch hub and pulley.
8. Inspect compressor for refrigerant leaks. Refer to HA-135.

Refrigerant Lines

NDHA0192



: Refrigerant leak checking points

: Spring lock coupling

: N·m (kg-m, in-lb)

: N·m (kg-m, ft-lb)

WHA186

Checking Refrigerant Leaks

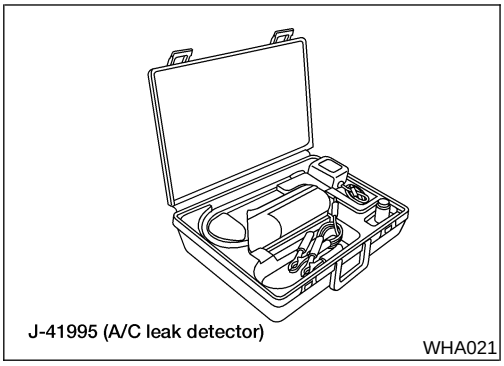
NDHA0193

PRELIMINARY CHECK

NDHA0193S01

- Perform a visual inspection of all refrigeration parts, fittings, hoses and components for signs of A/C lubricant leakage, damage and corrosion. A/C lubricant leakage may indicate an area of refrigerant leakage. Allow extra inspection time in these areas when using either an electronic refrigerant leak detector or fluorescent dye leak detector.
- If dye is observed, confirm the leak with an approved electronic refrigerant leak detector. It is possible a prior leak was repaired and not properly cleaned.
- When searching for leaks, do not stop when one leak is found but continue to check for additional leaks at all system components and connections.
- When searching for refrigerant leaks using an electronic leak detector, move the probe along the suspected leak area at 1 to 2 inches per second an no further than 1/4 inch from the component.

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


J-41995 (A/C leak detector)
WHA021

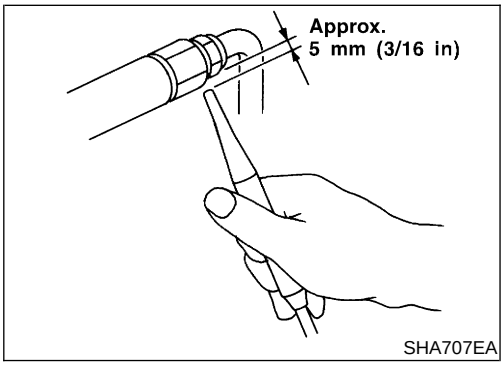
Electronic Refrigerant Leak Detector

NDHA0278

PRECAUTIONS FOR HANDLING LEAK DETECTOR

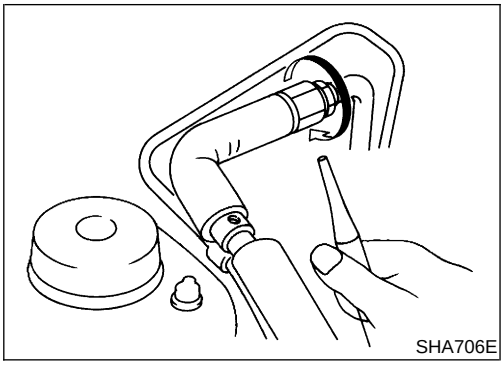
NDHA0278S01

When performing a refrigerant leak check, use a J41995 electronic refrigerant leak detector or equivalent. Ensure that the instrument is calibrated and set properly per the operating instructions.
The leak detector is a delicate device. In order to use the leak detector properly, read the operating instructions and perform any specified maintenance.
Other gases in the work area or substances on the A/C components, for example, anti-freeze, windshield washer fluid, solvents and lubricants, may falsely trigger the leak detector. Make sure the surfaces to be checked are clean. Clean with a dry cloth or blow off with shop air. Do not allow the sensor tip of the detector to contact any substance. This can also cause false readings and may damage the detector.

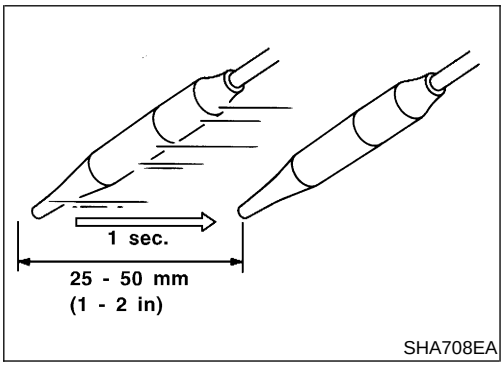


SHA707EA

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


SHA706E

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



SHA708EA

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

CHECKING PROCEDURE

NDHA0278S02

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

1. Turn engine off.
2. Connect a suitable A/C manifold gauge set to the A/C service ports.
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.52 kg/cm^2, 50 psi) above 16°C (61°F). If less than specification, recover/evacuate and recharge the system with the specified amount of refrigerant.

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

4. Conduct the leak test from the high side (compressor discharge **a** to evaporator inlet **d**) to the low side (evaporator drain hose **e** to compressor suction **p**). Refer to HA-134. Perform a leak check for the following areas carefully. Clean the component to be checked and move the leak detector probe completely around the connection/component.

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

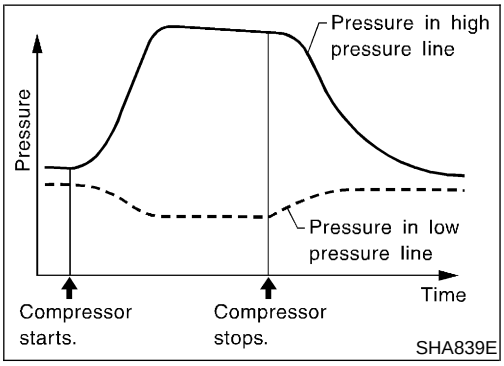
NOTE:
After removing A/C manifold gauge set from service valves, wipe any residue from valves to prevent any false readings by leak detector.

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

5. If a leak detector detects a leak, verify at least once by blowing compressed air into area of suspected leak, then repeat check as outlined above.
6. Do not stop when one leak is found. Continue to check for additional leaks at all system components.
   If no leaks are found, perform steps 7 through 10.
7. Start engine.
8. Set the heater A/C control as follows:

a. A/C switch ON
b. Face mode
c. Recirculation switch ON
d. Max cold temperature
e. Fan speed high

9. Run engine at 1,500 rpm for at least 2 minutes.
10. Turn engine off and perform leak check again following steps 4 through 6 above.



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

11. Before connecting ACR4 to vehicle, check ACR4 gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover refrigerant from equipment lines and then check refrigerant purity.
12. Confirm refrigerant purity in supply tank using ACR4 and refrigerant identifier.
13. Confirm refrigerant purity in vehicle A/C system using ACR4 and refrigerant identifier.
14. Discharge A/C system using approved refrigerant recovery equipment. Repair the leaking fitting or component as necessary.
15. Evacuate and recharge A/C system and perform the leak test to confirm no refrigerant leaks.
16. Conduct A/C performance test to ensure system works properly.

Fluorescent Dye Leak Detector

NDHA0274

PRECAUTIONS FOR FLUORESCENT DYE LEAK DETECTION

NDHA0274S01

- The fluorescent dye leak detector is not a replacement for an electronic refrigerant leak detector. The fluorescent dye leak detector should be used in conjunction with an electronic refrigerant leak detector (J-41995) to pinpoint refrigerant leaks.
- For your safety and your customer's satisfaction, read and follow all manufacturer's operating instructions and precautions prior to performing the work.
- Refer to "Precautions for Leak Detection Dye", HA-4.

CHECKING SYSTEM FOR LEAKS USING THE FLUORESCENT LEAK DETECTOR

NDHA0274S02

1. Check A/C system for leaks using the UV lamp and safety glasses (J-42220) in a low sunlight area (area without windows preferable). Illuminate all components, fittings and lines. The dye will appear as a bright green/yellow area at the point of leakage. Fluorescent dye observed at the evaporator drain opening indicates an evaporator core assembly (tubes, core or TXV) leak.
2. If the suspected area is difficult to see, use an adjustable mirror or wipe the area with a clean shop rag or cloth, then check the cloth with the UV lamp for dye residue.
3. Confirm any suspected leaks with an approved electronic refrigerant leak detector.
4. After the leak is repaired, remove any residual dye using dye cleaner (J-43872) to prevent future misdiagnosis.
5. Perform a system performance check and verify the leak repair with an approved electronic refrigerant leak detector.

DYE INJECTION

NDHA0274S03

(This procedure is only necessary when re-charging the system or when the compressor has seized and was replaced.)
Refer to "Precautions for Leak Detection Dye", HA-4.

1. Check A/C system static (at rest) pressure. Pressure must be at least 345 kPa (50 psi).
2. Pour one bottle (1/4 ounce / 7.4 cc) of the A/C refrigerant dye into the injector tool (J-41459).
3. Connect the injector tool to the A/C LOW PRESSURE side service fitting.
4. Start engine and switch A/C ON.
5. With the A/C operating (compressor running), inject one bottle (1/4 ounce / 7.4 cc) of fluorescent dye through the low-pressure service valve using dye injector tool J-41459 (refer to the manufacturer's operating instructions).
6. With the engine still running, disconnect the injector tool from the service fitting.

CAUTION:
Be careful not to allow dye to spray or drip when disconnecting the injector from the system.

NOTE:
If repairing the A/C system or replacing a component, pour the dye directly into the open system connection and proceed with the service procedures.

7. Operate the A/C system for a minimum of 20 minutes to mix

the dye with the system oil. Depending on the leak size, operating conditions and location of the leak, it may take from minutes to days for the dye to penetrate a leak and become visible.

Belt

TENSION ADJUSTMENT

NDHA0194

- **Refer to " Checking Drive Belt", *MA-13*.**

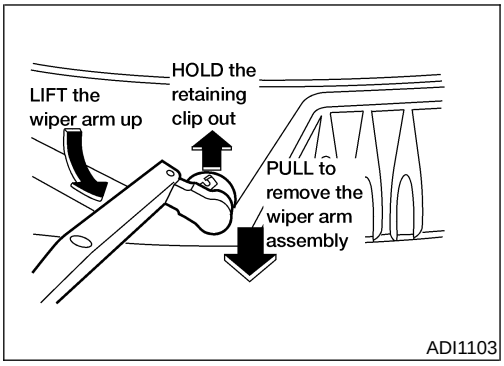
Cabin Air Filter

NDHA0270

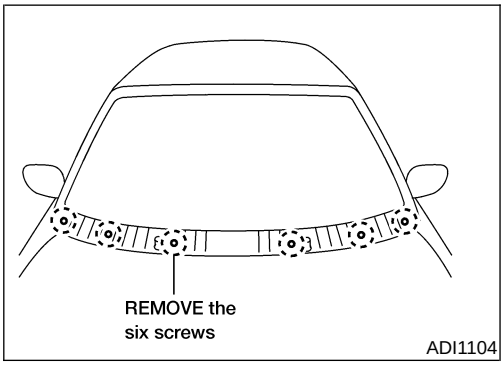
The cabin air filter restricts the entry of airborne dust and pollen particles and reduces some objectionable outside odors. The filter is located just in front of the windshield under the cowl cover on the passenger side of the vehicle.
To replace the filter, perform the following procedure.

REMOVAL

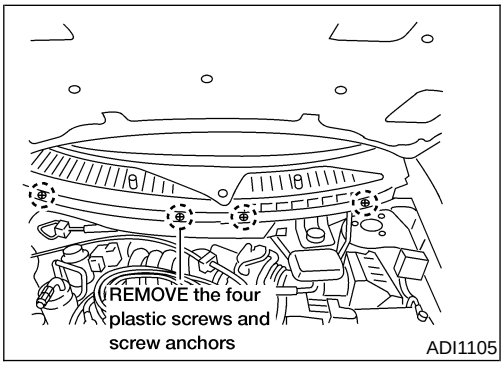
NDHA0270S01



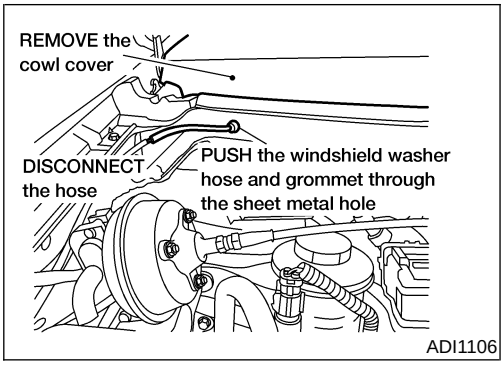
1. Remove the windshield wiper arms.
- Lift the wiper arm away from the windshield surface until the wiper is perpendicular to the windshield.
- Lift and remove the wiper arm while holding the small retaining clip at the base of wiper arm outward.



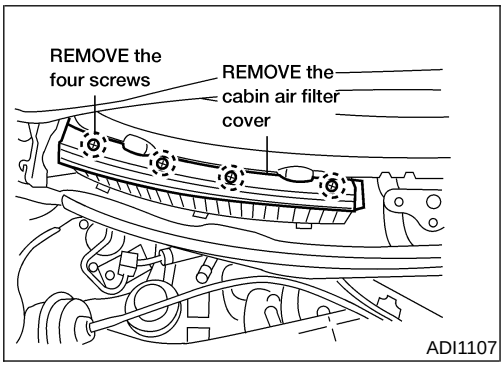
2. Remove the cowl cover.
- Remove the six screws.
- Open the hood.



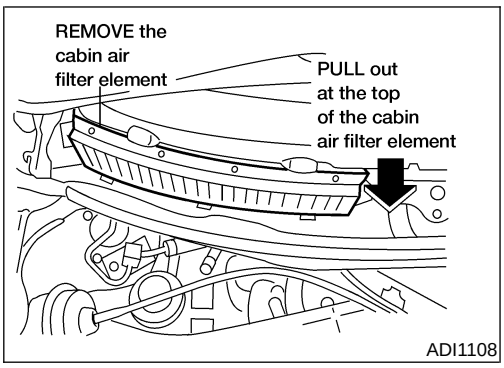
- Remove the four plastic screws from the forward edge of the cowl cover.
- Remove the four plastic screw anchors.



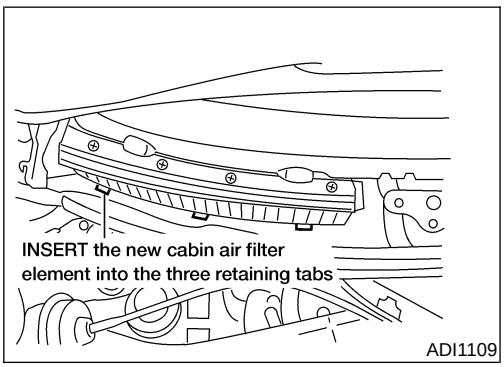
- Disconnect the windshield washer hose at the passenger side rear corner of the engine compartment.
- Push the windshield washer hose and the grommet through the sheet metal hole.
- Lift the cowl cover and remove it from the vehicle.



3. Locate the cabin air filter on the passenger side of the vehicle.
- Remove the four screws from the top surface of the cabin air filter top cover.
- Remove the cabin air filter cover.



- Remove the cabin air filter element by pulling forward on the top surface of the filter and lifting.



INSTALLATION

NDHA0270S02

1. Install the new cabin air filter element into the filter retaining frame, ensure that you insert the three retaining tabs in the bottom of the filter frame.
2. Install the filter top cover and the four screws.
3. Feed the windshield washer hose from the cowl cover through the hole in the sheet metal.
- Ensure that you fully seat the rubber grommet into the sheet metal hole.
4. Reconnect the windshield washer hose.
5. Position the windshield washer hose.
6. Reinstall the four screw anchors and the four screws.
7. Close the hood.
8. Install the six screws in the cowl cover.
9. Install the windshield wiper arms.
- Push the wiper arm downward onto the wiper arm pivot until the small retaining clip snaps into the locked position.
- Lower the wiper arm blade onto the windshield surface.

Fast Idle Control Device (FICD)

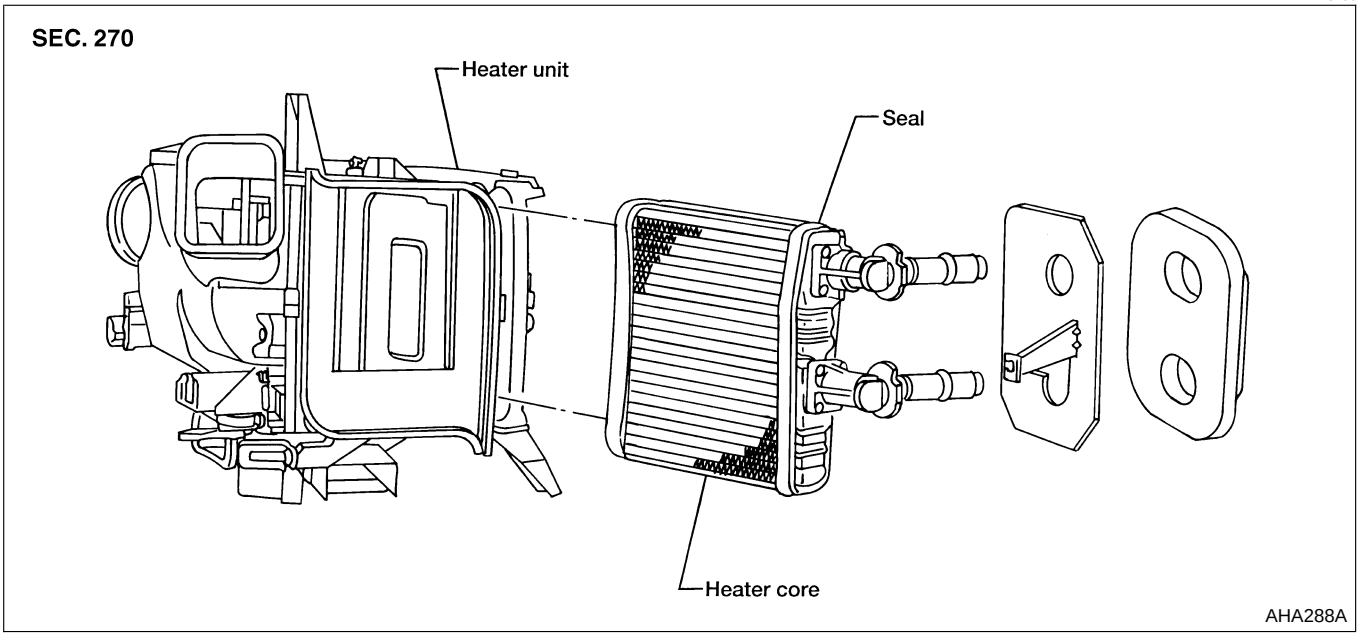
INSPECTION

NDHA0195

- **Refer to “IACV-FICD SOLENOID VALVE”, *EC-552*.**

Heater Core

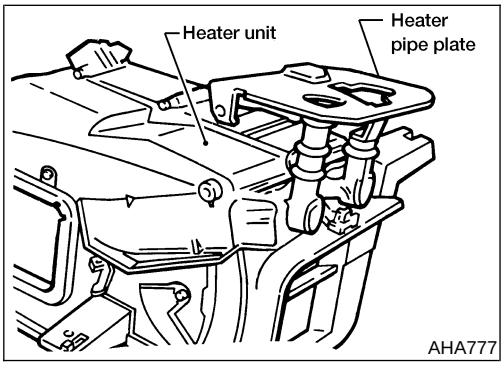
NDHA0196



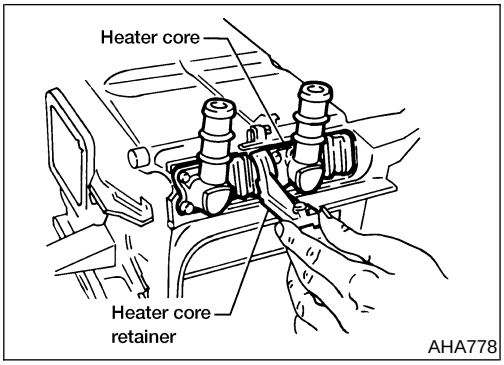
REMOVAL

NDHA0196S01

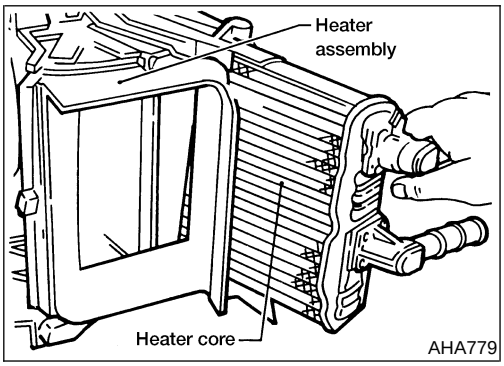
1. Drain cooling system. Refer to “Changing Engine Coolant”, ***MA-14***.
2. Disconnect two heater hoses in engine compartment.
3. Disconnect heater unit ducts.
4. Disconnect heater unit bolts.
5. Disconnect door motor electrical connectors.
6. Remove heater unit.



7. Remove heater pipe plate.



8. Remove heater core retainer.



9. Remove heater core from heater unit.

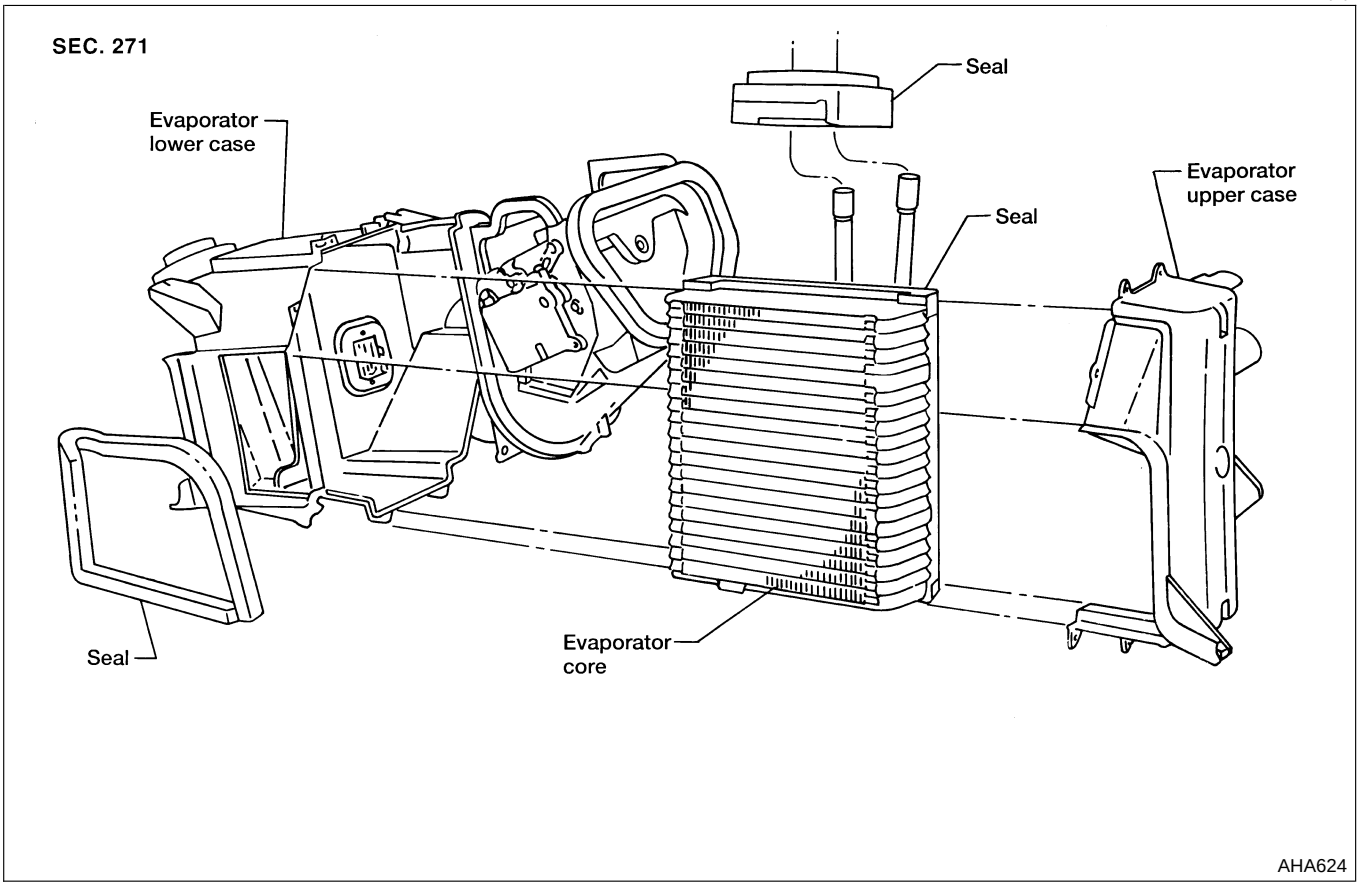
INSTALLATION

NDHA0196S02

Installation is the reverse order of removal. Inspect system for coolant leaks. Refer to "Changing Engine Coolant", ***MA-14***.

Front Evaporator Core

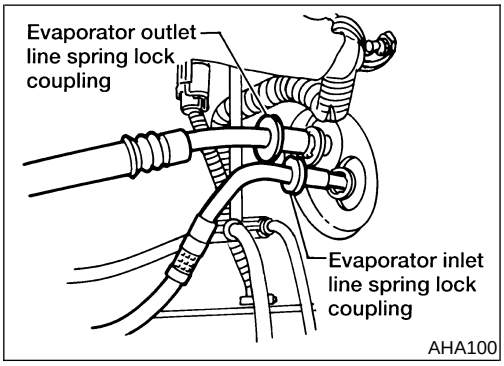
NDHA0197



REMOVAL

NDHA0197S01

1. Discharge the A/C system. Refer to HA-122.



2. Use tool to disconnect spring lock couplings in engine compartment.
3. Remove instrument panel.
4. Remove duct from heater unit to register RH.
5. Disconnect blower motor and electrical connector.
6. Remove evaporator.

INSTALLATION

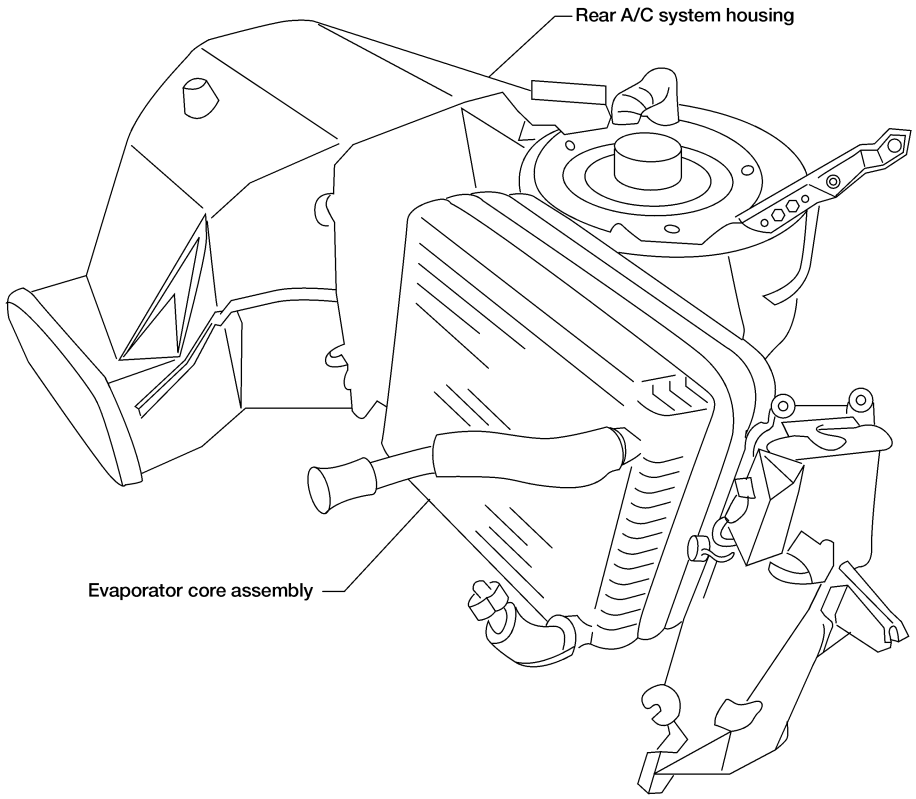
NDHA0197S02

Installation is the reverse order or removal.
Inspect system for refrigerant leaks. Refer to HA-135.

Rear Evaporator Core

NDHA0198

SEC. 270 • 271



AHA416A

REMOVAL

NDHA0198S01

1. Discharge and recover refrigerant from the A/C system. Refer to HA-122.
2. Remove driver's side trim panel and bolts from housing.
3. Remove A/C system housing.
4. Remove evaporator core.

INSTALLATION

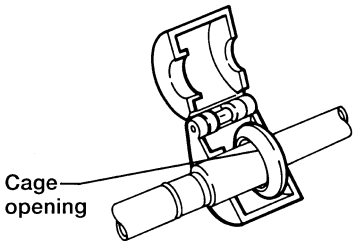
NDHA0198S02

Installation is the reverse order of removal.

Spring Lock Coupling

NDHA0264

- **Refer to "Precautions for Refrigerant Connection" on page HA-5.**
  A plastic indicator ring is used on spring lock couplings during vehicle assembly to indicate that the coupling is connected. After the coupling is connected, the indicator ring is not necessary but will stay near the cage opening.



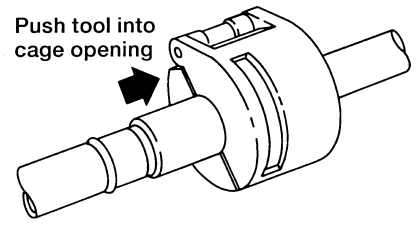
Fit tool to coupling so that tool can enter cage opening to release the garter spring.

AHA011

REMOVAL

NDHA0264S04

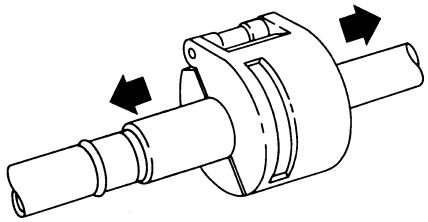
1. Discharge refrigerant from system. Fit spring lock coupling tools (9.53 mm [3/8 in], 12.70 mm [1/2 in], 15.88 mm [5/8 in] or 19.05 mm [3/4 in] to the coupling.



Push the tool into the cage opening to release the female fitting from the garter spring.

AHA012

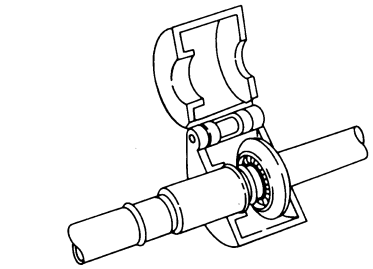
2. Close tool and push into open side of cage to expand garter spring and release female fitting.
If the tool is cocked while pushing it into the cage opening the garter spring may not release.



Pull the coupling male and female fittings apart.

AHA013

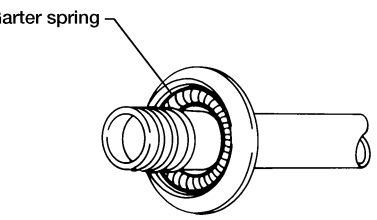
3. After garter spring is expanded, pull fitting apart.



Remove the tool from the disconnected spring lock coupling.

AHA014

4. Remove tool from disconnected coupling.



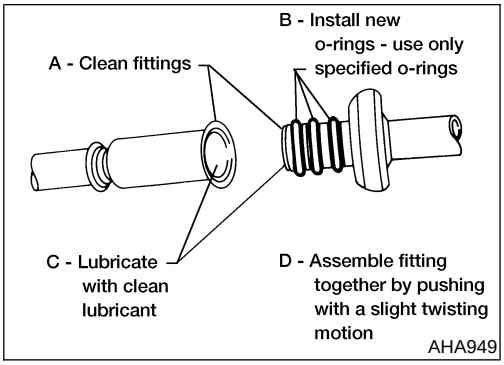
Check for missing or damaged garter spring - remove damaged spring with small hooked wire - install new spring if damaged or missing.

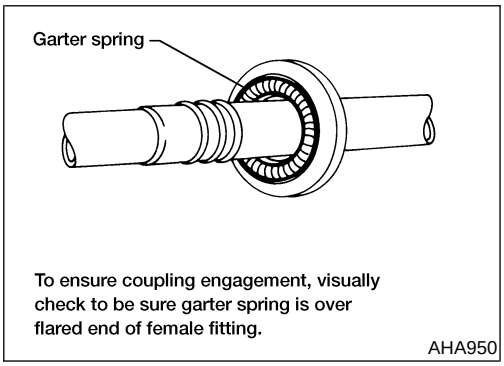
AHA948

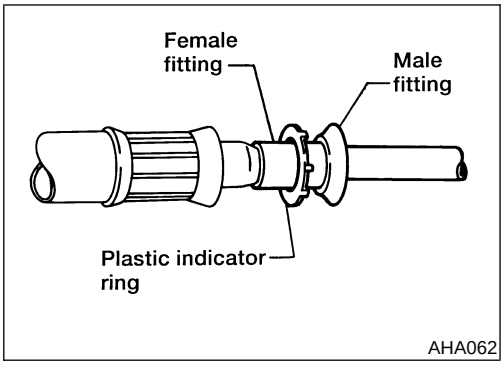
INSTALLATION

NDHA0264S05

1. Check to ensure that garter spring is in cage of male fitting. If garter spring is missing, install a new spring by pushing it into the cage opening. If garter spring is damaged, remove it from cage with a small wire hook (do not use a screwdriver) and install a new spring. Check for burrs on the end of the male tube to avoid scratching the female tube.







2. Clean all dirt of foreign material from both pieces of coupling.
3. Install new O-rings on male fitting.

NOTE:
O-rings are made of a special material. Use only the specified O-rings.

The use of any O-ring other than the specified O-ring may allow the connection to leak intermittently during vehicle operation.

4. Lubricate male fitting and O-rings and inside of female fitting with clean lubricant. Check for scratches on the inner surface of the female fitting.
5. Install plastic indicator ring into cage opening if indicator ring is to be used.
6. Fit female fitting to male fitting and push until garter spring snaps over flared end of female fitting.
   If plastic indicator ring is not used, it will snap out of cage opening when coupling is connected to indicate engagement.
7. If indicator ring is not used, ensure coupling engagement by visually checking to verify garter spring is over flared end of female fitting.

Auto

GENERAL SPECIFICATIONS

=NDHA0164

Compressor

NDHA0164S01

Model	FS-10
Type	Swash plate
Displacement cm^3 (cu in)/rev.	170 (10.37)
Cylinder bore x stroke mm (in)	29.0 x 25.7 (1.142 x 1.012)
Direction of rotation	Clockwise (viewed from drive end)
Drive Belt	Poly V

Lubricant

NDHA0164S02

Model	Only front A/C models	Front & rear A/C models
	FS-10 compressor	
Type	Nissan A/C System Lubricant PAG Type F or equivalent*	
Capacity mℓ (US fl oz, imp fl oz) Total in system	207 (7.0, 7.3)	325 (11.0, 11.5)

*: Suniso 5GS is not acceptable for use in this vehicle.

Refrigerant

NDHA0164S03

Type		R134a
Capacity kg (lb)	Only front A/C models	0.907 (2.0)
	Front A/C & rear A/C models	1.531 (3.376)

INSPECTION AND ADJUSTMENT

NDHA0165

Engine Idling Speed (When A/C is ON)

NDHA0165S01

- Refer to “Idle Speed and Ignition Timing”, ***EC-563***.

Belt Tension

NDHA0165S02

- Refer to “Checking Drive Belts”, ***MA-13***.

Compressor

NDHA0165S03

Model	FS-10
Off Vehicle Clutch hub-pulley clearance mm (in)	0.45-0.85 (0.0177-0.335)

Supplemental Restraint System (SRS) "AIR BAG"

NDHA0060

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 **RS section** of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance should be performed by an authorized NISSAN dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses are covered with yellow insulation either just before the harness connectors or for the complete harness, for easy identification.**

A/C Identification Label

NDHA0166

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

NOTE:
Vehicles with factory installed fluorescent dye have a green label.
Vehicles without factory installed fluorescent dye have a blue label.

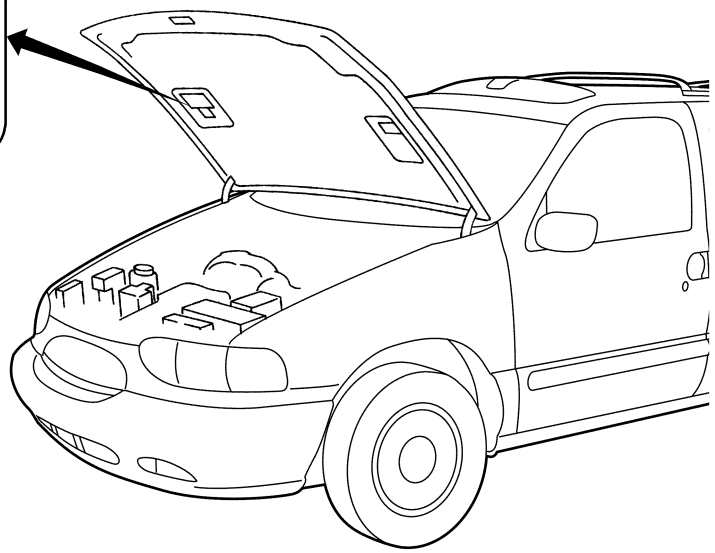
CAUTION (IF A/C EQUIPPED) **MISE EN GARDE** (VÉHICULES CLIMATISÉS)

· REFRIGERANT UNDER HIGH PRESSURE. AIR CONDITIONING SYSTEM TO BE SERVICED BY QUALIFIED PERSONNEL. IMPROPER SERVICE METHODS MAY CAUSE PERSONAL INJURY. CONSULT SERVICE MANUAL.
· LE FRIGOTIGENE EST SOUS FORTE PRESSION. NE CONFIER L'ENTRETIEN ET LA ŔEPARATION DU CLIMATISEUR QU'À UN PERSONNEL QUALIFIÉ. L'EMPLOI DE MAUVAISES MÉTHODES PEUT CAUSER DES BLESSURES. CONSULTER LE MANUEL DE ŔEPARATION.

DISTR.:
NISSAN—
CARSON, CA.

	REFRIG. FRIGORIG.	LUBRICANT/LUBRIFIANT
TYPE:	R-134a	POLYALKYLENE GLYCOL LUBRICANT/ LUBRIFIANT AU POLYALKYLENE GLYCOL
AMOUNT: W/ FR A/C: QTE. CLIM. AV. :	2.0 LB	47 CC
W/FR & RR A/C: CLIM. AV. ET AR.	3.5 LB	166 CC

SAE J639



AHA282A

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

=NDHA0061

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed, compressor failure is likely to occur, refer to "Contaminated Refrigerant". To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/ Recycling Recharging equipment (ACR4) (J-39500–NI) and Refrigerant Identifier.**
- **Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If lubricant other than that specified is used, compressor failure is likely to occur.**
- **The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**

a) When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.

b) When installing refrigerant components to a vehicle, do not remove the caps (unseal) until just before connecting the components. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.

c) Only use the specified lubricant from a sealed container. Immediately reseal containers of lubricant. Without proper sealing, lubricant will become moisture saturated and should not be used.

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

e) Do not allow lubricant (Nissan A/C System Oil Type S) to come in contact with styrofoam parts. Damage may result.

Contaminated Refrigerant

NDHA0267

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

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- If you choose to perform the repair, recover the refrigerant using only dedicated equipment and containers. **Do not recover contaminated refrigerant into your existing service equipment.** If your facility does not have dedicated recovery equipment, you may contact a local refrigerant product retailer for available service. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.
- If the vehicle is within the warranty period, the air conditioner warranty is void. Please contact Nissan Customer Affairs for further assistance.

Precautions for Leak Detection Dye

NDHA0276

- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety glasses to protect your eyes and enhance the visibility of the fluorescent dye.
- A compressor shaft seal should not be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electronic refrigerant leak detector (J-41995).
- Always remove any dye from the leak area after repairs are complete to avoid a misdiagnosis during a future service.
- Do not allow dye to come into contact with painted body panels or interior components. If dye is spilled, clean immediately with the approved dye cleaner. Fluorescent dye left on a surface for an extended period of time **cannot be removed**.
- Do not spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Do not use more than one refrigerant dye bottle (1/4 ounce / 7.4 cc) per A/C system.
- Leak detection dyes for R-134a and R-12 A/C systems are different. Do not use R-134a leak detection

dye in R-12 A/C systems or R-12 leak detection dye in R-134a A/C systems or A/C system damage may result.

- The fluorescent properties of the dye will remain for over three (3) years unless a compressor failure occurs.

General Refrigerant Precautions

NDHA0062

WARNING:

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

Precautions for Refrigerant Connection

NDHA0063

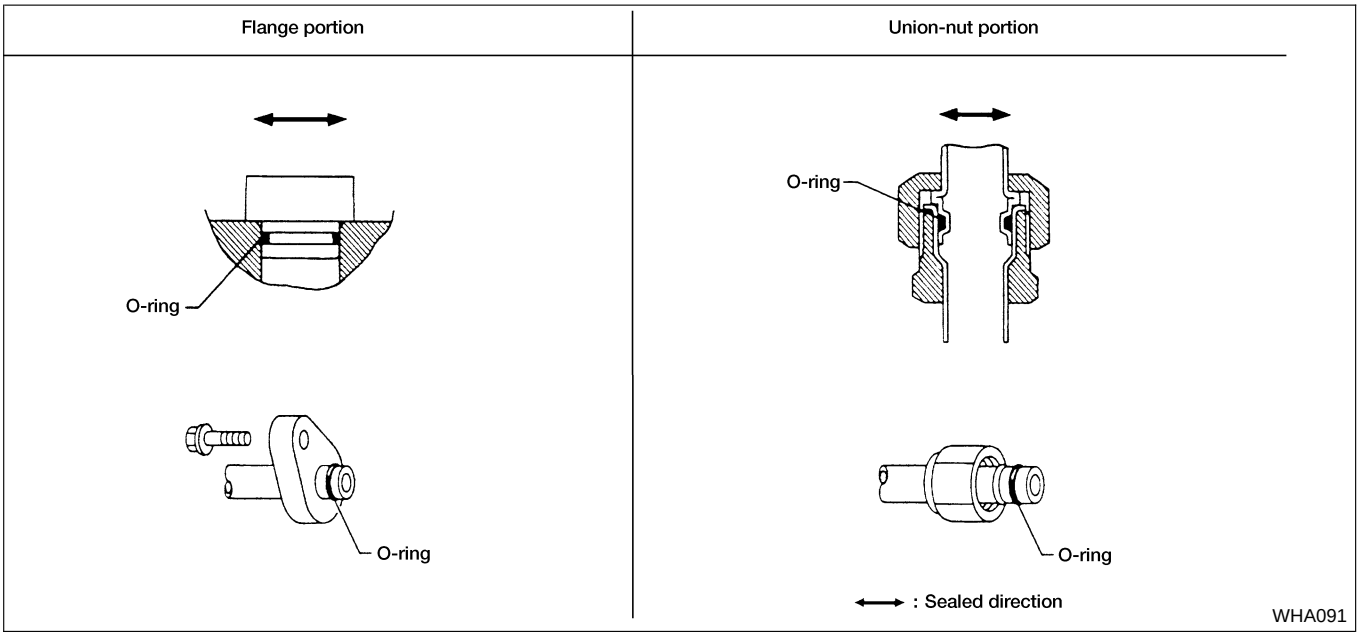
A new type refrigerant connection has been introduced to all refrigerant lines except the following portion.

- Front evaporator core connections.

FEATURES OF NEW TYPE REFRIGERANT CONNECTION

NDHA0063S01

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

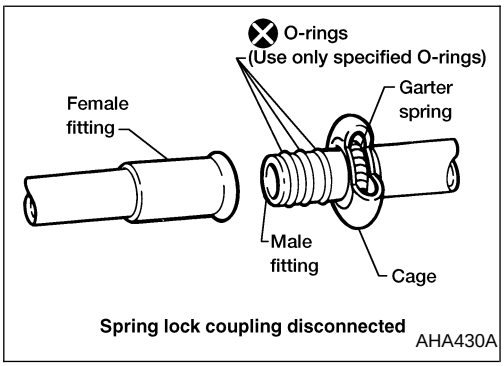


SPRING LOCK COUPLING

NDHA0063S04

The spring lock coupling is a refrigerant line coupling held together by a garter spring inside a circular cage. When the coupling is connected, the flared end of the female fitting slips behind the garter spring inside the cage of the male fitting. The garter spring and cage prevent the flared end of the female fitting from pulling out of the cage.

Three green O-rings are used to seal the three halves of the coupling. **These O-rings are made of special material and must be replaced with an O-ring made of the same material.** The O-rings normally used in refrigerant system connections **are not** the same material and should not be used with the spring lock coupling. **Use only the specified O-ring for the spring lock coupling. For Removal and Installation, refer to HA-255.**



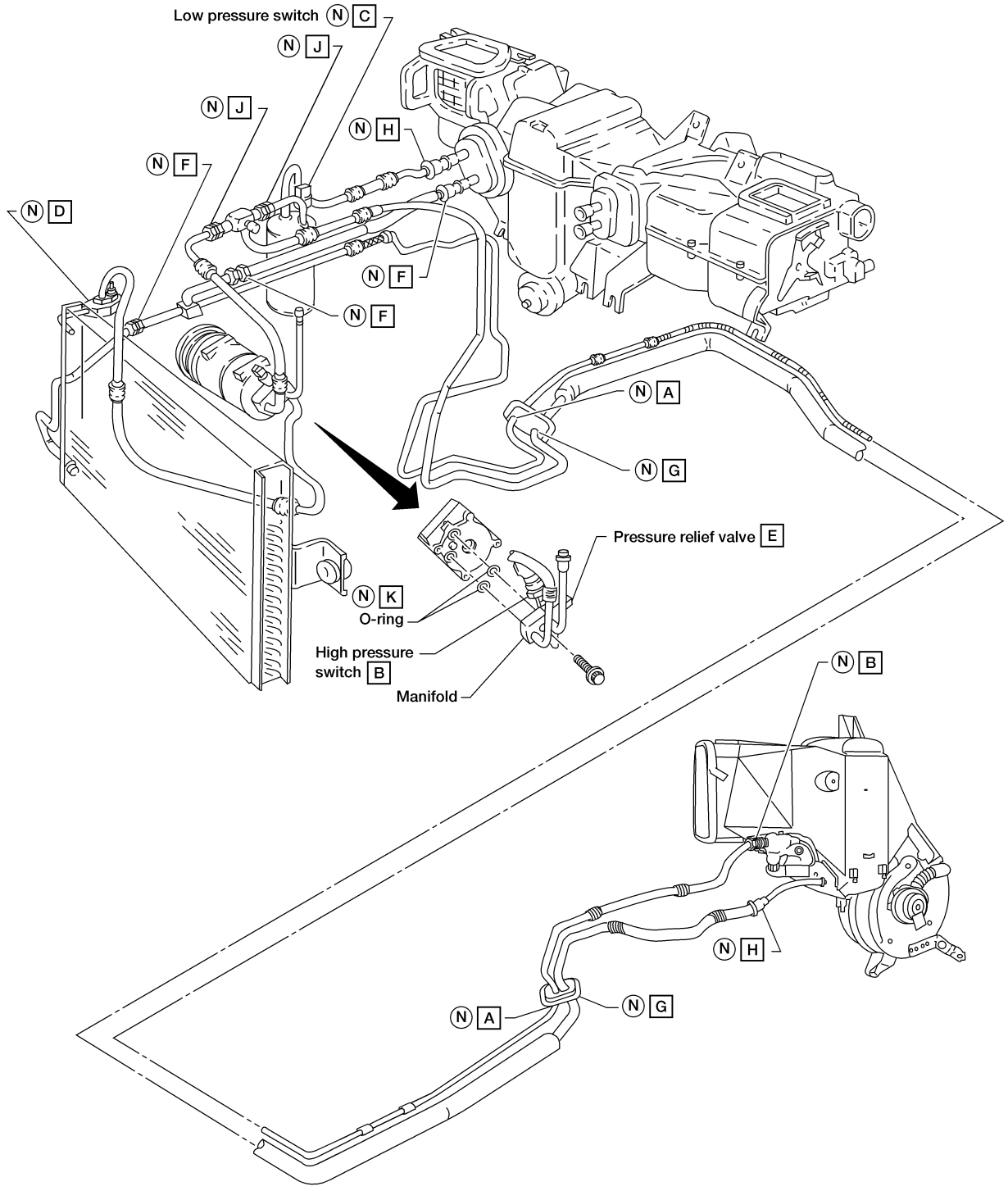
Spring lock coupling disconnected AHA430A

O-RING AND REFRIGERANT CONNECTION

=NDHA0063S02

Models with Rear A/C

SEC. 271 • 274 • 276

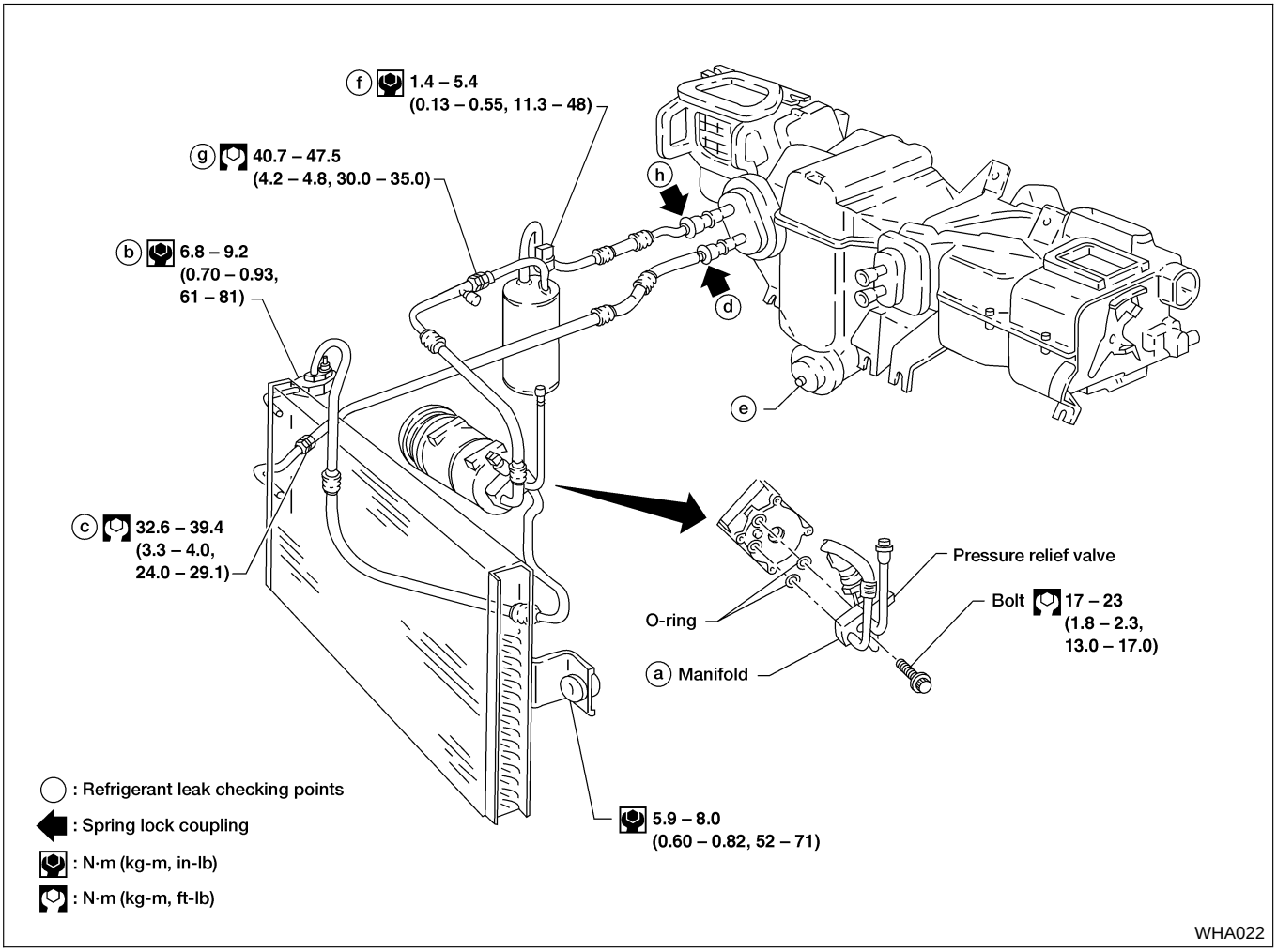


N : New type refrigerant connection

□ : O-ring size

WHA216

Models without Rear A/C

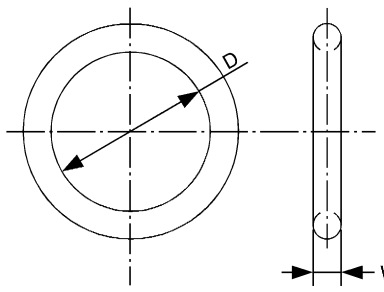


CAUTION:

Refrigerant connections in some systems use different O-ring configurations. Do not confuse O-rings since they are not interchangeable. If a wrong O-ring is installed, refrigerant will leak at, or around, the connection.

O-Ring Part Numbers and Specifications

NDHA0063S0201



SHA814E

Connection type	O-ring size	Part number*	D mm (in)	W mm (in)
New	A	92477 7B003	6.45 (0.2539)	2.62 (0.1031)
New	B	92477 0B000	7.37 (0.2902)	1.81 (0.0713)
New	C	92477 0B003	8.03 (0.3161)	1.96 (0.0772)
New	D	92477 7B001	9.19 (0.3618)	2.62 (0.1031)
New	E	92477 7B004	9.25 (0.3642)	1.78 (0.0701)
New	F	92477 0B001	10.16 (0.4000)	1.85 (0.0728)
New	G	92477 7B005	11.60 (0.4567)	2.62 (0.1031)
New	H	92477 0B002	12.93 (0.5091)	1.86 (0.0732)
New	J	92477 7B002	15.67 (0.6169)	1.93 (0.0760)
New	K	92785 0B700	20.25 (0.7972)	3.53 (0.1390)

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

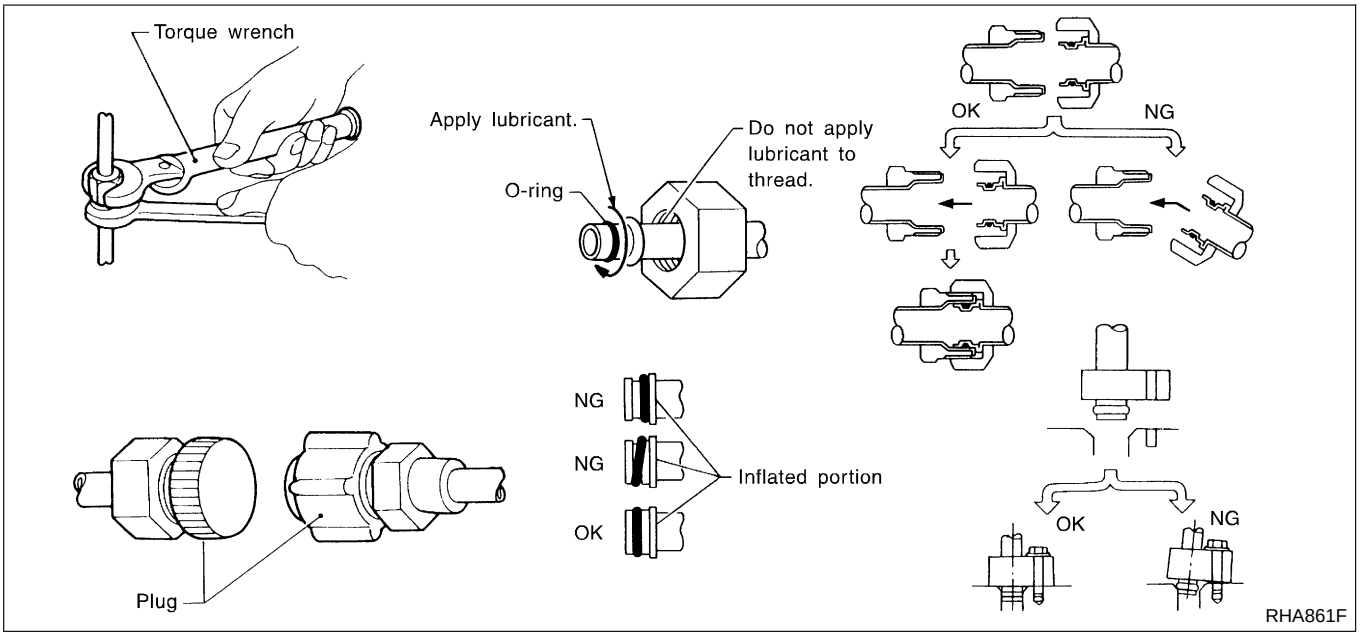
WARNING:

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

CAUTION:

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

- **When the compressor is removed, store it in the same position as it is when mounted on the car. Failure to do so will cause lubricant to enter the low pressure chamber.**
- **When connecting tubes, always use a torque wrench and a back-up wrench.**
- **After disconnecting tubes, immediately plug all openings to prevent entry of dirt and moisture.**
- **When installing an air conditioner in the vehicle, connect the pipes as the final stage of the operation. Do not remove the seal caps of pipes and other components until just before required for connection.**
- **Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.**
- **Thoroughly remove moisture from the refrigeration system before charging the refrigerant.**
- **Always replace used O-rings.**
- **When connecting tube, apply lubricant to circle of the O-rings shown in illustration. Be careful not to apply lubricant to threaded portion.**
  Lubricant name: Nissan A/C System Oil Type F
  Part numbers*: KLH00-PAGQU and KLH00-PAGQF
- **O-ring must be closely attached to dented portion of tube.**
- **When replacing the O-ring, be careful not to damage O-ring and tube.**
- **Connect tube until you hear it click, then tighten the nut or bolt by hand until snug. Make sure that the O-ring is installed to tube correctly.**
- **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.**
  ***: Always check with the Parts Department for the latest parts information**



Precautions for Servicing Compressor

NDHA0064

- **Plug all openings to prevent moisture and foreign matter from entering.**
- **When the compressor is removed, store it in the same position as it is when mounted on the car.**
- **When replacing or repairing compressor, follow "Maintenance of Lubricant Quantity in Compressor" exactly. Refer to HA-233.**
- **Keep friction surfaces between clutch and pulley clean. If the surface is contaminated, with lubricant, wipe it off by using a clean waste cloth moistened with thinner.**

- **After compressor service operation, turn the compressor shaft by hand more than five turns in both directions. This will equally distribute lubricant inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for one hour.**
- **After replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation.**

Precautions for Service Equipment

NDHA0065

RECOVERY/RECYCLING EQUIPMENT

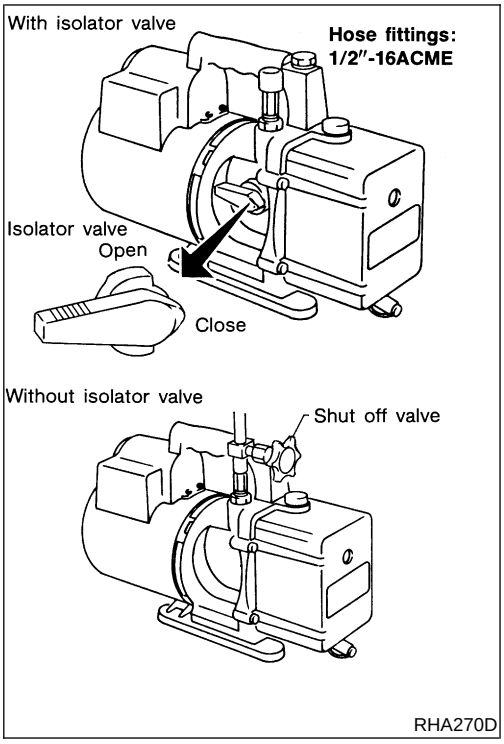
NDHA0065S01

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

ELECTRONIC LEAK DETECTOR

NDHA0065S02

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



VACUUM PUMP

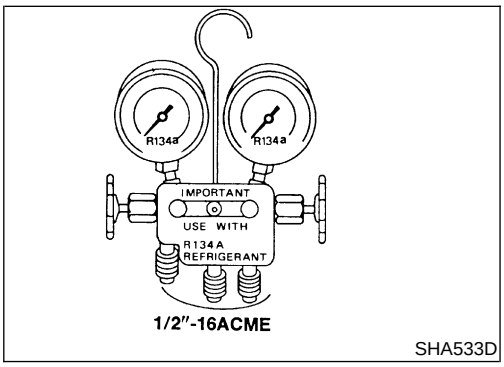
NDHA0065S03

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 lubricating oil may migrate.

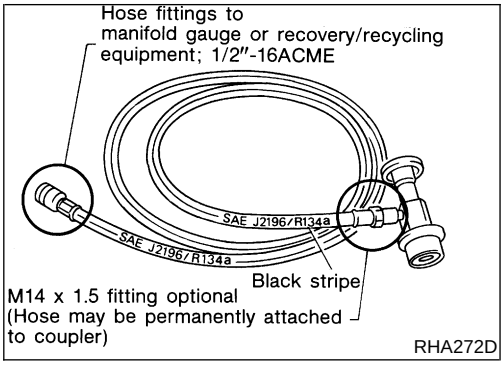
Some one-way valves open when vacuum is applied and close under a no vacuum condition. Such valves may restrict the pump's ability to pull a deep vacuum and are not recommended.



MANIFOLD GAUGE SET

NDHA0065S04

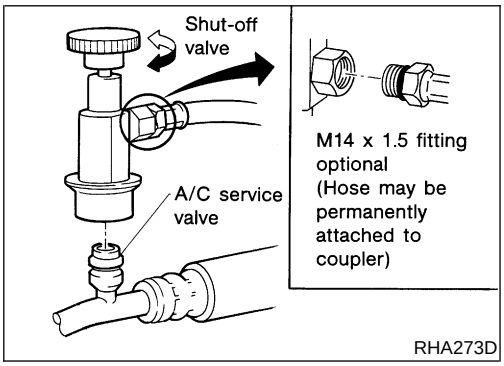
Be certain that the gauge face indicates R-134a or 134a. Make sure the gauge set has 1/2″-16 ACME threaded connections for service hoses. Confirm the set has been used only with refrigerant HFC-134a (R-134a) along with specified lubricant.



SERVICE HOSES

NDHA0065S05

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

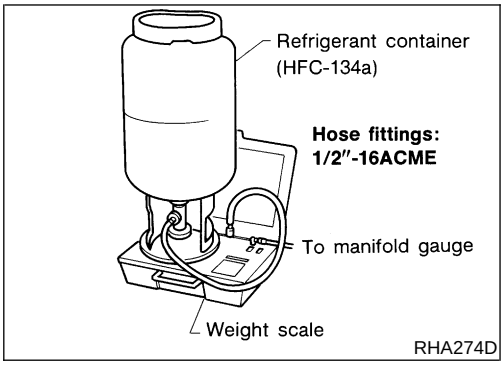


SERVICE COUPLERS

NDHA0065S06

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

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



REFRIGERANT WEIGHT SCALE

NDHA0065S07

Verify that no refrigerant other than HFC-134a (R-134a) and specified lubricants have been used with the scale. If the scale controls refrigerant flow electronically, the hose fitting must be 1/2″-16 ACME.

Calibrate the scale every 3 months.

CALIBRATING ACR4 WEIGHT SCALE

NDHA0065S10

Calibrate the scale every 3 months.

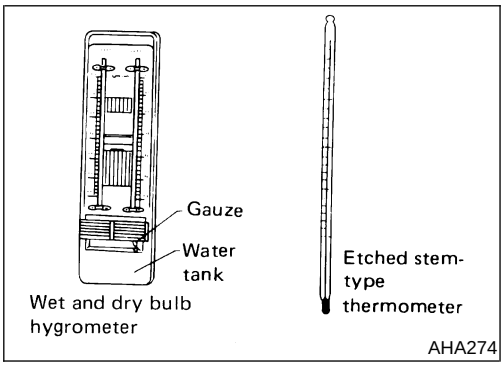
To calibrate the weight scale on the ACR4 (J-39500–NI):

1. Press **Shift/Reset** and **Enter** at the same time.
2. Press **8787. "A1"** will be displayed.
3. Remove all weight from the scale.
4. Press **0**, then press **Enter. "0.00"** will be displayed and changed to **"A2"**.
5. Place a known weight (dumbbell or similar weight), between 10 and 19 lbs., on the center of the weight scale.
6. Enter the known weight using 4 digits. (Example 10 lbs = 10.00, 10.5 lbs = 10.50)
7. Press **Enter** — the display returns to the vacuum mode.
8. Press **Shift/Reset** and **Enter** at the same time.
9. Press **6** — the known weight on the scale is displayed.
10. Remove the known weight from the scale. "0.00" will be displayed.
11. Press **Shift/Reset** to return the ACR4 to the program mode.

CHARGING CYLINDER

NDHA0065S08

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



THERMOMETER AND HYGROMETER

NDHA0065S09

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

Wiring Diagrams and Trouble Diagnosis

NDHA0066

When you read wiring diagrams, refer to the followings:

- "HOW TO READ WIRING DIAGRAMS", ***GI-10***
- "POWER SUPPLY ROUTING", ***EL-10***

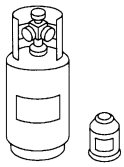
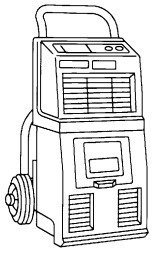
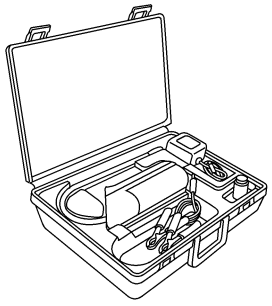
When you perform trouble diagnosis, refer to the followings:

- "HOW TO FOLLOW TEST GROUP IN TROUBLE DIAGNOSIS", ***GI-34***
- "HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT", ***GI-23***

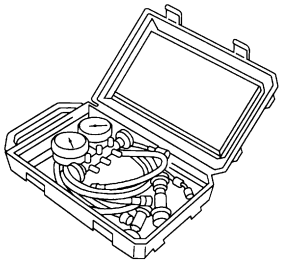
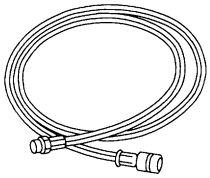
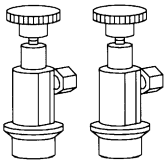
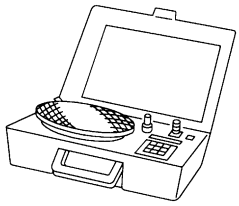
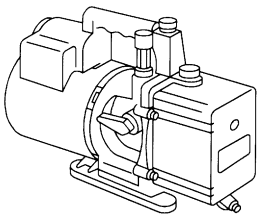
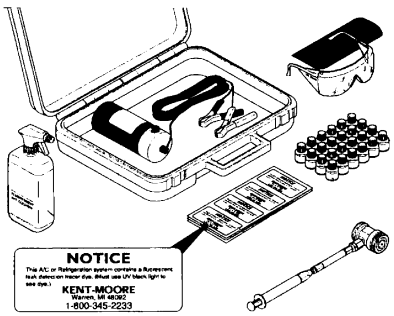
HFC-134a (R-134a) Service Tools and Equipment

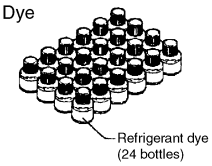
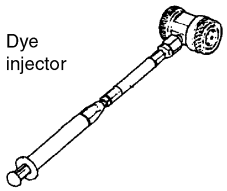
=NDHA0068

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	
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-PAGQU KLH00-PAGQF (—) Nissan A/C System Oil Type F	 NT197	Type: Poly alkylene glycol oil (PAG), type F Application: HFC-134a (R-134a) swash plate (piston) compressors (Nissan only) Lubricity: 206 mℓ (7.0 US fl oz, 7.3 Imp fl oz) 295 mℓ (10.0 US fl oz, 10.4 Imp fl oz)
(J-39500-NI) Recovery/Recycling Recharging equipment (ACR4)	 NT195	Function: Refrigerant Recovery and Recycling and Recharging
(J-41995) Electronic refrigerant leak detector	 AHA281A	Function: Checks for refrigerant leaks.

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

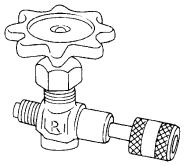
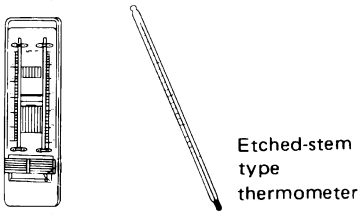
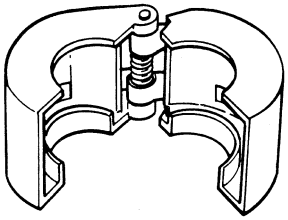
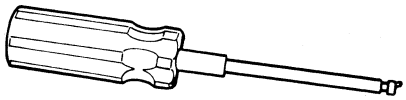
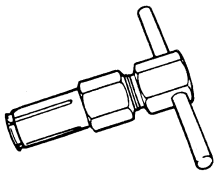
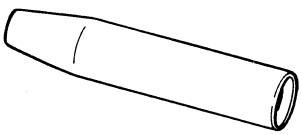
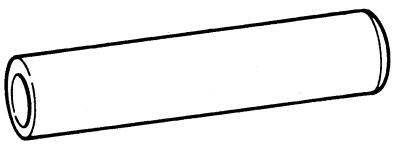
Tool number (Kent-Moore No.) Tool name	Description	
(J-39183) Manifold gauge set (with hoses and couplers)	 NT199	Identification: ● The gauge face indicates R-134a. Fitting size: Thread size ● 1/2″-16 ACME
Service hoses ● High side hose (J-39501-72) ● Low side hose (J-39502-72) ● Utility hose (J-39476-72)	 NT201	Hose color: ● Low hose: Blue with black stripe ● High hose: Red with black stripe ● Utility hose: Yellow with black stripe or green with black stripe Hose fitting to gauge: ● 1/2″-16 ACME
Service couplers ● High side coupler (J-39500-20) ● Low side coupler (J-39500-24)	 NT202	Hose fitting to service hose: ● M14 x 1.5 fitting is optional or permanently attached.
(J-39650) Refrigerant weight scale	 NT200	For measuring of refrigerant Fitting size: Thread size ● 1/2″-16 ACME
(J-39649) Vacuum pump (Including the isolator valve)	 NT203	Capacity: ● Air displacement: 4 CFM ● Micron rating: 20 microns ● Oil capacity: 482 g (17 oz) Fitting size: Thread size ● 1/2″-16 ACME
(J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety glasses (J-41459) Refrigerant dye injector (J-41447) Qty. 24 R-134a refrigerant dye (J-43872) Refrigerant dye cleaner	 LHA176	Power supply: DC 12V (Battery terminal)

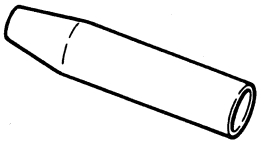
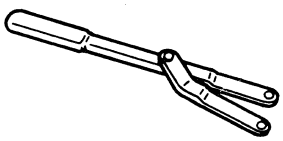
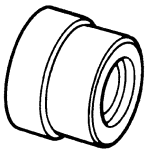
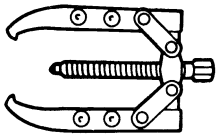
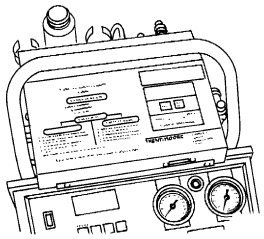
Tool number (Kent-Moore No.) Tool name	Description	
(J-42220) Fluorescent dye leak detector	 LHA177	Power supply: DC12V (Battery terminal) For checking refrigerant leak when fluorescent dye is installed in A/C system Includes: UV lamp and UV safety glasses
(J-41447) R134a fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)	 LHA178	Application: For R-134a PAG oil Container: 1/4 ounce (7.4 cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye)
(J-41459) R134a dye injector Use with J-41447, 1/4 ounce bottle	 LHA179	For injecting 1/4 ounce (7.4 cc) of Fluorescent Leak Detection Dye into A/C system
(J-43872) Dye cleaner	 LHA180	For cleaning dye spills

Commercial Service Tools

=NDHA0067

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

Tool name	Description	Note
Additional Valve	 SHA898C	For discharging, evacuating and charging refrigerant
Thermometer and hygrometer	 SHA900C	For checking temperature and humidity
Spring lock coupling remover	 AHA283	For disconnecting spring lock coupling ● 3/8″ ● 1/2″ ● 5/8″ ● 3/4″
Snap ring remover	 AHA284	For removing snap rings from compressor
Shaft seal remover	 AHA285	For removing shaft seal from compressor
Shaft seal protector	 AHA286	For protecting compressor shaft seal during shaft seal installation
Shaft seal installer	 AHA287	For installing compressor shaft seal

Tool name	Description	Note
Coil remover	 AHA288	For removing compressor magnet clutch coil
Spanner wrench	 AHA289	For removing compressor clutch hub retaining bolt
Coil pressing tool	 AHA290	For installing compressor magnet clutch coil
Puller	 AHA291	For removing and installing compressor magnet clutch coil
Refrigerant Identifier Equipment	 NT765	Checks refrigerant purity and for system contamination

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

Refrigeration System

REFRIGERATION CYCLE

NDHA0069

Refrigerant Flow

NDHA0069S01

The refrigerant flows in the standard pattern, that is, through the compressor, the condenser, orifice tube and/or thermal expansion valve, through the evaporator, the accumulator (from orifice tube), and back to the compressor. The refrigerant evaporation through the evaporator coil is controlled by an orifice tube or an externally equalized expansion valve, located outside the evaporator case.

Freeze Protection

NDHA0069S02

Under normal operating conditions, when the A/C is switched on, the compressor runs continuously, and the evaporator pressure, and therefore temperature, is controlled by the compressor to prevent freeze up.

Refrigerant System Protection

NDHA0069S03

High-pressure switch

NDHA0069S0301

The refrigerant system is protected against excessively high pressure by a high-pressure switch, located on the end of the compressor. If the system pressure rises above the specifications, the high-pressure switch opens to interrupt the compressor operation and a set of contacts close to switch the cooling fan on high. Refer to “High Pressure Switch”, ***EC-561*** and HA-223.

Low-pressure switch

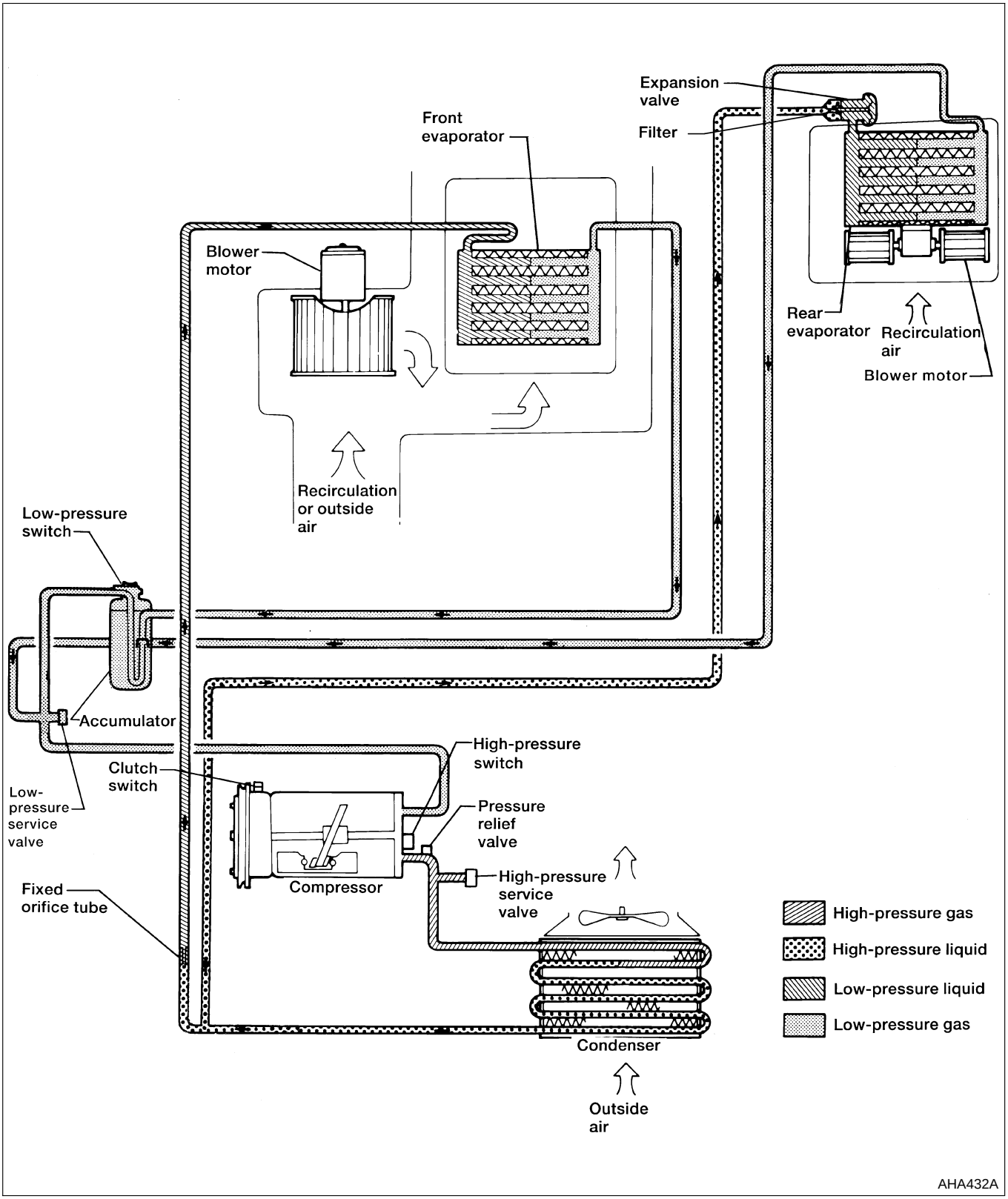
NDHA0069S0303

The refrigerant system is protected against excessively low pressure by the low-pressure switch, located on the accumulator. If the system pressure falls below the specifications, the low-pressure switch opens to interrupt the compressor operation. When the outside temperature is below 4°C (40°F) the low pressure switch opens to interrupt the compressor operation. Refer to HA-223.

Pressure Relief Valve

NDHA0069S0302

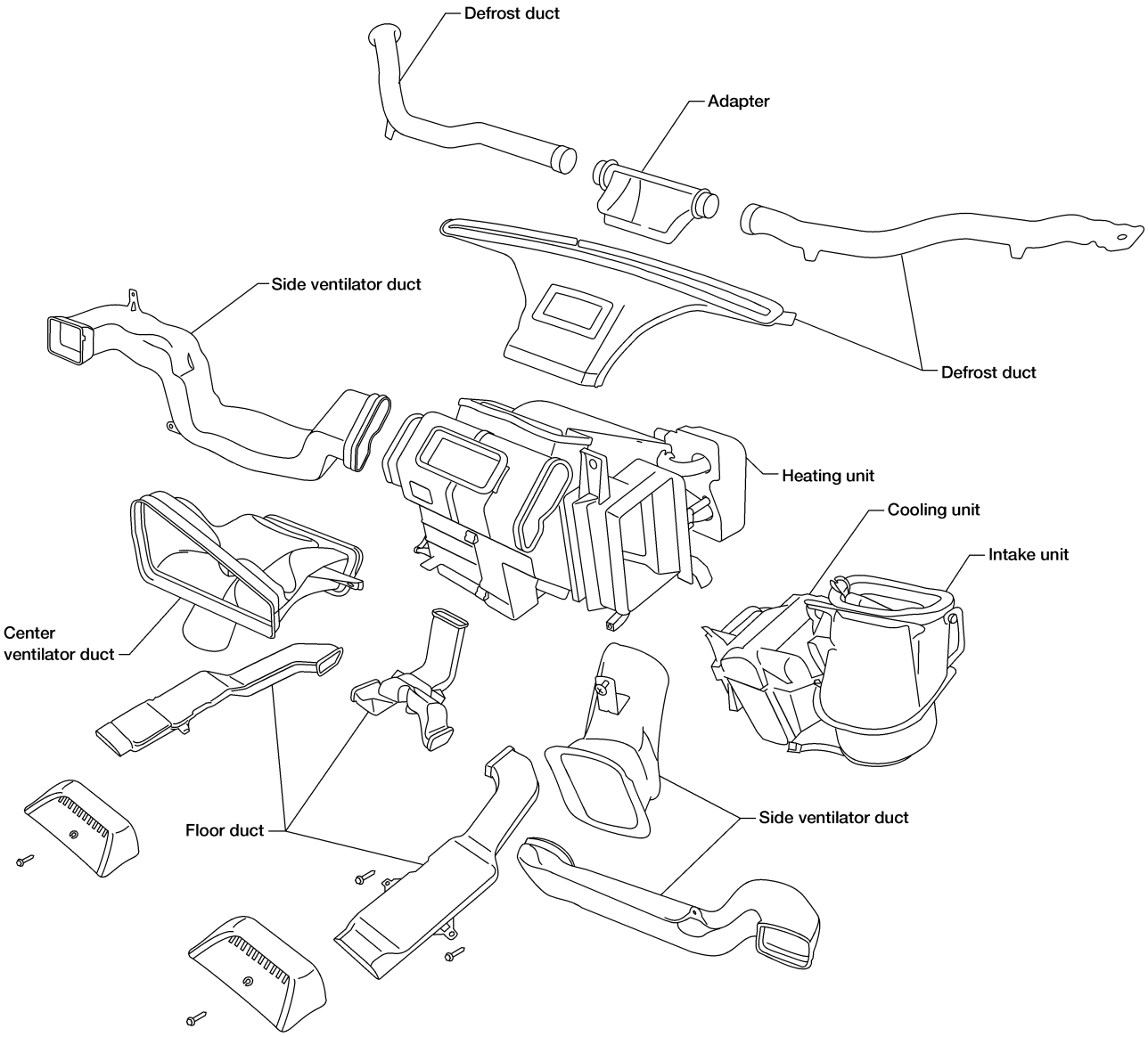
The refrigerant system is also protected by a pressure relief valve located on the flexible high pressure hose near the compressor. When the pressure of refrigerant in the system increases to an abnormal level [more than 3,727 kPa (38 kg/cm^2, 540 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.


Expansion valve
Filter
Front evaporator
Blower motor
Rear evaporator
Recirculation air
Blower motor
Recirculation or outside air
Low-pressure switch
Accumulator
Clutch switch
Low-pressure service valve
High-pressure switch
Pressure relief valve
High-pressure service valve
Compressor
Fixed orifice tube
Condenser
Outside air
High-pressure gas
High-pressure liquid
Low-pressure liquid
Low-pressure gas
AHA432A

Component Layout

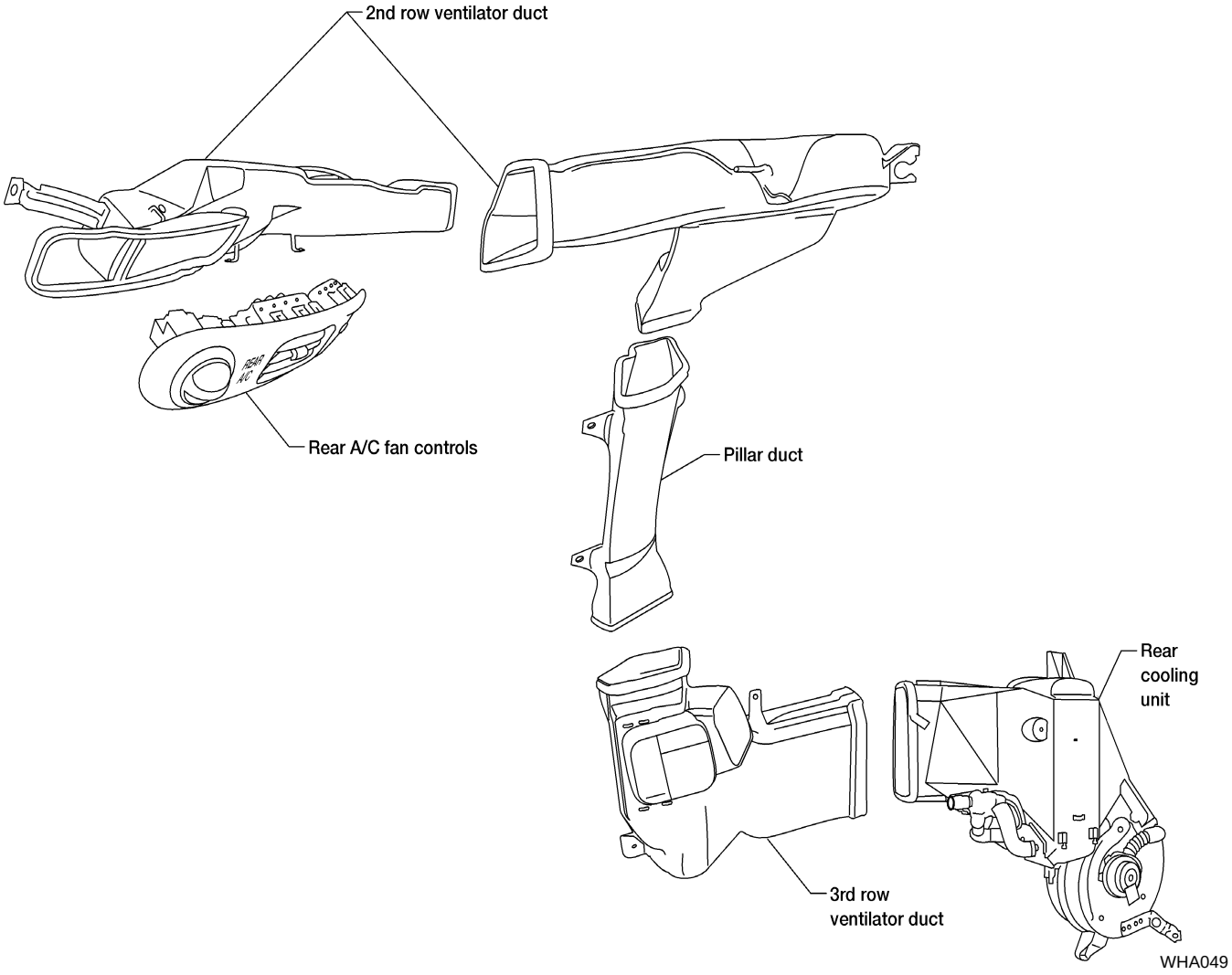
NDHA0071

SEC. 270 • 271 • 272 • 273 • 685
Front heating and A/C unit



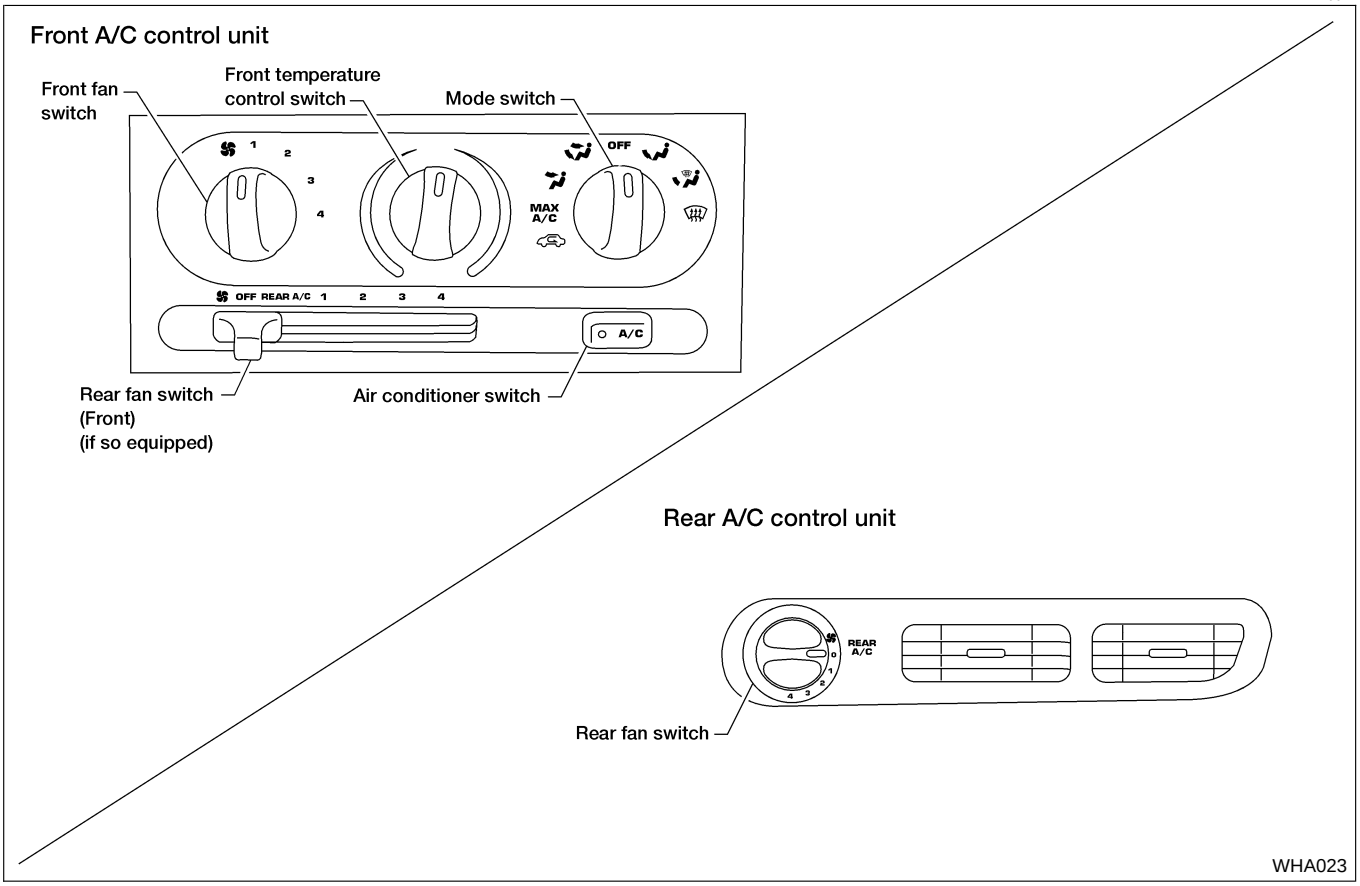
AHA405A

SEC. 270 • 271
Rear A/C unit



Control Operation

NDHA0072



FRONT FAN SWITCH

NDHA0072S01

Manual control of the front blower speed can be obtained by rotating the front fan switch. The fan symbol ( ) will be shown in the display screen.

REAR FAN SWITCH

NDHA0072S02

When the rear fan switch (front) is in the OFF position, the rear blower motor cannot operate.
When the rear fan switch (front) is in the REAR position, it allows the rear fan switch to control the rear blower speed. In any other position (1–4), the rear fan switch (front) controls the rear blower speed regardless of the rear fan switch position.

MODE SWITCH

NDHA0072S03

These switches control the direction of air flow through the front discharge outlets.
DEF ( ) or F/D ( ) positions the front intake door to the outside air FRESH position. The compressor operates at ambient temperature approx. 4°C (40°F) or above.

FRONT TEMPERATURE CONTROL SWITCH

NDHA0072S04

This switch allows adjustment of the temperature of the air through the front discharge outlets.

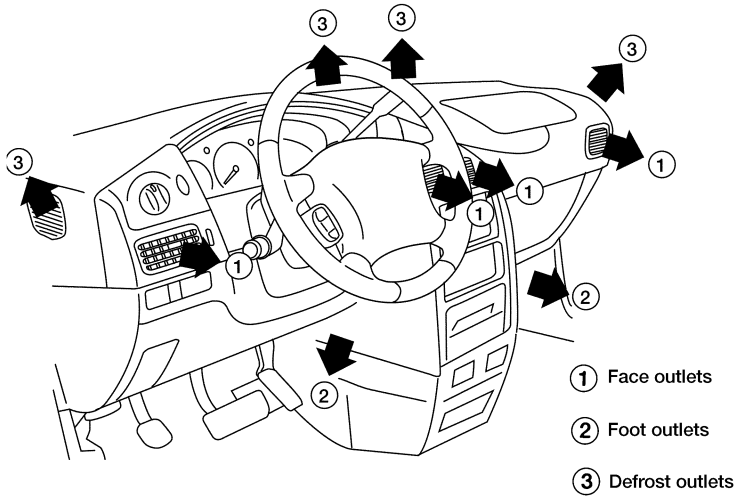
AIR CONDITIONER SWITCH

NDHA0072S05

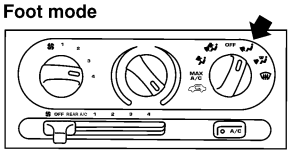
This switch controls A/C operation when any mode switch is selected except OFF. The A/C indicator will light and stay ON when A/C is selected, until the air conditioner switch in turned off or OFF mode is selected.
The air conditioner cooling function operates only when the engine is running.

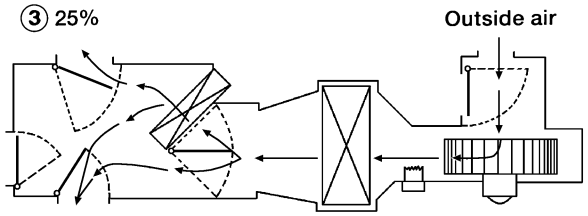
Discharge Air Flow

NDHA0073

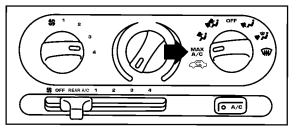


Foot mode

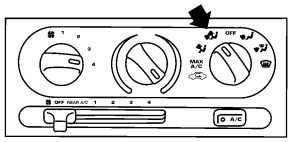


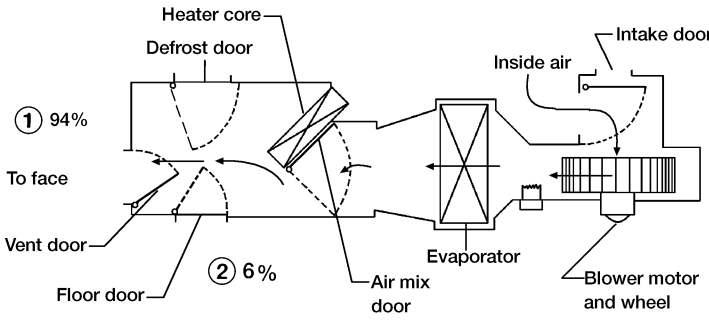


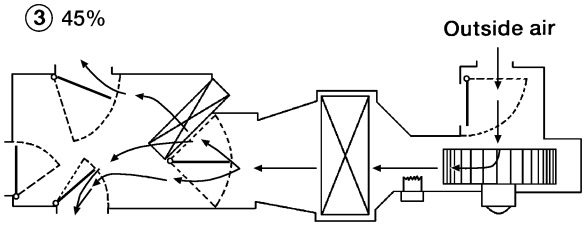
Face mode



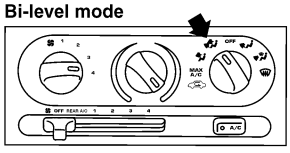
Foot and defrost mode



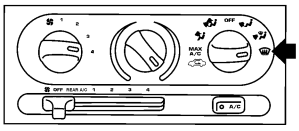


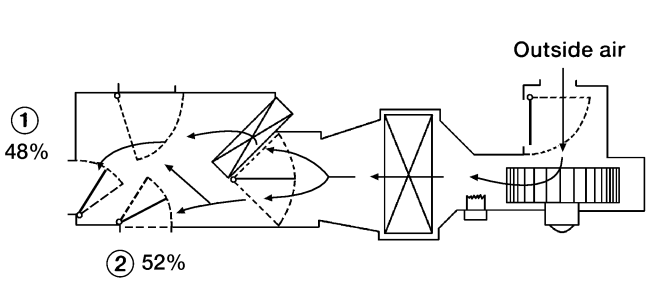


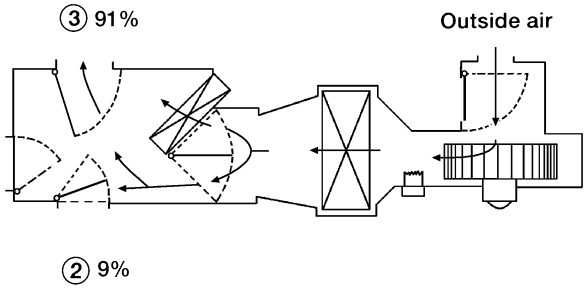
Bi-level mode



Defrost mode







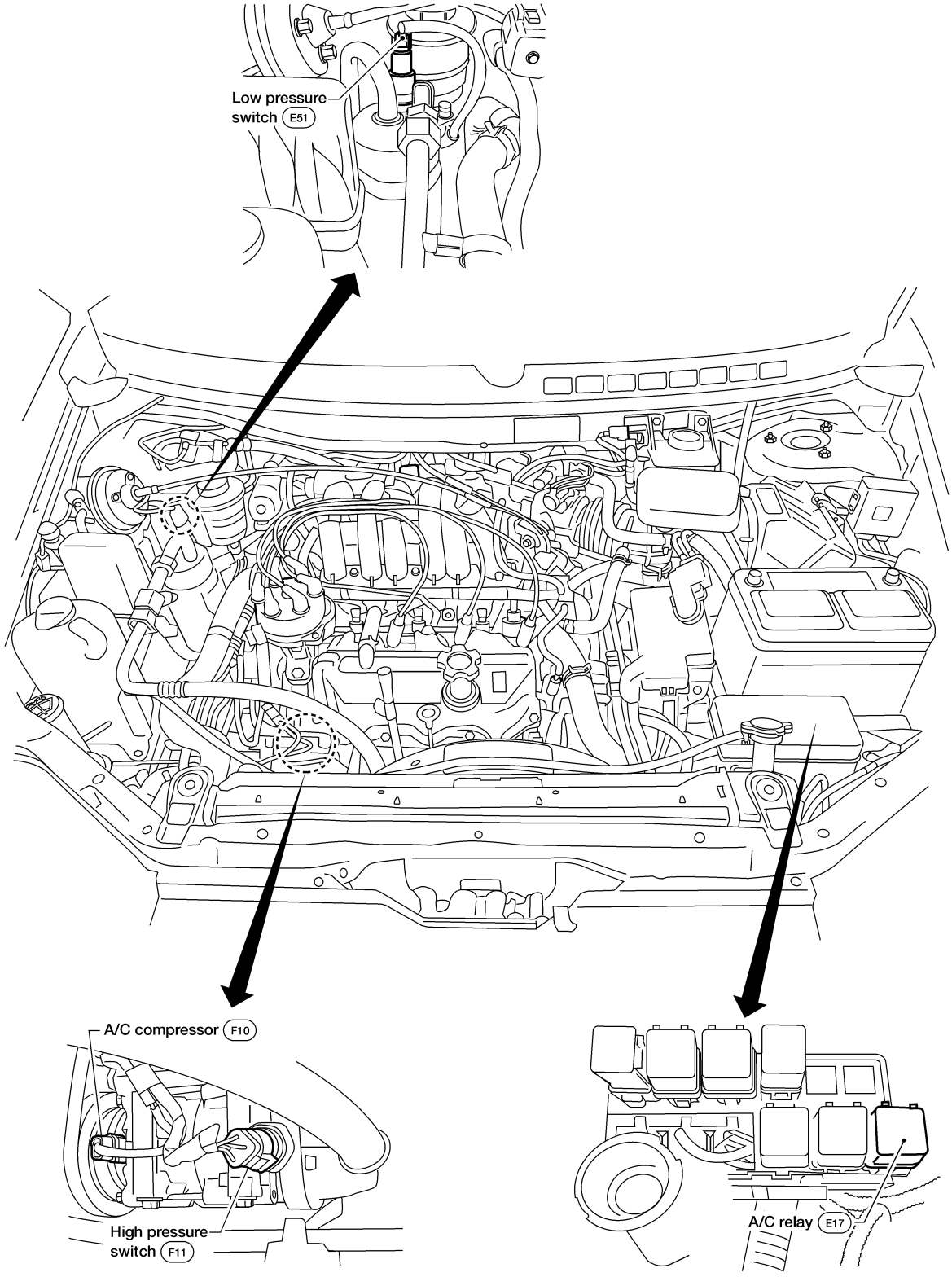
WHA082

Component Location

NDHA0085

NDHA0085S01

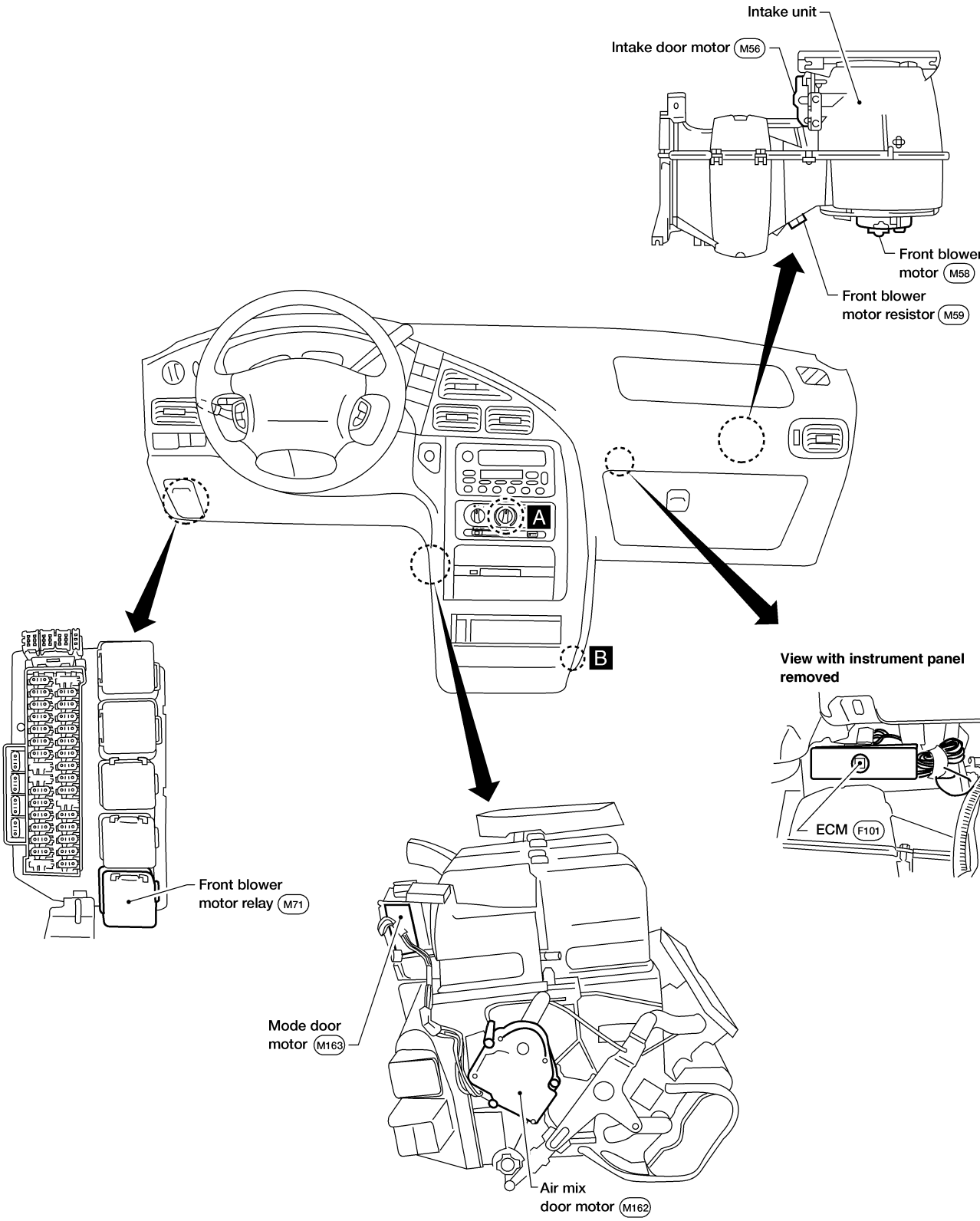
ENGINE COMPARTMENT



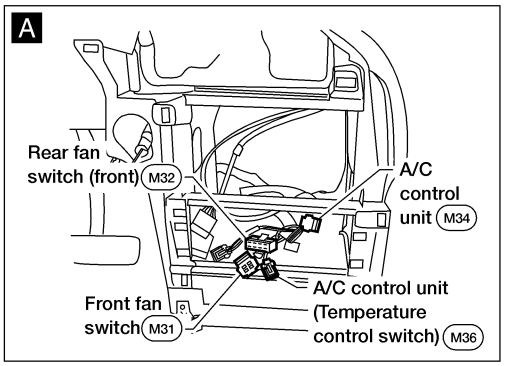
AHA334A

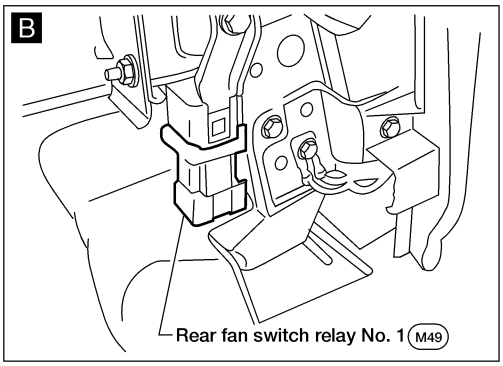
PASSENGER COMPARTMENT

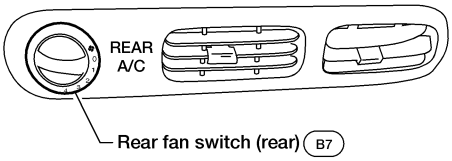
NDHA0085S02

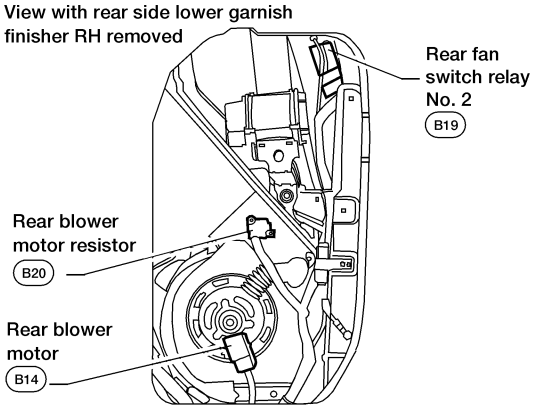


AHA398A


A
Rear fan switch (front) M32
A/C control unit M34
A/C control unit (Temperature control switch) M36
Front fan switch M31


B
Rear fan switch relay No. 1 M49

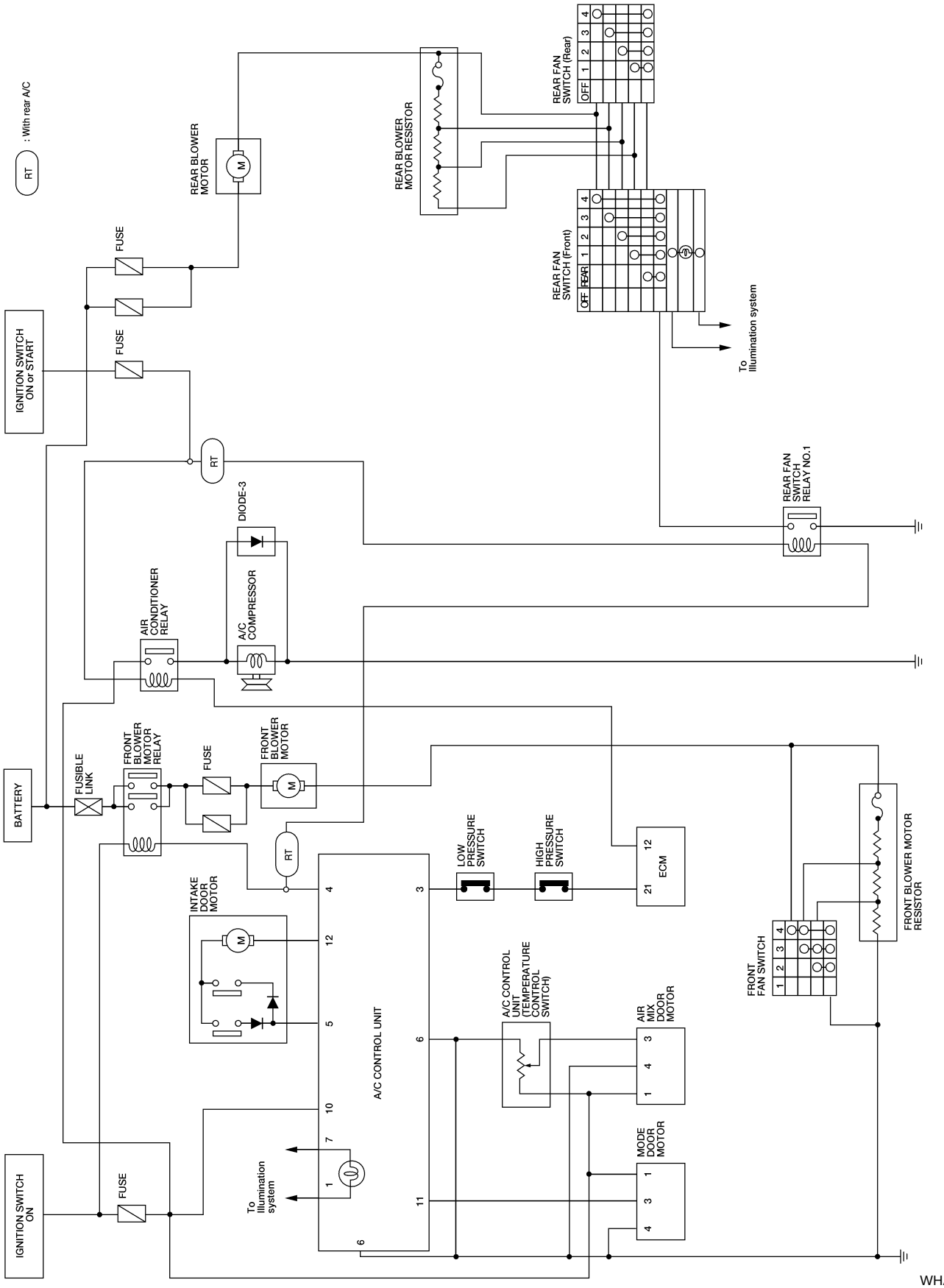

REAR A/C
Rear fan switch (rear) B7


View with rear side lower garnish finisher RH removed
Rear fan switch relay No. 2 B19
Rear blower motor resistor B20
Rear blower motor B14

WHA083

Circuit Diagram — Manual Air Conditioner

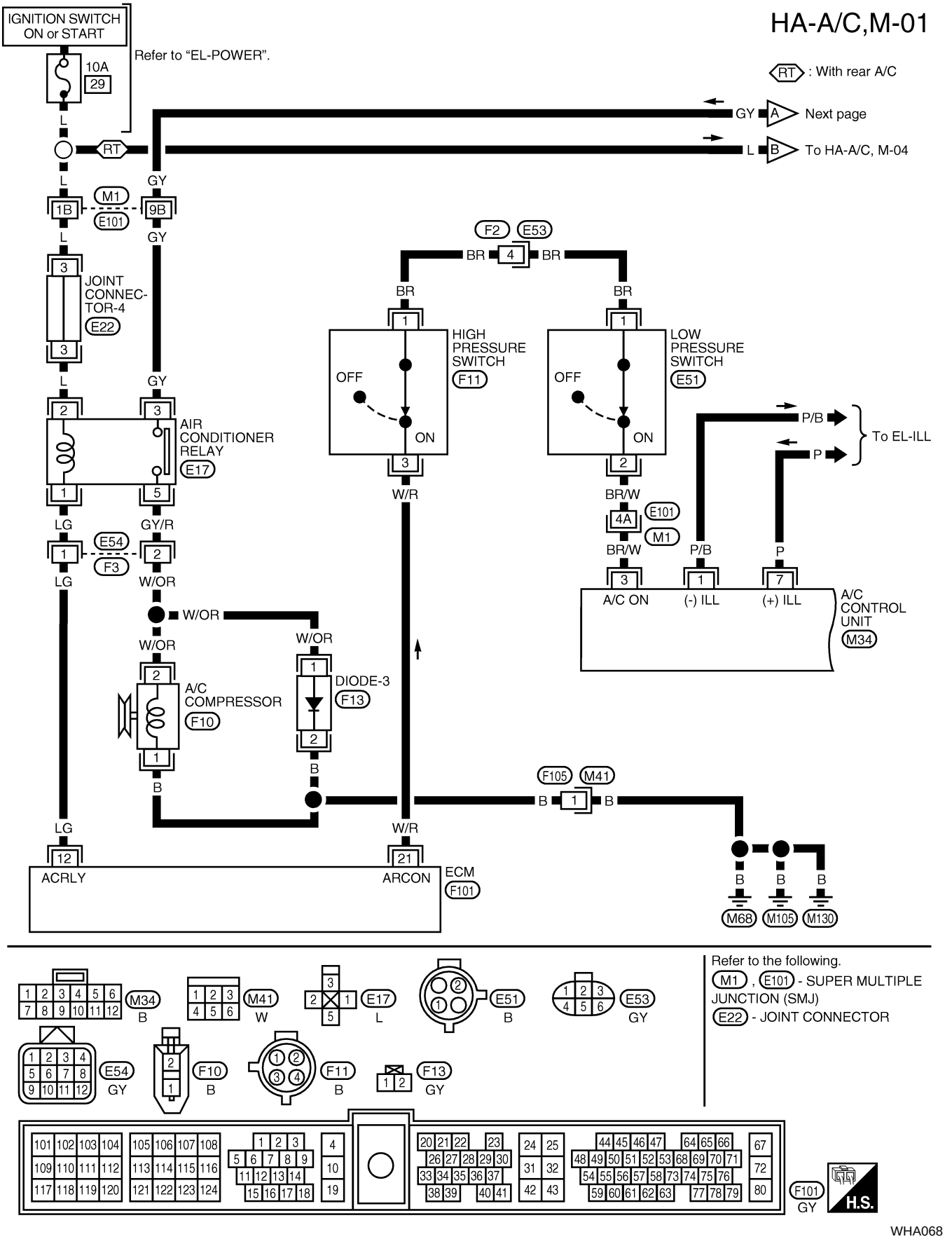
NDHA0087



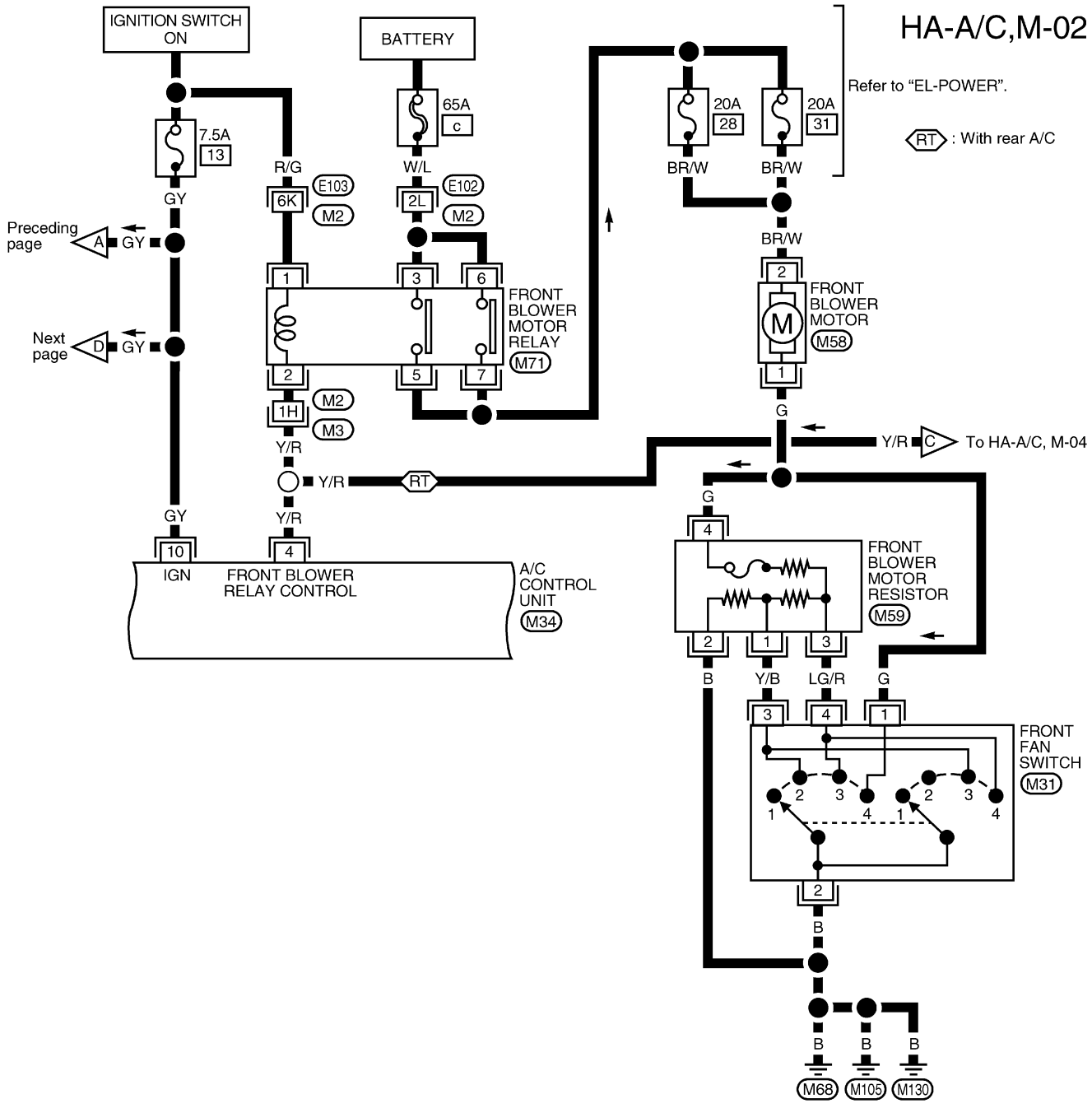
WHA209

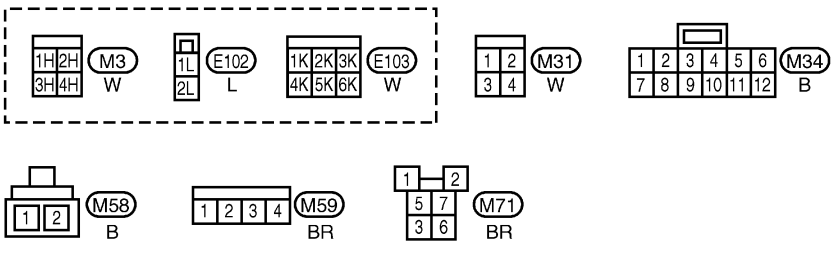
Wiring Diagram — A/C, M —

NDHA0088



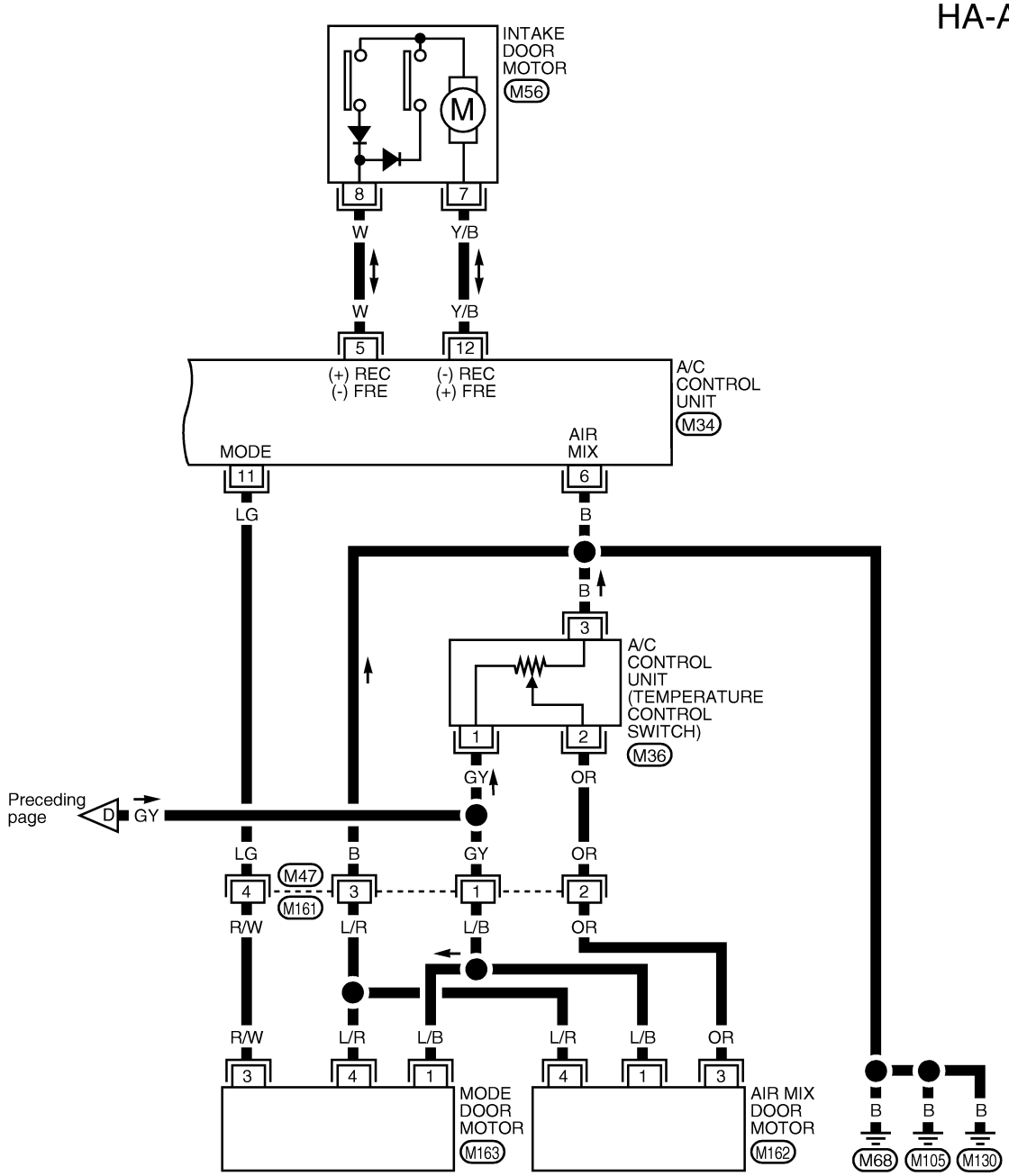
WHA068

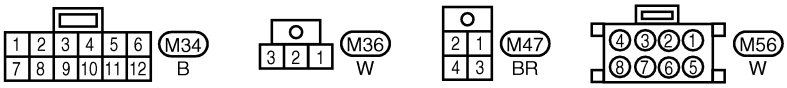

HA-A/C,M-02
IGNITION SWITCH ON
BATTERY
7.5A 13
65A c
20A 28
20A 31
Refer to "EL-POWER".
RT : With rear A/C
R/G
W/L
BR/W
BR/W
E103
6K
M2
E102
2L
M2
Preceding page
A
GY
Next page
D
GY
FRONT BLOWER MOTOR RELAY
M71
FRONT BLOWER MOTOR
M58
1H
M2
M3
Y/R
Y/R
RT
G
Y/R
C
To HA-A/C, M-04
GY
Y/R
10
4
IGN
FRONT BLOWER RELAY CONTROL
A/C CONTROL UNIT
M34
FRONT BLOWER MOTOR RESISTOR
M59
B
Y/B
LG/R
G
FRONT FAN SWITCH
M31
B
M68
M105
M130

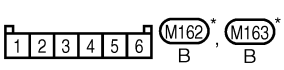

M3 W
E102 L
E103 W
M31 W
M34 B
M58 B
M59 BR
M71 BR

AHA173A

HA-A/C,M-03





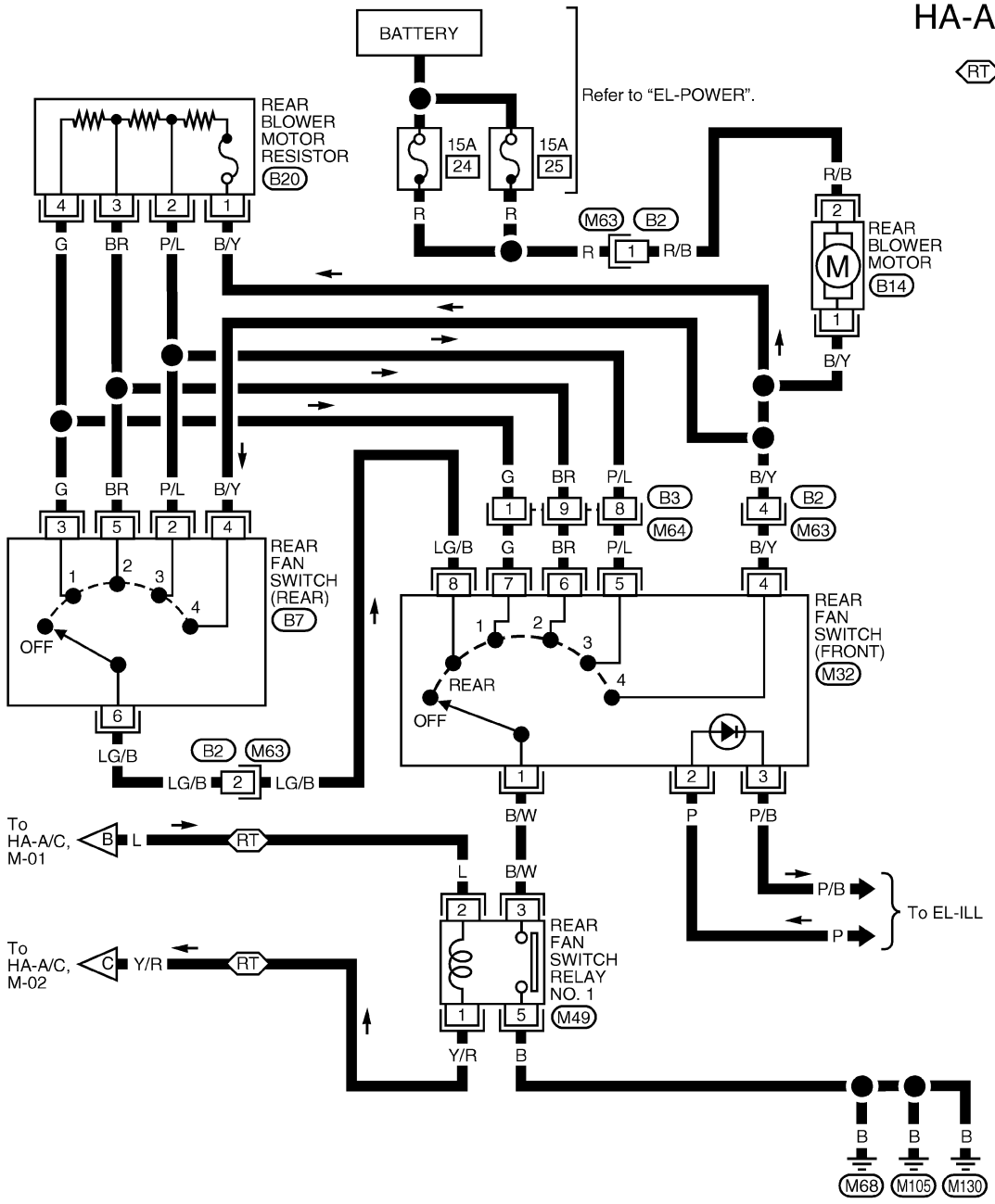


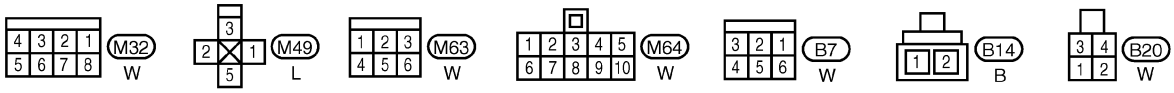
*This connector is not shown in "HARNESS LAYOUT" of EL Section.

WHA069

HA-A/C,M-04

RT : With rear A/C





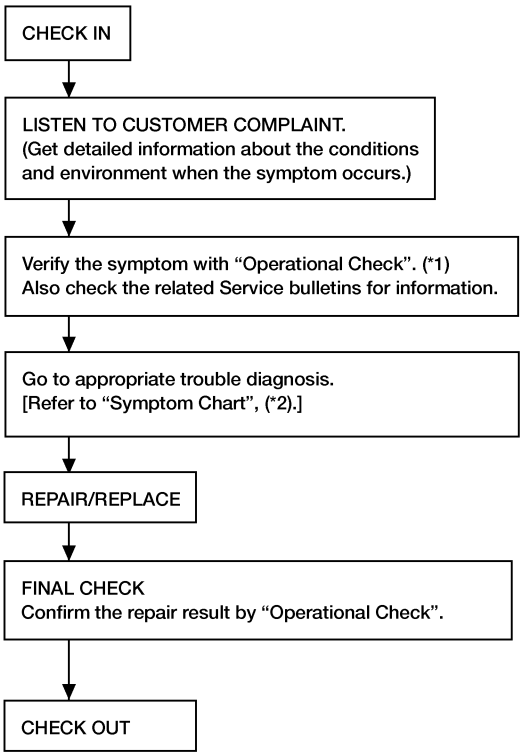
WHA210

How to Perform Trouble Diagnoses for Quick and Accurate Repair

NDHA0075

WORK FLOW

NDHA0075S01



AHA383A

*1: HA-179

*2: HA-181

Operational Check

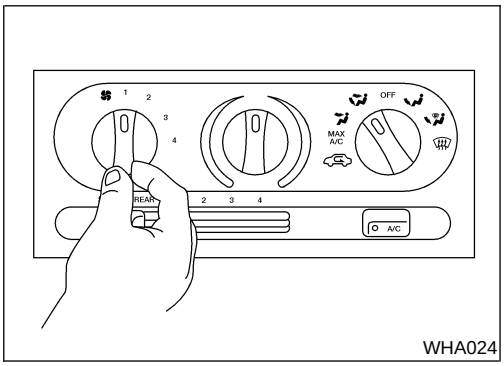
=NDHA0076

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

CONDITIONS:

NDHA0076S01

Engine running at normal operating temperature.



WHA024

PROCEDURE:

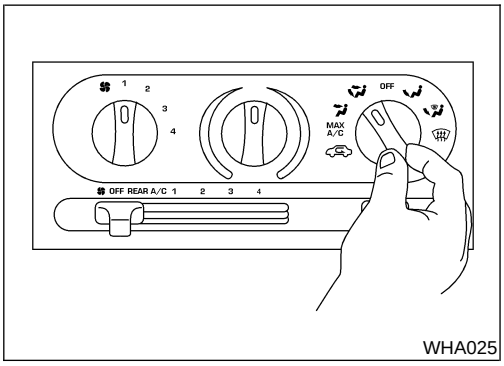
NDHA0076S02

1. Check Front Blower

NDHA0076S0201

1) Turn mode control knob to any mode position except OFF.
2) Turn fan control knob to 1-speed.
   Blower should operate on 1-speed.
3) Turn fan control knob to 2-speed.
4) Continue checking blower speed until all four speeds are checked.
5) Leave blower on 4-speed.

If NG, refer to HA-197 “Front Blower Motor”.
If OK, continue with the next check.



WHA025

2. Check Discharge Air

NDHA0076S0202

1) Turn mode control knob.

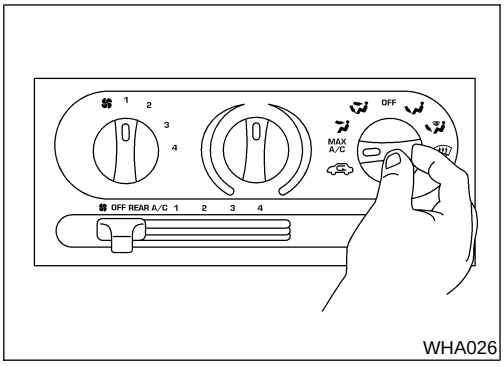
Discharge air flow

Mode control knob	Air outlet/distribution		
	Face	Foot	Defroster
	94%	6%	–
	48%	52%	–
	–	75%	25%
	–	55%	45%
	–	9%	91%

AHA207A

2) Confirm that discharge air comes out according to the air distribution table at left.
Refer to "Discharge Air Flow" in "DESCRIPTION" (HA-169).

If NG, refer to HA-189 "Mode Door Motor".
If OK, continue with the next check.



WHA026

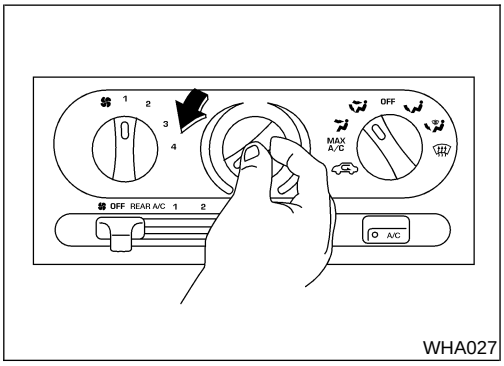
3. Check MAX A/C (Recirculation)

NDHA0076S0203

1) Turn mode control knob to MAX A/C (recirculation).
2) Listen for intake door position change (you should hear blower sound change slightly).

NOTE:
MAX A/C (recirculation) does not operate in DEF ( ) and F/D ( ) modes.

If NG, refer to HA-189 "Intake Door Motor".
If OK, continue with the next check.



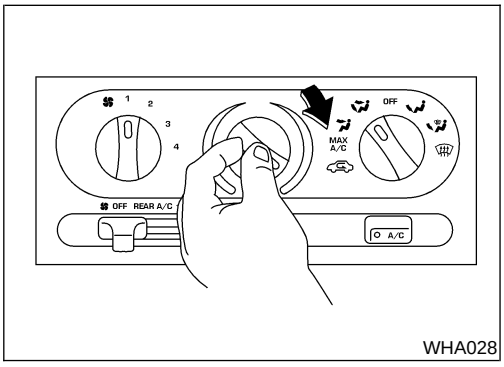
WHA027

4. Check Temperature Decrease

NDHA0076S0204

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

If NG, refer to HA-224 "Insufficient Cooling".
If OK, continue with the next check.



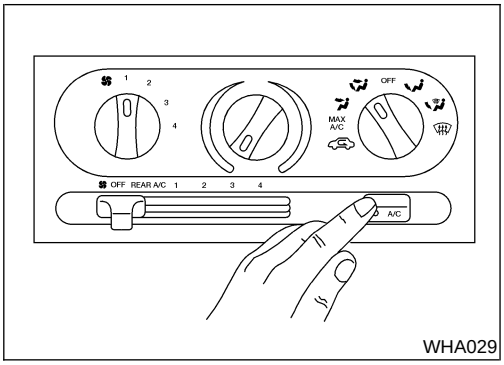
WHA028

5. Check Temperature Increase

NDHA0076S0205

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

If NG, refer to HA-229 "Insufficient Heating".
If OK, continue with the next check.



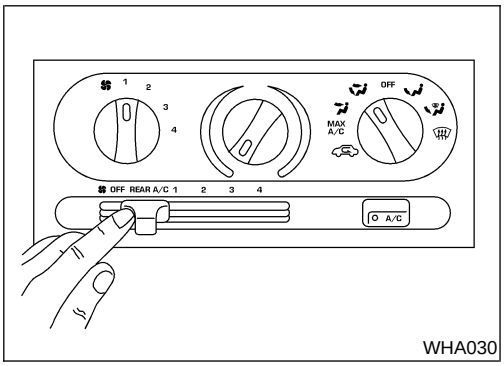
WHA029

6. Check A/C Switch

NDHA0076S0206

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

If NG, refer to HA-183 "A/C System".
If OK, continue with the next check.

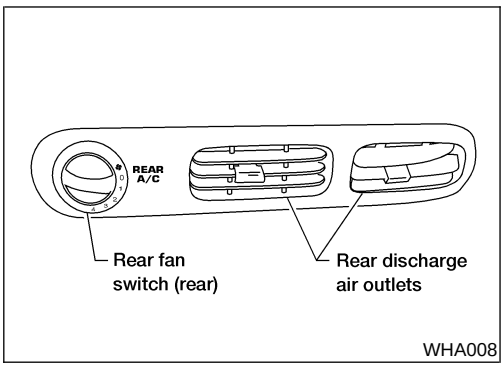


WHA030

7. Check Rear Blower

NDHA0076S0207

1) Set rear fan switch (front) to REAR position.
2) Press any mode switch except OFF.
3) Press A/C switch ON.
4) Turn rear fan switch to 1-speed.
   Blower should operate on 1-speed.
5) Confirm air flow from the rear discharge outlets.
6) Turn rear fan switch to 2-speed.
7) Continue checking blower speed until all four speeds are checked.
8) Turn rear fan switch (rear) to 0-speed (OFF).
9) Set rear fan switch (front) to 1-speed.
   Blower should operate on 1-speed.
10) Set rear fan switch (front) to 2-speed.
11) Continue checking blower speed until all four speeds are checked.



WHA008

If NG, refer to "Rear Blower Motor" (HA-206). If all operational checks are OK (symptom cannot be duplicated), refer to ***GI-24*** "Incident Simulation Tests" and perform tests as outlined to simulate driving conditions environment. If symptom appears, refer to "Symptom Chart" (HA-181) and perform applicable trouble diagnosis procedure.

Symptom Chart

NDHA0235

Symptom	Reference page	
• A/C system does not come on.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR A/C SYSTEM".	HA-183
• Air mix door does not operate normally.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR AIR MIX DOOR MOTOR".	HA-185
• Intake door does not operate normally.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR INTAKE DOOR MOTOR".	HA-189
• Mode door does not operate normally.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR MODE DOOR MOTOR".	HA-194
• Front blower motor does not rotate.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR FRONT BLOWER MOTOR".	HA-197
• Rear blower motor does not rotate when rear fan switch (front) is set to REAR position.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR REAR FAN SWITCH (FRONT)".	HA-206
• Rear blower motor does not rotate when rear fan switch (front) is set at 1 - 4 speed.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR REAR BLOWER MOTOR (1 - 4 SPEED)".	HA-208
• Magnet clutch does not engage.	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH".	HA-217

Symptom Chart (Cont'd)

Symptom	Reference page	
• Insufficient cooling	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT COOLING".	HA-224
• Insufficient heating	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT HEATING".	HA-229
• Noise	• Go to "TROUBLE DIAGNOSIS PROCEDURE FOR NOISE".	HA-230

A/C System

TROUBLE DIAGNOSIS PROCEDURE FOR A/C SYSTEM

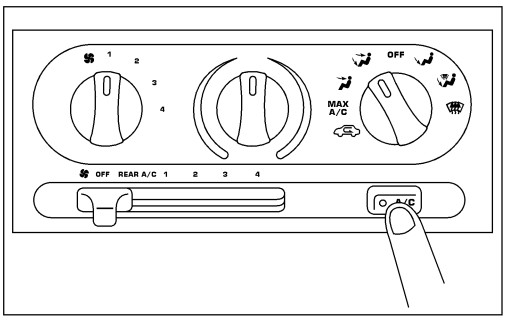
=NDHA0236

Symptom:

- **A/C system does not come on.**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – A/C switch

1) Turn mode control knob to any mode position except OFF.
2) Press air conditioner switch to turn ON air conditioner. Indicator light will come on when air conditioner is ON.

If OK (symptom cannot be duplicated), perform complete operational check (*2).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.
OK
3. Check main power supply and ground circuit. (*1)
OK
4. A/C system circuit (*2).
OK
5. Replace A/C control unit.

WHA031

*1: HA-184 *2: HA-184

MAIN POWER SUPPLY AND GROUND CIRCUIT CHECK

=NDHA0238

Power Supply Circuit Check for Manual A/C System

NDHA0238S01

Check power supply circuit for manual air conditioning system.
Refer to "POWER SUPPLY ROUTING", *EL-10*.

A/C System Circuit

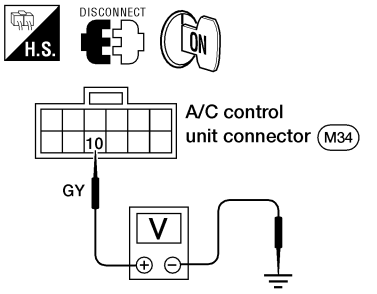
NDHA0238S02

SYMPTOM:

- A/C System does not come on.

1	CHECK POWER SUPPLY CIRCUIT FOR A/C CONTROL UNIT

1. Disconnect A/C control unit harness connector.



Voltmeter terminal		Voltage
(+)	(-)	
10	Body ground	Approx. 12V

WHA086

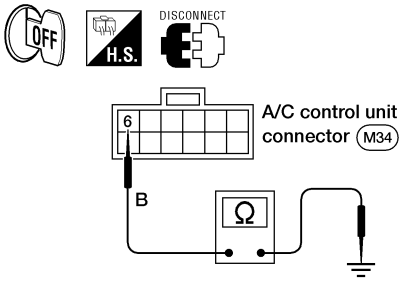
2. Connect Voltmeter from harness side.
3. Measure voltage across terminal No. 10 and body ground.

OK or NG

OK	▶	GO TO 2.
NG	▶	Check 7.5A fuse No. 10 at fuse block.

2	CHECK BODY GROUND CIRCUIT FOR A/C CONTROL UNIT

1. Disconnect A/C control unit harness connector.



Ohmmeter terminal		Continuity
(+)	(-)	
6	Body ground	Yes

Continuity should exist

WHA087

2. Connect Ohmmeter to harness side.
3. Check for continuity between terminal No. 6 and body ground.

OK or NG

OK	▶	**INSPECTION END**
NG	▶	Repair harness or connector.

CONTROL SYSTEM—A/C CONTROL UNIT

NDHA0239

The A/C control unit has a built-in microcomputer which processes information needed for air conditioner operation. The mode door motor, intake door motor, front blower motor and compressor are then controlled.

Air Mix Door

TROUBLE DIAGNOSIS PROCEDURE FOR AIR MIX DOOR MOTOR

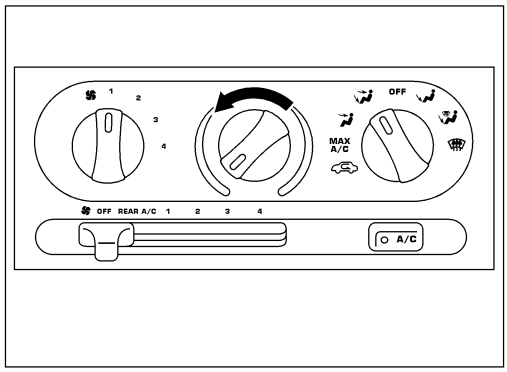
=NDHA0240

Symptom:

- **Air mix door does not operate normally.**

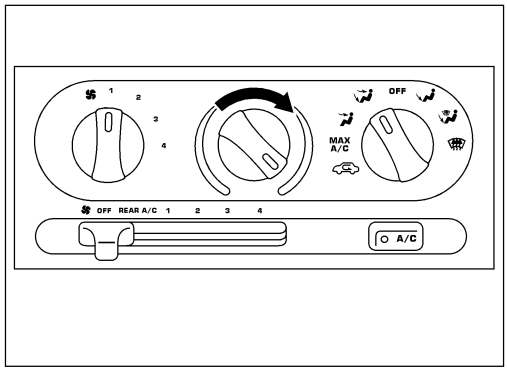
Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Temperature decrease and increase

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



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

If OK (symptom cannot be duplicated), perform complete operational check (*2).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

3. Check air mix door motor circuit. (*1)

OK

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

Yes → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

No

INSPECTION END.

WHA032

*1: HA-186 *2: HA-179 *3: HA-181

AIR MIX DOOR MOTOR CIRCUIT

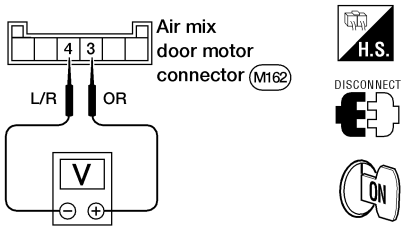
NDHA0242

Symptom:

- **Air mix door does not operate normally.**

1	CHECK TEMPERATURE CONTROL SWITCH OUTPUT VOLTAGE

Does approx. 0 - 10.5 volts exist between air mix door motor harness terminals 3 and 4 when the temperature control switch is turned from full cool to full warm or when turned from full warm to full cool?



WHA217

Temp control switch position	Terminal No. 3	Terminal No. 4	Voltage V
Full cool → Full warm	⊕	⊖	Approx. 0 - 10.5
Full warm → Full cool			

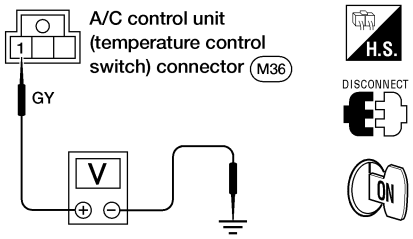
WHA206

Yes or No

Yes	▶	GO TO 5.
No	▶	GO TO 2.

2	CHECK TEMPERATURE CONTROL SWITCH POWER SUPPLY CIRCUIT

1. Disconnect A/C control unit (temperature control switch) harness connector.
2. Check voltage between A/C control unit (temperature control switch) harness terminal 1 and ground.



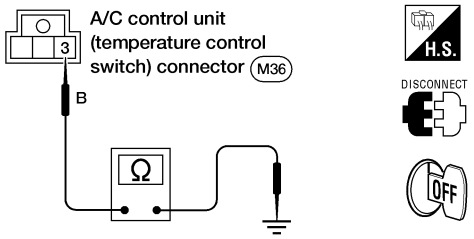
AHA360A

Does battery voltage exist?

Yes	▶	GO TO 3.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M36 ● Harness for open or short between A/C control unit (temperature control switch) and fuse

3	CHECK TEMPERATURE CONTROL SWITCH GROUND CIRCUIT

Check circuit continuity between A/C control unit (temperature control switch) harness terminal 3 and ground.



AHA361A

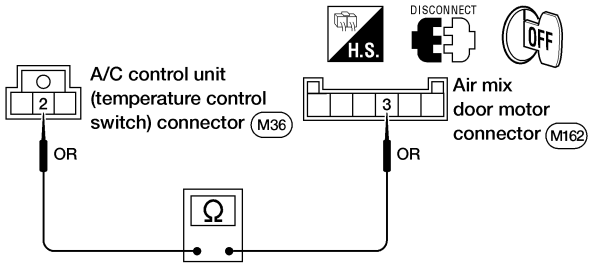
Continuity should exist.

OK or NG

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

4	CHECK CIRCUIT CONTINUITY

1. Check circuit continuity between A/C control unit (temperature control switch) harness terminal 2 and air mix door harness terminal 3.



AHA362A

Continuity should exist.

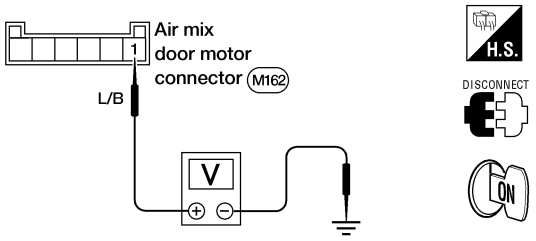
2. Also, check harness for short.

OK or NG

OK	▶	Replace A/C control unit (temperature control switch).
NG	▶	Repair harness or connectors.

5	CHECK AIR MIX DOOR MOTOR POWER SUPPLY CIRCUIT

1. Disconnect air mix door motor harness connector.
2. Check voltage between air mix door motor harness terminal 1 and ground.



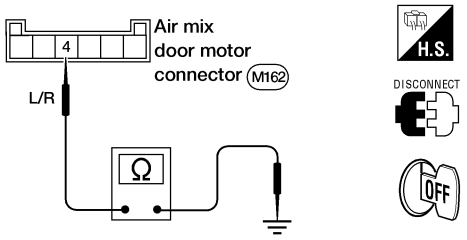
AHA363A

Does battery voltage exist?

Yes	▶	GO TO 6.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M162 ● Harness for open or short between air mix door motor and fuse

6	CHECK AIR MIX DOOR MOTOR GROUND CIRCUIT

Check circuit continuity between air mix door motor harness terminal 4 and ground.



AHA364A

Continuity should exist.

OK or NG

OK	▶	Replace air mix door motor.
NG	▶	Repair harness or connector.

Intake Door

TROUBLE DIAGNOSIS PROCEDURE FOR INTAKE DOOR MOTOR

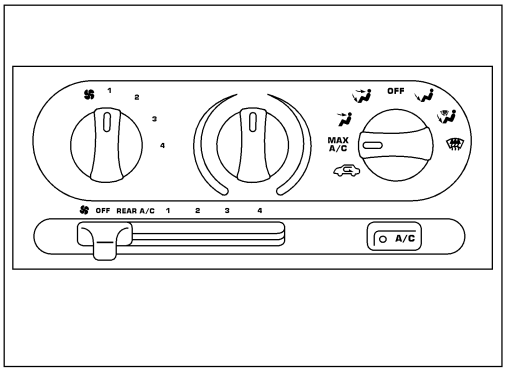
=NDHA0135

Symptom:

- **Intake door does not operate normally.**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Recirculation

1) Turn mode control knob to MAX A/C (recirculation).
2) Listen for intake door position change (you should hear sound change slightly).

If OK (symptom cannot be duplicated), perform complete operational check (*2).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

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

OK

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

Yes → Go to Trouble Diagnosis for related symptom.

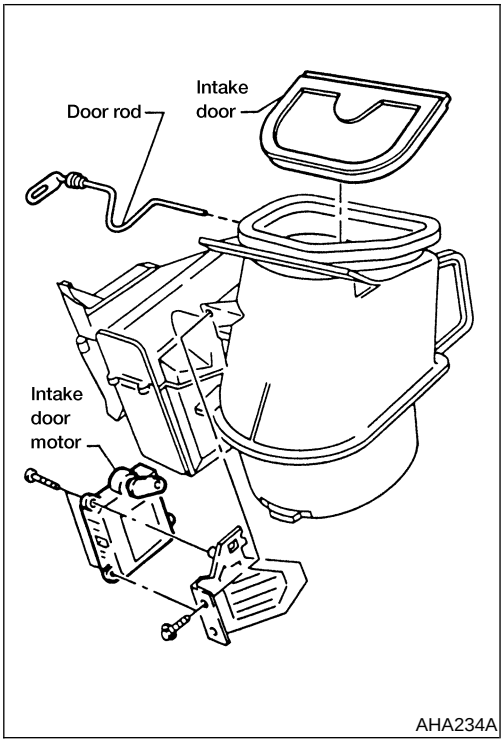
[Another symptom exists.]

OK

INSPECTION END.

WHA033

*1: HA-191 *2: HA-179 *3: HA-181



CONTROL SYSTEM OUTPUT COMPONENTS

NDHA0136

Intake Door Motor

NDHA0136S01

The intake door motor is attached to the intake unit.
It rotates so that air is drawn from inlets set by the A/C control unit when the mode switch is set to the MAX A/C (recirculation) position. Motor rotation is conveyed to a rod which opens and closes the intake door.

Intake Door Motor Operation

NDHA0136S0101

7	8	Intake door operation	Movement of link rotation
+	–	REC → FRE	Clockwise
—	—	STOP	STOP
–	+	FRE → REC	Counterclockwise

INTAKE DOOR MOTOR CIRCUIT

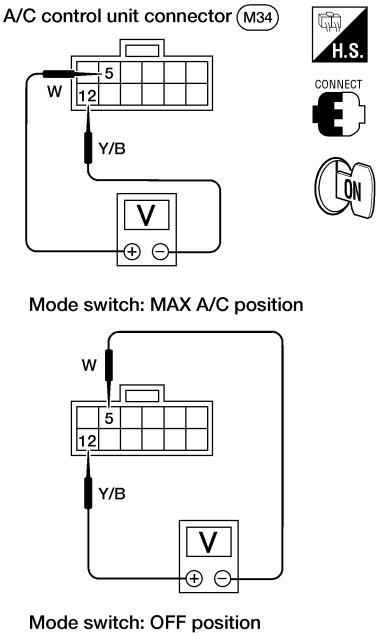
=NDHA0090

SYMPTOM:

- **Intake door motor does not operate normally.**

1	CHECK A/C CONTROL UNIT OUTPUT

Do approx. 12 volts exist between A/C control unit harness terminals 5 and 12 with mode switch in MAX A/C or OFF?



AHA366A

Mode switch position	Terminal No.		Voltage V
	5	12	
MAX A/C	⊕	⊖	Approx. 12
OFF	⊖	⊕	

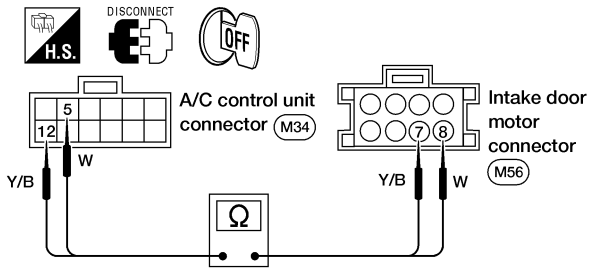
AHA367A

Yes or No

Yes	▶	GO TO 2.
No	▶	GO TO 3.

2	CHECK CIRCUIT CONTINUITY

1. Disconnect intake door motor and front A/C control unit harness connectors.
2. Check circuit continuity between intake door motor harness terminal 7 (8) and A/C control unit harness terminal 12 (5).



AHA368A

Continuity should exist.

3. Also, check harness for short.

OK or NG

OK	▶	Replace intake door motor.
NG	▶	Repair harness or connectors.

3	CHECK A/C CONTROL UNIT POWER SUPPLY CIRCUIT

Refer to HA-184.

OK or NG

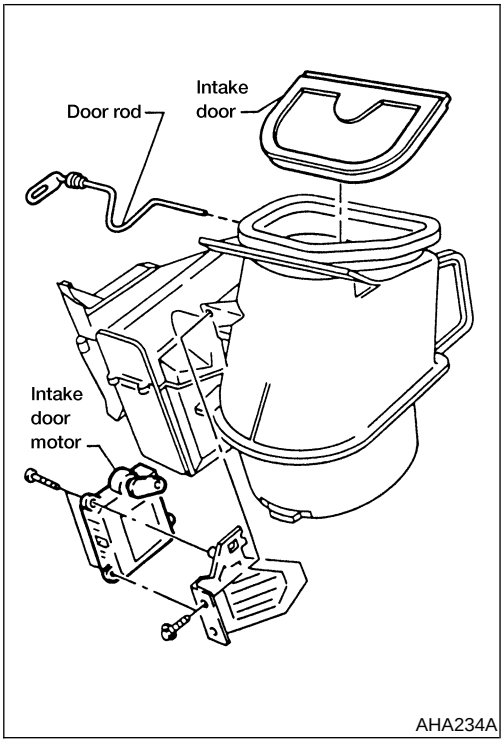
OK	▶	GO TO 4.
NG	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M34 ● Harness for open or short between A/C control unit and fuse

4	CHECK A/C CONTROL UNIT GROUND

Refer to HA-184.

OK or NG

OK	▶	Replace A/C control unit.
NG	▶	Repair harness or connector.



CONTROL LINKAGE ADJUSTMENT

NDHA0093

Intake Door Motor

NDHA0093S04

1. Connect the intake door motor harness connector before installing the intake door motor.
2. Turn ignition switch ON.
3. Select MAX A/C (REC) mode.
4. Install the intake door lever and the intake door motor.
5. Set the intake door rod in MAX A/C (REC) position and fasten door rod to holder.
6. Check that the intake door operates properly when MAX A/C (REC) mode is selected.

Mode Door Motor

TROUBLE DIAGNOSIS PROCEDURE FOR MODE DOOR MOTOR

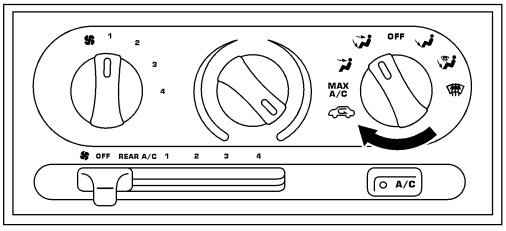
=NDHA0260

Symptom:

- **Mode door does not operate normally.**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Discharge air

1) Turn mode control knob.

Discharge air flow

Mode control knob	Air outlet/distribution		
	Face	Foot	Defroster
	94%	6%	-
	48%	52%	-
	-	75%	25%
	-	55%	45%
	-	9%	91%

2) Confirm that discharge air comes out according to the air distribution table at left.
Refer to "Discharge Air Flow" in "DESCRIPTION" (*4).

If OK (symptom cannot be duplicated), perform complete operational check (*2).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

3. Check mode door motor circuit. (*1)

OK

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

Yes → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

INSPECTION END.

WHA034

*1: HA-195 *2: HA-179 *3: HA-181

MODE DOOR MOTOR CIRCUIT

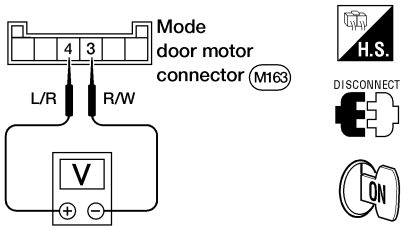
=NDHA0261

Symptom:

- **Mode door does not operate normally.**

1	CHECK OUTPUT OF A/C CONTROL UNIT

Does voltage change between 0 and approx. 12 volts between mode door motor harness terminals 3 and 4 when the mode switch is turned to each mode position except OFF.



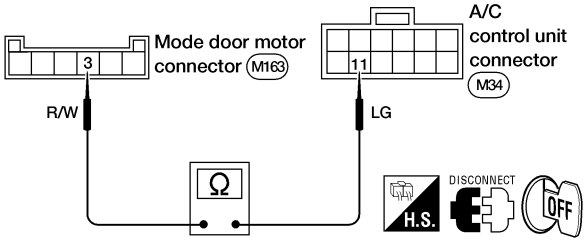
AHA390A

Yes or No

Yes	▶	GO TO 3.
No	▶	GO TO 2.

2	CHECK CIRCUIT CONTINUITY

1. Disconnect A/C control unit harness connector and mode door motor harness connector.
2. Check circuit continuity between A/C control unit harness terminal 11 and mode door motor harness terminal 3.



AHA370A

Continuity should exist.

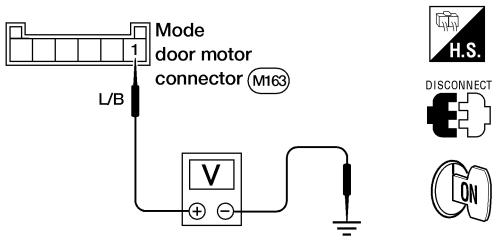
3. Also, check harness for short.

OK or NG

OK	▶	Replace A/C control unit.
NG	▶	Repair harness or connectors.

3	CHECK MODE DOOR MOTOR POWER SUPPLY CIRCUIT

1. Disconnect mode door motor harness connector.
2. Check voltage between mode door motor harness terminal 1 and ground.



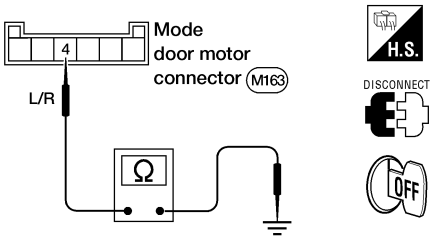
AHA391A

Does battery voltage exist?

Yes	▶	GO TO 4.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M163 ● Harness for open or short between mode door motor and fuse

4	CHECK MODE DOOR MOTOR GROUND CIRCUIT

Check circuit continuity between mode door motor harness terminal 4 and ground.



AHA392A

Continuity should exist.

OK or NG

OK	▶	Replace mode door motor.
NG	▶	Repair harness or connector.

Front Blower Motor

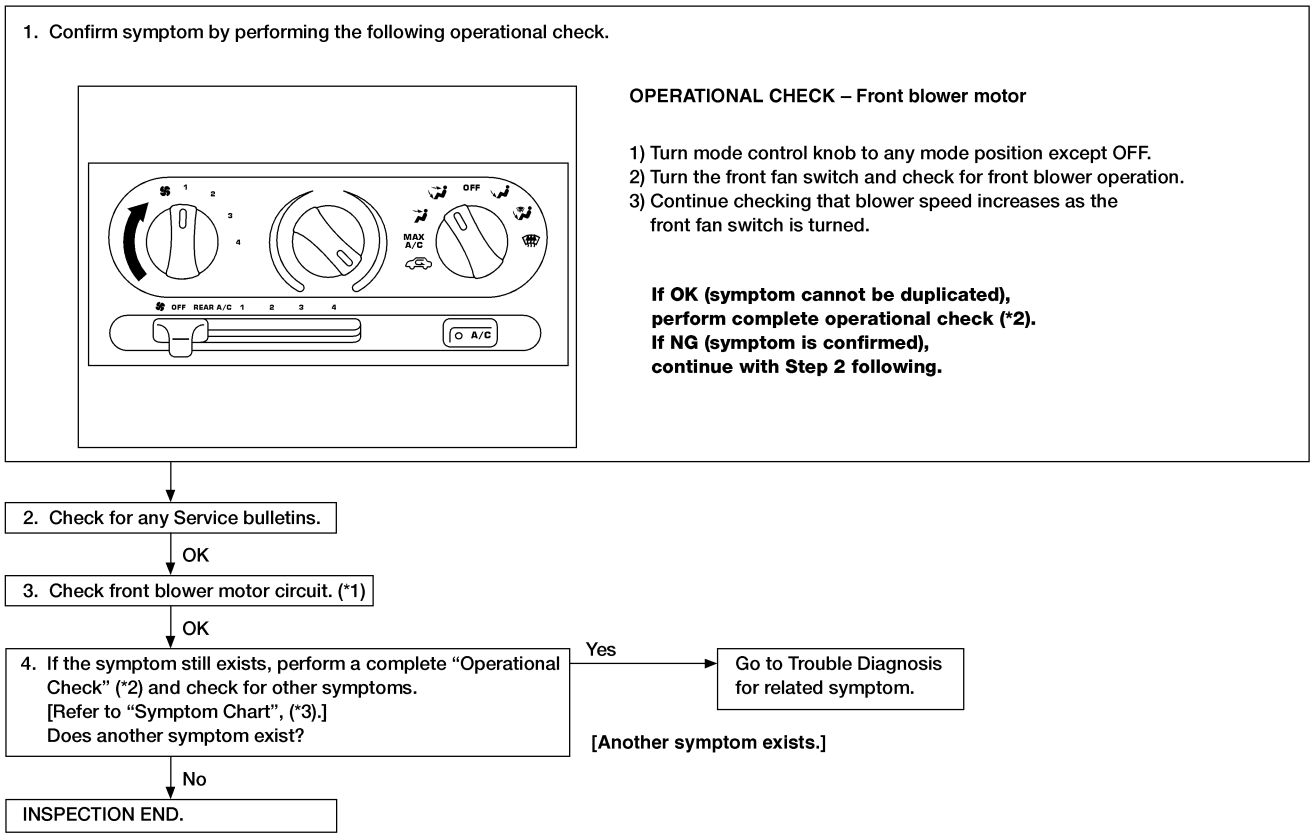
TROUBLE DIAGNOSIS PROCEDURE FOR FRONT BLOWER MOTOR

=NDHA0138

Symptom:

- **Front blower motor does not rotate.**

Inspection Flow



WHA035

*1: HA-198 *2: HA-179 *3: HA-181

FRONT BLOWER MOTOR CIRCUIT

=NDHA0089

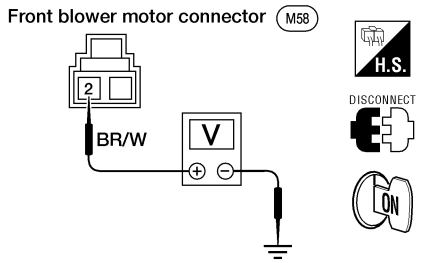
SYMPTOM:

- **Front blower motor does not rotate.**

1	DIAGNOSTIC PROCEDURE	
Check if front blower motor rotates properly at each fan speed.		
Does not rotate at any speed	▶	GO TO 2.
Does not rotate at 1-3 speed	▶	GO TO 16.
Does not rotate at 4 speed	▶	GO TO 19.

2	CHECK FUSES	
Check 20A fuse (No. 28, located in the fuse block) and 20A fuse (No. 31, located in the fuse block). For fuse layout, refer to "POWER SUPPLY ROUTING", ***EL-10***.		
Are fuses OK?		
OK	▶	GO TO 3.
NG	▶	GO TO 10.

3	CHECK FRONT BLOWER MOTOR POWER SUPPLY CIRCUIT	
1. Disconnect front blower motor harness connector. 2. Press any mode switch except OFF. 3. Check voltage between front blower motor harness terminal 2 and ground.		



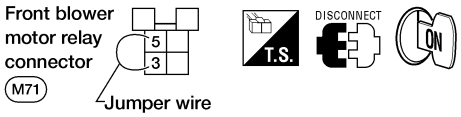
WHA095

Does battery voltage exist?		
Yes	▶	GO TO 14.
No	▶	GO TO 4.

4	CHECK FRONT BLOWER MOTOR RELAY	
Refer to HA-205.		
OK or NG		
OK	▶	GO TO 5.
NG	▶	Replace front blower motor relay.

5	CHECK FRONT BLOWER MOTOR SYSTEM

1. Reconnect front blower motor harness connector.
2. Turn the ignition key ON and press any mode switch except OFF.
3. Set the fan switch to 4 speed.
4. Momentarily (no more than 4 seconds) connect a jumper wire between front blower motor relay connector M71 (body side) terminals 3 and 5.

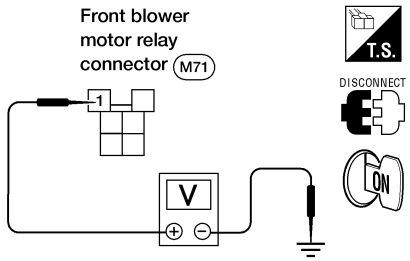


AHA257A

Does front blower motor rotate?

Yes	▶	GO TO 6.
No	▶	GO TO 12.

6	CHECK FRONT BLOWER MOTOR RELAY (COIL SIDE) POWER SUPPLY CIRCUIT



AHA259A

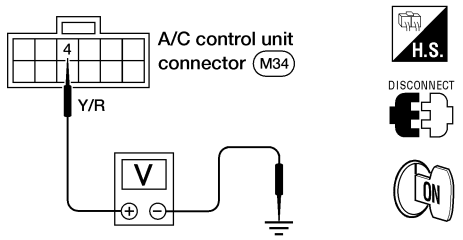
Do approx. 12 volts exist between front blower motor relay connector M71 (body side) terminal 1 and ground when ignition switch is turned ON?

Yes or No

Yes	▶	GO TO 7.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M71 ● Harness for open or short between front blower motor relay and ignition switch

7	CHECK RELAY CONTROL POWER SUPPLY CIRCUIT

1. Reconnect front blower motor relay.
2. Disconnect A/C control unit harness connector.
3. Check voltage between A/C control unit harness terminal 4 and ground.



AHA372A

Does battery voltage exist when ignition switch is turned ON?

Yes	▶	GO TO 8.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M34 ● Harness for open or short between front blower motor relay and A/C control unit

8	CHECK A/C CONTROL UNIT POWER SUPPLY CIRCUIT

Refer to HA-184.

OK or NG

OK	▶	GO TO 9.
NG	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M34 ● Harness for open or short between A/C control unit and fuse

9	CHECK A/C CONTROL UNIT GROUND CIRCUIT

Refer to HA-184.

OK or NG

OK	▶	Replace A/C control unit.
NG	▶	Repair harness or connector.

10	REPLACE FUSE

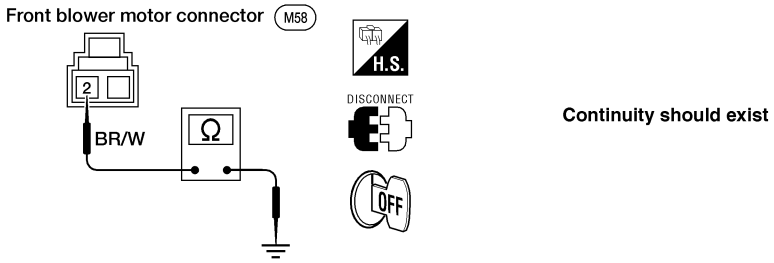
1. Replace fuses.
2. Activate the front blower motor system.

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

Yes	▶	GO TO 11.
No	▶	**INSPECTION END**

11	CHECK FRONT BLOWER MOTOR POWER SUPPLY CIRCUIT FOR A SHORT

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



WHA096

Continuity should not exist.

Does continuity exist?

Yes	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M58 ● Harness for open or short between front blower motor and fuses
No	▶	Check front blower motor. Refer to HA-205. If necessary, clear intake unit. If OK, replace front blower motor.

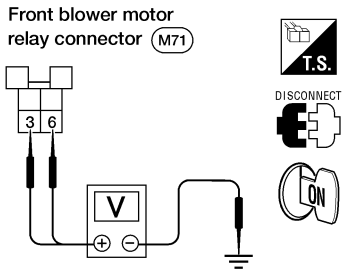
12	CHECK FUSIBLE LINK

Check 65A fusible link (letter **c**, located in the fuse and fusible link box). For fusible link layout, refer to "POWER SUPPLY ROUTING", ***EL-10***.

Is fusible link OK?

Yes	▶	GO TO 13.
No	▶	GO TO 22.

13	CHECK FRONT BLOWER MOTOR RELAY (SWITCH SIDE) POWER SUPPLY CIRCUIT



AHA264A

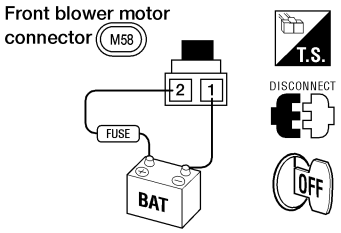
Check voltage between front blower motor relay connector M71 (body side) terminals 3, 6 and ground.

Does battery voltage exist?

Yes	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors M58 and M71 ● Harness for open or short between front blower motor relay and fusible link
No	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connector M71 ● Harness for open or short between front blower motor relay and fusible link

14	CHECK FRONT BLOWER MOTOR

Does front blower motor rotate when 12 volts is applied to terminal 2 and ground to terminal 1?



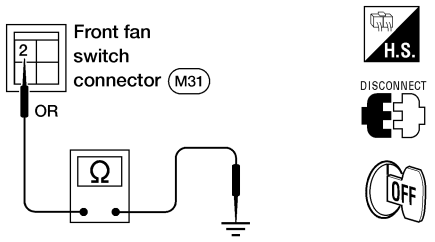
WHA097

Yes or No

Yes	▶	GO TO 15.
No	▶	Replace front blower motor.

15	CHECK FRONT FAN SWITCH GROUND CIRCUIT

1. Disconnect front fan switch harness connector.
2. Check circuit continuity between front fan switch harness terminal 2 and ground.



AHA373A

Continuity should exist.

OK or NG

OK	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors M31 and M58 ● Harness for open or short between front blower motor and front fan switch, front blower motor resistor
NG	▶	Repair harness or connector.

16	CHECK FRONT BLOWER MOTOR RESISTOR

Refer to HA-205.

OK or NG

OK	▶	GO TO 17.
NG	▶	Replace front blower motor resistor.

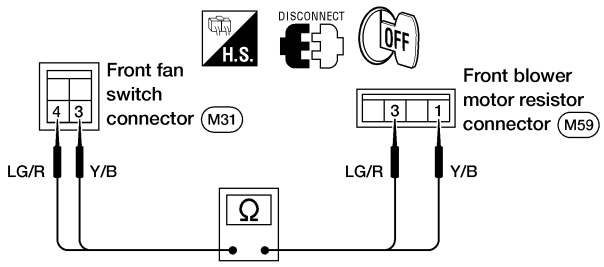
17	CHECK FRONT BLOWER MOTOR RESISTOR HARNESS CONNECTOR

Reconnect front blower motor resistor harness connector.

Does not rotate at 1 speed	▶	GO TO 21.
Does not rotate at 2 - 3 speed	▶	GO TO 18.

18	CHECK CIRCUIT CONTINUITY

1. Check circuit continuity between front blower motor resistor harness terminals 1 (3) and front fan switch harness terminals 3 (4).



AHA374A

Continuity should exist.

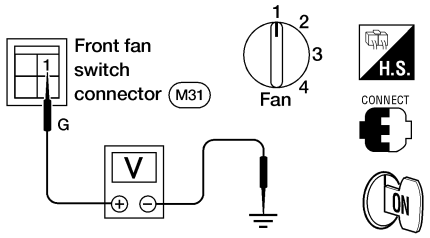
2. Also, check harness for short.

OK or NG

OK	▶	GO TO 20.
NG	▶	Repair harness or connectors.

19	CHECK FRONT FAN SWITCH POWER SUPPLY CIRCUIT (4 SPEED)

1. Turn mode switch to any position except OFF.
2. Check voltage between front fan switch harness terminal 1 and ground.



AHA375A

Is voltage approximately 8.5 volts?

Yes	▶	GO TO 20.
No	▶	**Check the following.** If NG, repair harness or connectors. • Harness connectors M31 and M58 • Harness for open or short between front blower motor and front fan switch

20	CHECK FRONT FAN SWITCH

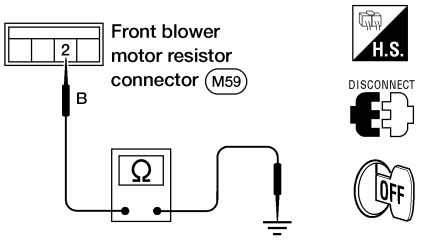
Refer to HA-205.

OK or NG

OK	▶	**INSPECTION END**
NG	▶	Replace front fan switch.

21	CHECK FRONT BLOWER MOTOR RESISTOR GROUND CIRCUIT

1. Disconnect front blower motor resistor harness connector.
2. Check circuit continuity between front blower motor resistor harness terminal 2 and ground.



AHA393A

Continuity should exist.

OK or NG

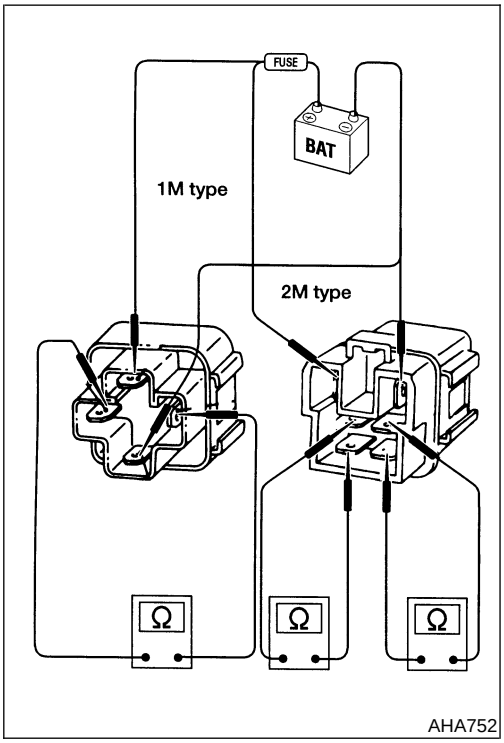
OK	▶	**INSPECTION END**
NG	▶	Repair harness or connector.

22	REPLACE FUSIBLE LINK

1. Replace fusible link.
2. Does fusible link blow when the front blower motor system is activated?

Yes or No

Yes	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors E102 and M2 ● Harness for open or short between front blower motor relay and fusible link
No	▶	**INSPECTION END**



AHA752

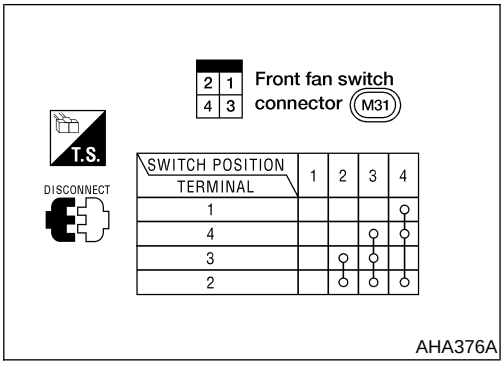
ELECTRICAL COMPONENTS INSPECTION

NDHA0246

Relays

NDHA0246S03

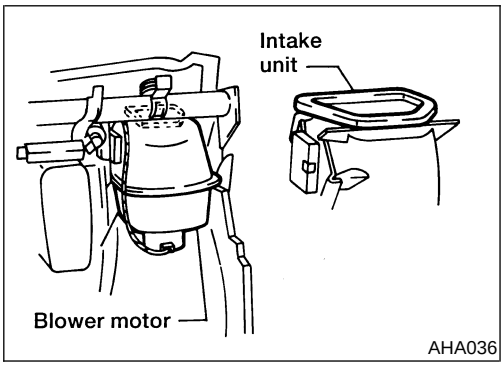
Check circuit continuity between terminals by supplying 12 volts and ground to coil side terminals of relays.



Front Fan Switch

NDHA0246S01

Check continuity between terminals at each switch position.

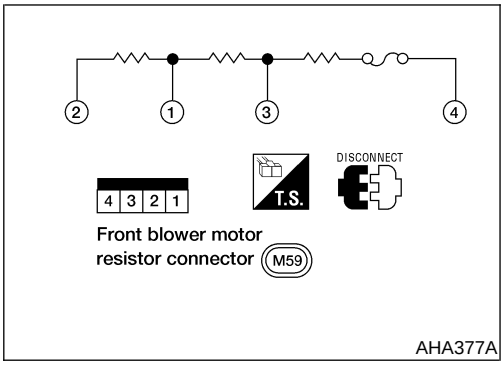


Front Blower Motor

NDHA0246S02

Confirm smooth rotation of the front blower motor.

- Check that there are no foreign particles inside the intake unit.
- Check cabin air filter. Refer to "Cabin Air Filter" (HA-250)



Front Blower Motor Resistor

NDHA0246S04

Check resistance between terminals

Terminal No.		Resistance (Ω)
(+)	(–)	
3	1	Approx. 1.4 - 1.6
4		Approx. 2.5 - 2.8
2		Approx. 0.5 - 0.6

Rear Blower Motor

TROUBLE DIAGNOSIS PROCEDURE FOR REAR FAN SWITCH (FRONT)

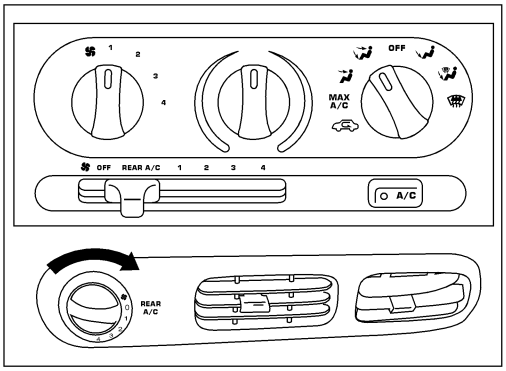
=NDHA0247

Symptom:

- **Rear blower motor does not rotate when rear fan switch (front) is set to REAR position.**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Rear blower motor

1) Turn mode control knob to any mode position except OFF.
2) Set rear fan switch (front) to REAR position.
3) Turn the rear fan switch (rear) and check for rear blower operation.
4) Continue checking that rear blower speed increases as the rear fan switch (rear) is rotated clockwise.

If OK (symptom cannot be duplicated), perform complete operational check (*2).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

3. Check rear fan switch (front) circuit. (*1)

OK

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

Yes → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

No

INSPECTION END.

WHA036

*1: HA-207 *2: HA-179 *3: HA-181

REAR FAN SWITCH (FRONT) CIRCUIT

=NDHA0248

Symptom:

- **Rear blower motor does not rotate when rear fan switch (front) is set to REAR position.**

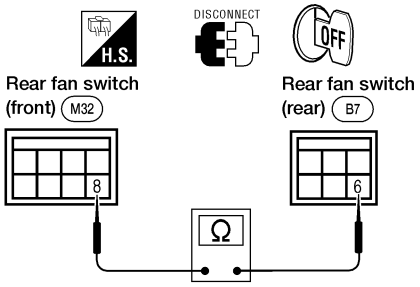
1	CHECK REAR BLOWER MOTOR OPERATION	
Does rear blower motor rotate normally when rear fan switch (front) is set at 1 - 4 speed?		
Yes or No		
Yes	▶	GO TO 2.
No	▶	Go to Trouble Diagnosis Procedure for Rear Blower Motor (1 - 4 Speed), HA-208.

2	CHECK REAR FAN SWITCH (FRONT)	
Refer to HA-215.		
OK or NG		
OK	▶	GO TO 3.
NG	▶	Replace rear fan switch (front).

3	CHECK REAR FAN SWITCH (REAR)	
Refer to HA-215.		
OK or NG		
OK	▶	GO TO 4.
NG	▶	Replace rear fan switch (rear).

4	CHECK CIRCUIT CONTINUITY	

1. Check continuity between rear fan switch (front) harness terminal 8 and rear fan switch (rear) harness terminal 6.



LHA098

Continuity should exist.

2. Also, check harness for short.

OK or NG		
OK	▶	**INSPECTION END**
NG	▶	Repair harness or connectors.

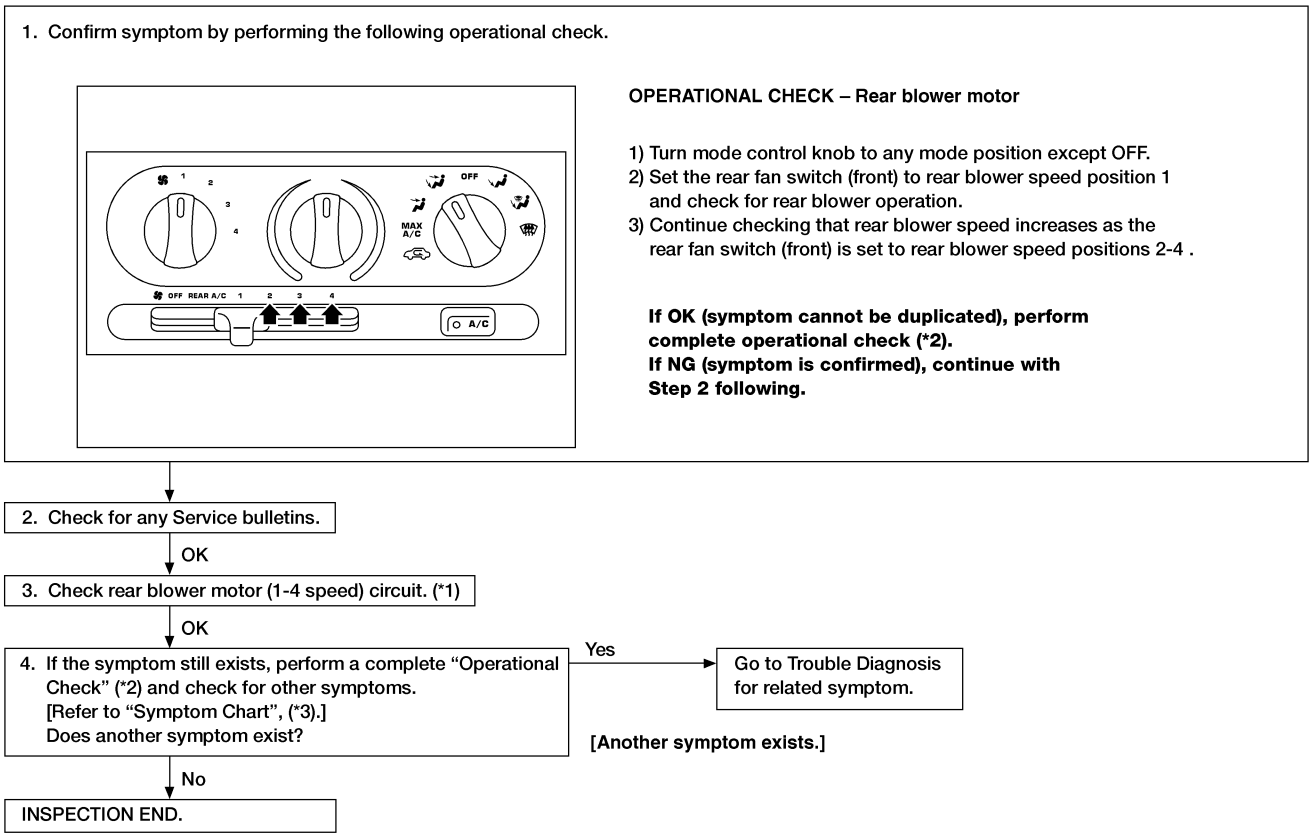
TROUBLE DIAGNOSIS PROCEDURE FOR REAR BLOWER MOTOR (1-4 SPEED)

=NDHA0249

Symptom:

- **Rear blower motor does not rotate when rear fan switch (front) is set at 1 - 4 speed.**

Inspection Flow



WHA037

*1: HA-209 *2: HA-179 *3: HA-181

REAR BLOWER MOTOR (1-4 SPEED) CIRCUIT

=NDHA0250

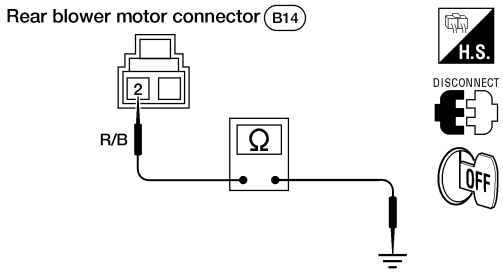
Symptom:

- **Rear blower motor does not rotate when rear fan switch (front) is set at 1 - 4 speed.**

1	DIAGNOSTIC PROCEDURE	
Check if rear blower motor rotates properly at each fan speed.		
Does not rotate at any speed	▶	GO TO 2.
Does not rotate at 1 - 3 speed	▶	GO TO 13.
Does not rotate at 4 speed	▶	GO TO 17.

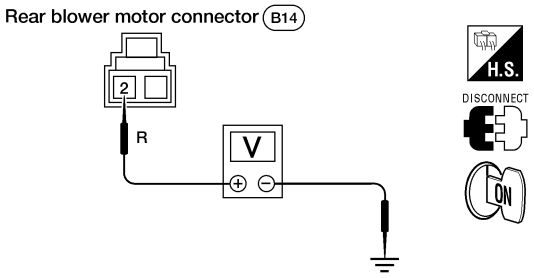
2	CHECK FUSES	
Check 15A fuse (No. 24, located in the fuse block) and 15A fuse (No. 25, located in the fuse block). For fuse layout, refer to "POWER SUPPLY ROUTING", ***EL-10***.		
Are fuses OK?		
Yes	▶	GO TO 5.
No	▶	GO TO 3.

3	REPLACE FUSE	
Replace fuse.		
Does fuse blow when the rear blower motor is activated?		
Yes	▶	GO TO 4.
No	▶	**INSPECTION END**

4	CHECK REAR BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT	
1. Disconnect battery cable and rear blower motor harness connector. 2. Check continuity between rear blower motor harness terminal 2 and ground.		
 AHA309A		
Continuity should not exist.		
Does continuity exist?		
Yes	▶	**Check the following.** If NG, repair harness connector. ● Harness connector B14 ● Harness for open or short between rear blower motor and fuses
No	▶	Check rear blower motor. Refer to HA-215. If necessary, clean intake unit. If OK, replace rear blower motor.

5	CHECK REAR BLOWER MOTOR POWER SUPPLY CIRCUIT

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



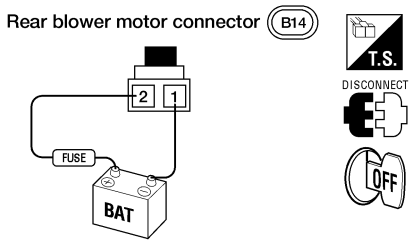
AHA397A

Does battery voltage exist?

Yes	▶	GO TO 6.
No	▶	**Check the following.** If NG, repair harness connector. ● Harness connector B14 ● Harness for open or short between rear blower motor relay and fuses

6	CHECK REAR BLOWER MOTOR

Does rear blower motor rotate when 12 volts is applied to terminal 2 and ground to terminal 1?



AHA396A

Yes or No

Yes	▶	GO TO 7.
No	▶	Replace rear blower motor.

7	CHECK REAR FAN SWITCH (FRONT)

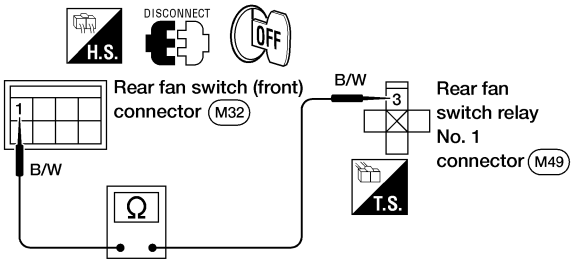
Refer to HA-215.

OK or NG

OK	▶	GO TO 8.
NG	▶	Replace rear fan switch (front).

8	CHECK REAR FAN SWITCH (FRONT) GROUND CIRCUIT

1. Disconnect rear fan switch relay No. 1.
2. Check circuit continuity between rear fan switch (front) harness terminal 1 and rear fan switch relay No. 1 connector M49 (body side) terminal 3.



AHA378A

Continuity should exist.

OK or NG

OK	▶	GO TO 9.
NG	▶	Repair harness or connector.

9	CHECK REAR FAN SWITCH RELAY NO. 1

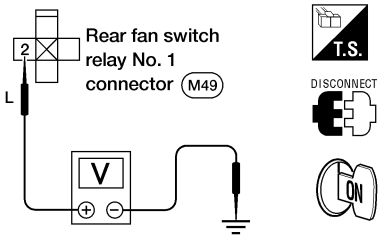
Refer to HA-215.

OK or NG

OK	▶	GO TO 10.
NG	▶	Replace rear fan switch relay No. 1.

10	CHECK REAR FAN SWITCH RELAY NO. 1 POWER SUPPLY CIRCUIT

Do approx. 12 volts exist between rear fan switch relay No. 1 connector M49 (body side) terminal 2 and ground?



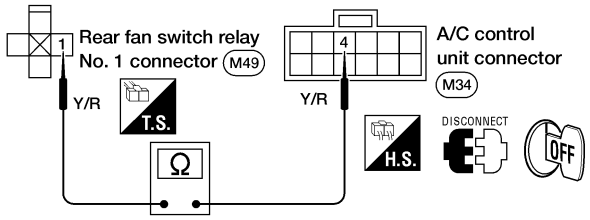
AHA379A

Yes or No

Yes	▶	GO TO 11.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector M49 ● Harness for open or short between rear fan switch relay No. 1 and fuse

11	CHECK REAR FAN SWITCH RELAY NO. 1 CONTROL CIRCUIT

1. Disconnect A/C control unit harness connector.
2. Check circuit continuity between A/C control unit harness terminal 4 and rear fan switch relay No. 1 connector M49 (body side) terminal 1.



AHA380A

Continuity should exist.

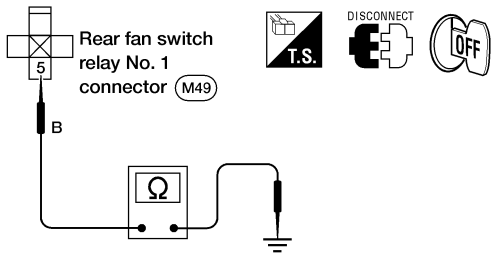
3. Also, check harness for short.

OK or NG

OK	▶	GO TO 12.
NG	▶	Repair harness or connectors.

12	CHECK REAR FAN SWITCH RELAY NO. 1 GROUND CIRCUIT

Check circuit continuity between rear fan switch relay No. 1 connector M49 (body side) terminal 5 and ground.



AHA381A

Continuity should exist.

OK or NG

OK	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector B14 ● Harness for open or short between rear blower motor and rear blower motor resistor
NG	▶	Repair harness or connector.

13	CHECK REAR BLOWER MOTOR RESISTOR

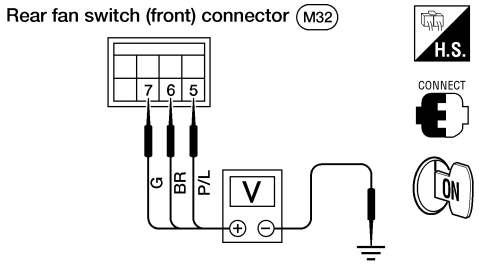
Refer to HA-216.

OK or NG

OK	▶	GO TO 14.
NG	▶	Replace rear blower motor resistor.

14	CHECK REAR FAN SWITCH (FRONT) CIRCUIT

1. Reconnect rear blower motor resistor harness connector.
2. Do approx. 12 volts exist between each rear fan switch (front) harness terminal and ground?



AHA312A

Terminal No.		Voltage
⊕	⊖	
5	Ground	Approx. 12V
6		
7		

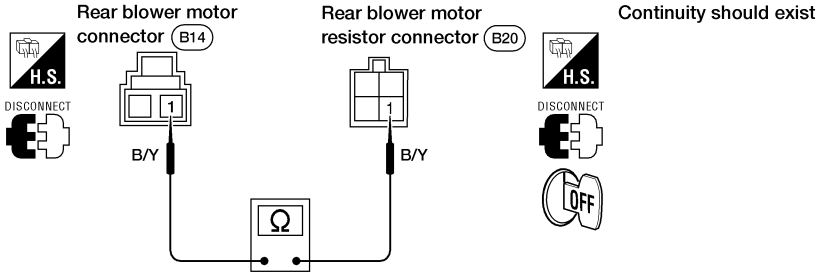
AHA313A

Yes or No

Yes	▶	GO TO 18.
No	▶	GO TO 15.

15	CHECK REAR BLOWER MOTOR GROUND CIRCUIT TO REAR BLOWER MOTOR RESISTOR

1. Disconnect rear blower motor and rear blower motor resistor harness connectors.
2. Check the circuit continuity between rear blower motor harness terminal 1 and rear blower motor resistor harness terminal 1.



WHA080

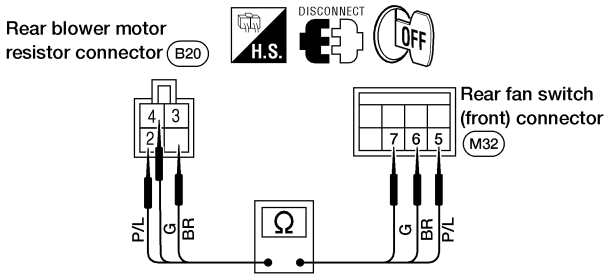
3. Also, check harness for short.

OK or NG

OK	▶	GO TO 16.
NG	▶	Repair harness or connectors.

16	CHECK CIRCUITS

1. Disconnect rear fan switch (front) harness connector.
2. Check circuit continuity between rear fan switch (front) harness terminals and rear blower motor resistor harness terminals.



Terminal No.		Continuity
Rear fan switch (front)	Rear blower motor resistor	
5	2	Yes
6	3	
7	4	

Continuity should exist

WHA081

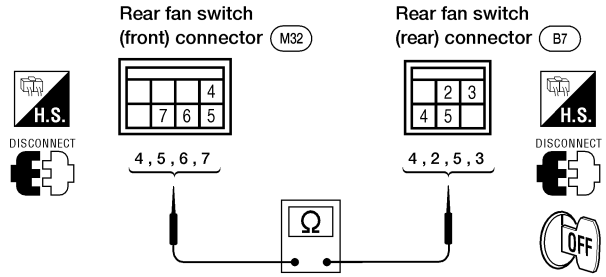
3. Also, check harness for short.

OK or NG

OK	▶	**INSPECTION END**
NG	▶	Repair harness or connector.

17	CHECK CIRCUIT CONTINUITY

1. Disconnect rear fan switch (front) and rear fan switch (rear) harness connectors.
2. Check circuit continuity between rear fan switch (front) connector M32 terminals and rear fan switch (rear) connector B7 terminals.



Rear fan switch (front) connector terminal	Rear fan switch (rear) connector terminal	Continuity
4	4	Yes
5	2	Yes
6	5	Yes
7	3	Yes

LHA102

Yes or No

Yes	▶	GO TO 18.
No	▶	Repair harness or connectors.

18	CHECK REAR FAN SWITCH (FRONT)

Refer to HA-215.

OK or NG

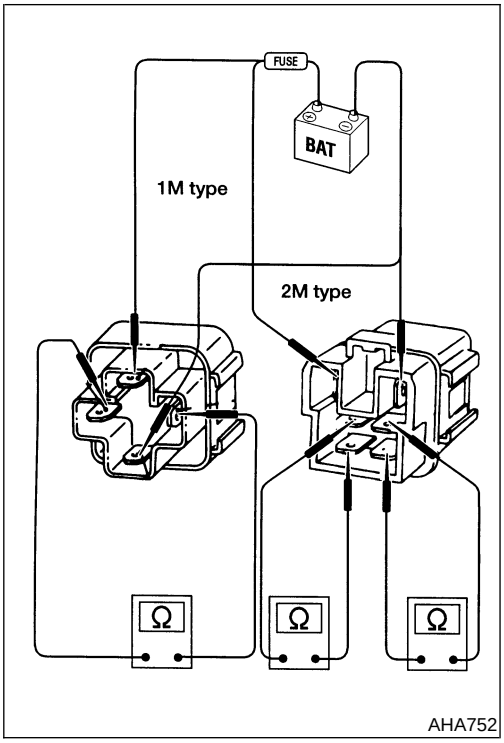
OK	▶	GO TO 19.
NG	▶	Replace rear fan switch (front).

19	CHECK REAR FAN SWITCH (REAR)

Refer to HA-215.

OK or NG

OK	▶	**INSPECTION END**
NG	▶	Replace rear fan switch (rear).



AHA752

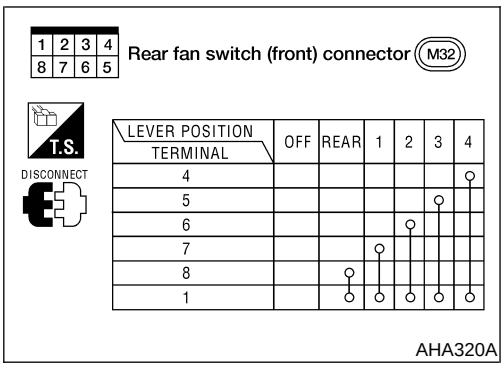
ELECTRICAL COMPONENT INSPECTION

NDHA0253

Relays

NDHA0253S01

Check circuit continuity between terminals by supplying 12 volts and ground to coil side terminals of relays.



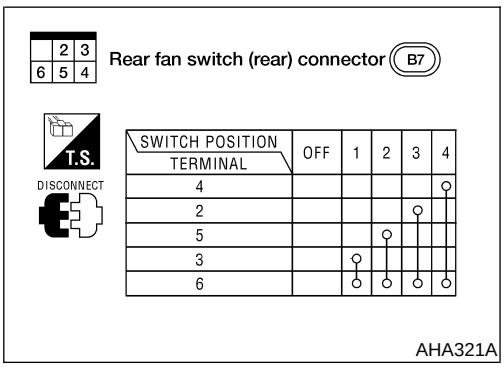
LEVER POSITION / TERMINAL	OFF	REAR	1	2	3	4
4						○
5					○	
6				○		
7			○			
8		○				
1		○	○	○	○	○

AHA320A

Rear Fan Switch (Front)

NDHA0253S02

Check continuity between terminals at each position.



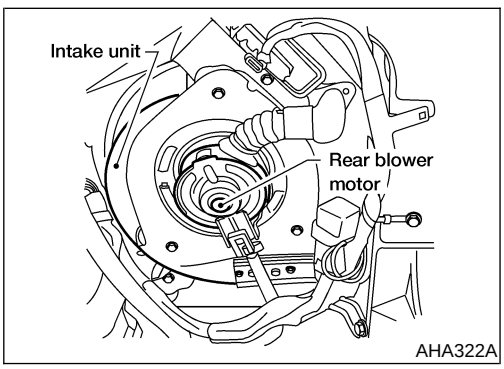
SWITCH POSITION / TERMINAL	OFF	1	2	3	4
4					○
2				○	
5			○		
3		○			
6		○	○	○	○

AHA321A

Rear Fan Switch (Rear)

NDHA0253S03

Check continuity between terminals at each position.



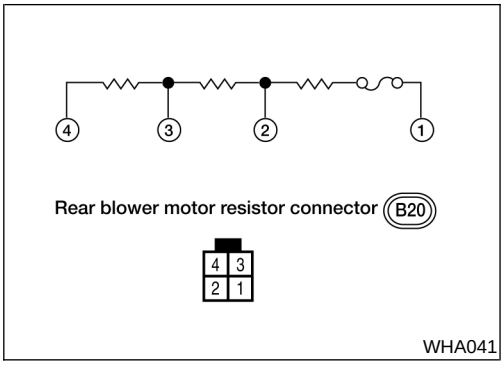
AHA322A

Rear Blower Motor

NDHA0253S04

Confirm smooth rotation of the rear blower motor.

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



Rear Blower Motor Resistor

NDHA0253S05

Check continuity between terminals.

Magnet Clutch

TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH

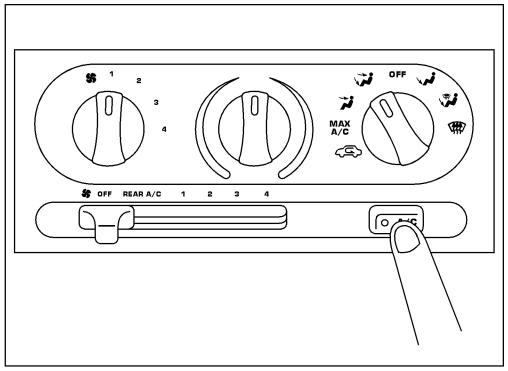
=NDHA0119

Symptom:

- **Magnet clutch does not engage.**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – A/C switch

1) Turn mode control knob to any mode position except OFF or MAX A/C.
2) Press air conditioner switch to turn ON air conditioner. Indicator light will come on when air conditioner is ON.

If OK (symptom cannot be duplicated), perform complete operational check (*3).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.
OK
3. Check compressor belt tension. Refer to MA section ("Checking Drive Belts", "ENGINE MAINTENANCE"). — NG → Adjust or replace compressor belt.
OK
4. Check refrigerant. Connect manifold gauge and check system pressure. — NG → Check for refrigerant leaks. Refer to (*1).
OK
5. Check magnet clutch circuit. (*2)
OK
6. If the symptom still exists, perform a complete "Operational Check" (*3) and check for other symptoms. [Refer to "Symptom Chart", (*4).] Does another symptom exist? — Yes → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

No
INSPECTION END.

WHA038

*1: HA-245
*2: HA-218
*3: HA-179
*4: HA-181

CONTROL SYSTEM OUTPUT COMPONENTS

NDHA0262

Magnet Clutch Control

NDHA0262S01

Under normal operating conditions, when the A/C is switched ON, the compressor runs continuously, and the evaporator pressure, and therefore temperature, is controlled by the V-6 variable displacement compressor to prevent freeze up.

Acceleration Cut Control

NDHA0262S0101

The ECM will turn the compressor ON or OFF based on the signal from the throttle position sensor.

MAGNET CLUTCH CIRCUIT

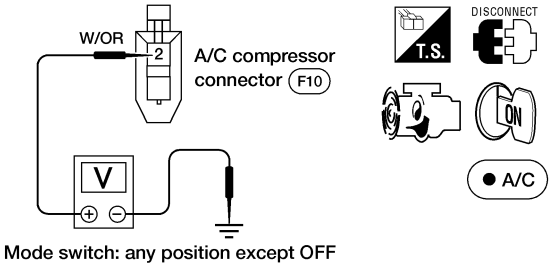
=NDHA0091

SYMPTOM:

- **Magnet clutch does not engage.**

1	CHECK A/C COMPRESSOR POWER SUPPLY CIRCUIT

1. Press the A/C mode switch ON.
2. Disconnect A/C compressor harness connector.
3. Do approx. 12 volts exist between A/C compressor connector F10 (body side) terminal 2 and ground?



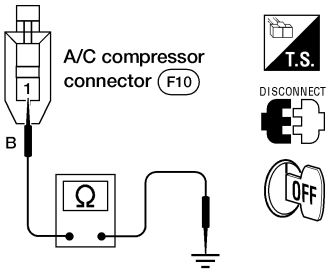
AHA325A

Yes or No

Yes	▶	GO TO 2.
No	▶	GO TO 3.

2	CHECK A/C COMPRESSOR GROUND CIRCUIT

Check circuit continuity between A/C compressor connector F10 (body side) terminal 1 and ground.



AHA328A

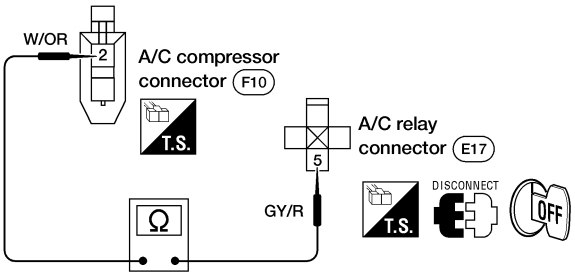
Continuity should exist.

OK or NG

OK	▶	Check magnet clutch coil. If OK, replace magnet clutch. Refer to HA-239.
NG	▶	Repair harness or connector.

3	CHECK CIRCUIT CONTINUITY

1. Disconnect A/C relay.
2. Check circuit continuity between A/C relay connector E17 (body side) terminal 5 and A/C compressor connector F10 (body side) terminal 2.



AHA326A

Continuity should exist.

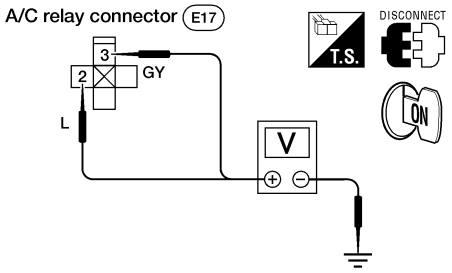
3. Also, check harness for short.

OK or NG

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

4	CHECK A/C RELAY POWER SUPPLY CIRCUIT

1. Disconnect A/C relay.
2. Do approx. 12 volts exist between A/C relay connector E17 (body side) terminals 2, 3 and ground?



AHA327A

Yes or No

Yes	▶	GO TO 5.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector E17 ● Harness for open or short between A/C relay and fuses

5	CHECK A/C RELAY

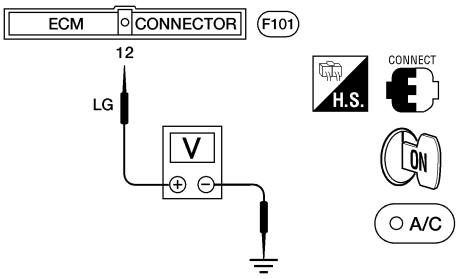
Refer to HA-223.

OK or NG

OK	▶	GO TO 6.
NG	▶	Replace A/C relay.

6	CHECK RELAY CONTROL POWER SUPPLY CIRCUIT

1. Reconnect A/C relay.
2. Do approx. 12 volts exist between ECM harness terminal 12 and ground?



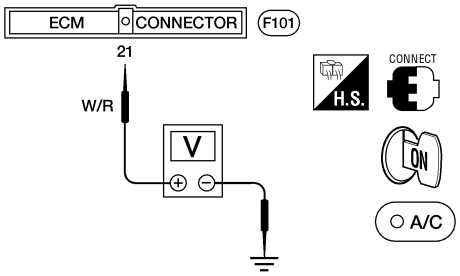
AHA329A

Yes or No

Yes	▶	GO TO 7.
No	▶	**Check the following.** If NG, repair harness or connectors. ● Harness connectors E17 and F101 ● Harness for open or short between A/C relay and ECM

7	CHECK ECM OUTPUT VOLTAGE

Do approx. 12 volts exist between ECM harness terminal 21 and ground?



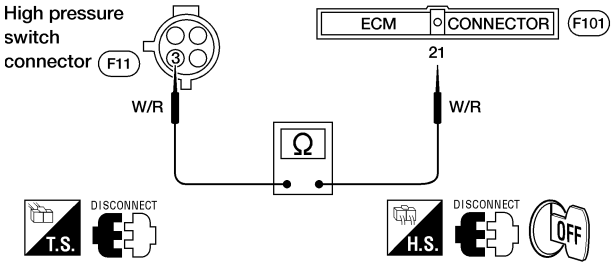
AHA330A

Yes or No

Yes	▶	GO TO 8.
No	▶	GO TO 13.

8	CHECK CIRCUIT CONTINUITY

1. Disconnect ECM harness connector and high pressure switch harness connector.
2. Check circuit continuity between ECM harness terminal 21 and high pressure switch connector F11 (body side) terminal 3.



AHA331A

Continuity should exist.

3. Also, check harness for short.

OK or NG

OK	▶	GO TO 9.
NG	▶	Repair harness or connector.

9	CHECK HIGH PRESSURE SWITCH

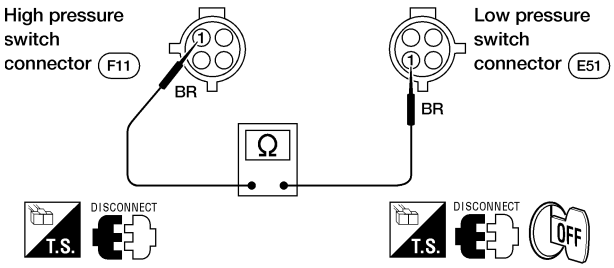
Refer to HA-223.

OK or NG

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

10	CHECK CIRCUIT CONTINUITY

1. Disconnect low pressure switch harness connector.
2. Check circuit continuity between high pressure switch connector F11 (body side) terminal 1 and low pressure switch connector E51 (body side) terminal 1.



AHA332A

Continuity should exist.

3. Also, check harness for short.

OK or NG

OK	▶	GO TO 11.
NG	▶	Repair harness or connector.

11	CHECK LOW PRESSURE SWITCH

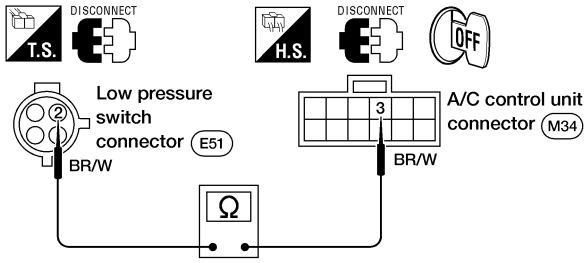
Refer to HA-223.

OK or NG

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

12	CHECK CIRCUIT CONTINUITY

1. Disconnect A/C control unit harness connector.
2. Check circuit continuity between low pressure switch connector E51 (body side) terminal 2 and A/C control unit harness terminal 3.



AHA382A

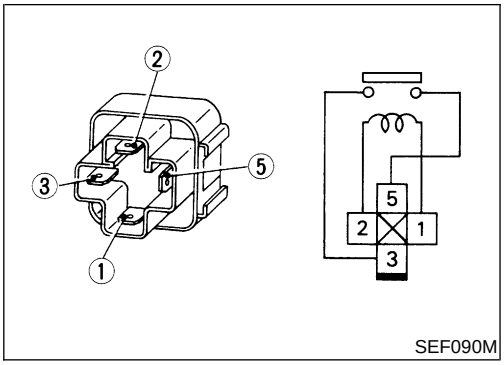
Continuity should exist.

3. Also, check harness for short.

OK or NG

OK	▶	Replace A/C control unit.
NG	▶	Repair harness or connectors.

13	CHECK ECM
Refer to EC section.	
▶	**INSPECTION END**



SEF090M

ELECTRICAL COMPONENTS INSPECTION

=NDHA0092

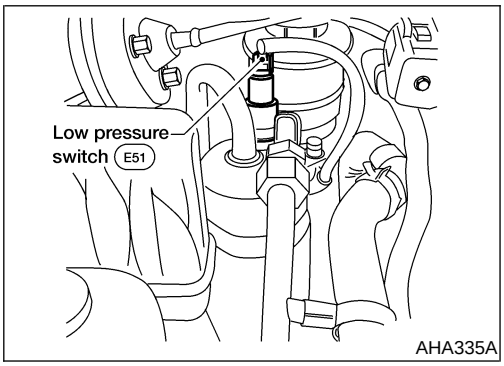
A/C Relay

NDHA0092S07

Check continuity between terminals 3 and 5.

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

If NG, replace relay.



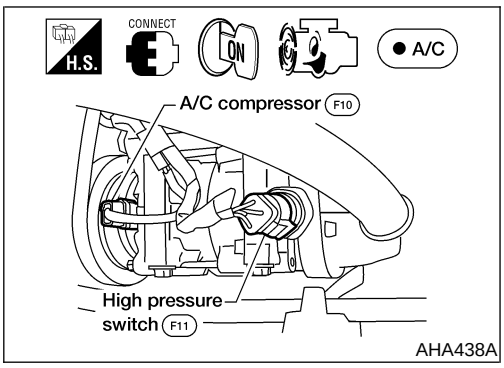
AHA335A

Low Pressure Switch

NDHA0092S09

Check continuity between terminals.

Low pressure side line pressure kPa (kg/cm^2, psi)	Clutch operation	Continuity
Decreasing to 159 (1.6, 23)	Turn OFF	Does not exist
Increasing to 324 (3.3, 47)	Turn ON	Exists
Tightening torque	1.4 - 5.4 N·m (0.13 - 0.55 kg-m, 11.3 - 48 in-lb)	



AHA438A

High Pressure Switch

NDHA0092S10

Check continuity between terminals 1 and 3.

High pressure side line pressure kPa (kg/cm^2, psi)	Clutch operation	Continuity
Increasing to 2,785 (28.4, 404)	Turn OFF	Does not exist
Decreasing to 1,569 (16.0, 228)	Turn ON	Exists
Tightening torque	6.8 - 12.2 N·m (0.69 - 1.24 kg-m, 60 - 108 in-lb)	

Insufficient Cooling

TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT COOLING

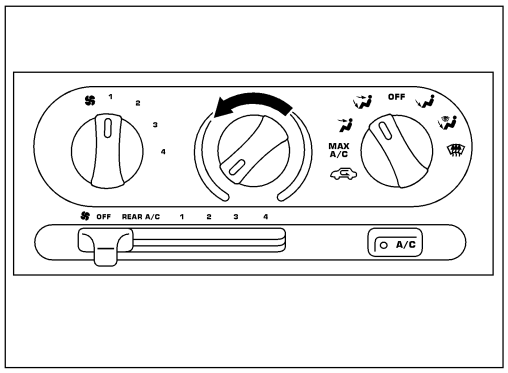
=NDHA0150

Symptom:

- **Insufficient cooling**

Inspection Flow

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Temperature decrease

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

If OK (symptom cannot be duplicated), perform complete operational check (*4).
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

3. Check compressor belt tension. Refer to MA section ("Checking Drive Belts", "ENGINE MAINTENANCE").

NG → Adjust or replace compressor belt.

OK

4. Check cooling fan motor operation.

NG → Refer to EC section.

OK

5. Check refrigeration cycle pressure with manifold gauge connected. Refer to (*1).

NG → Perform Performance Test Diagnoses. Refer to (*2).

OK

6. Check for evaporator coil freeze up.

NG (Freeze up.) → Replace compressor. (*3)

(Does not freeze up.)

OK

7. Check ducts for air leaks.

NG → Repair air leaks.

OK

8. If the symptom still exists, perform a complete "Operational Check" (*4) and check for other symptoms.
[Refer to "Symptom Chart", (*5).]
Does another symptom exist?

Yes → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

No

INSPECTION END.

WHA039

*1: HA-225
*2: HA-225
*3: HA-236
*4: HA-179
*5: HA-181

PERFORMANCE TEST DIAGNOSES

=NDHA0082

This A/C system is different from other Nissan A/C systems. The typical Nissan A/C system uses a thermal expansion valve to provide a restriction which causes a pressure change and also controls refrigerant flow through the evaporator.

This system uses a Fixed Orifice Tube (FOT) to cause a pressure change, by restricting the flow of refrigerant to the evaporator. The flow of refrigerant is controlled by engaging and disengaging the compressor clutch based on low side pressure. Therefore, it is critical to consider clutch engagement and disengagement times for proper diagnosis.

The refrigerant flow is regulated by a fixed orifice tube for the front evaporator and a thermal expansion valve for the rear evaporator.

The best way to diagnose a condition in the refrigerant system is to note the system pressures (shown by the manifold gauges) and the clutch cycle rate and times. Then, compare the findings to the charts.

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

Important — Test Conditions

NDHA0082S02

The following test conditions must be established to obtain accurate clutch cycle rate and cycle time readings

- run engine at 1,500 rpm for 10 minutes
- operate A/C system on MAX A/C (recirculating air)
- run blower at maximum speed
- stabilize in vehicle temperature at 21°C to 27°C (70°F to 80°F).

The following procedure is recommended for achieving accurate diagnosis results in the least amount of time.

1) Connect a manifold gauge set to the system. **The test conditions specified must be met to obtain accurate test results.**
2) Start the engine and run at 1,500 rpm.
3) Turn A/C system ON (with rear A/C off, if equipped).
4) As soon as the system is stabilized, record the high- and low-pressures as shown by the manifold gauges. The low side should cycle between approximately 168.9 kPa (1.723 kg/cm^2, 24.5 psi) and 276 to 324 kPa (2.81 to 3.30 kg/cm^2, 40 to 47 psi). (As low pressure drops, high pressure should rise.) When the clutch disengages, the low side should rise and the high side should drop.
5) Determine the clutch cycle rate per minute (clutch on time plus off time is a cycle).
6) Record clutch OFF time in seconds.
7) Record clutch ON time in seconds.
8) Record center register discharge temperature.
9) Determine and record ambient temperature.
10) Compare test readings with applicable chart.

- Plot a vertical line for recorded ambient temperature from scale at bottom of each chart to top of each chart.
- Plot a horizontal line for each of the other test readings from scale at LH side of appropriate chart.

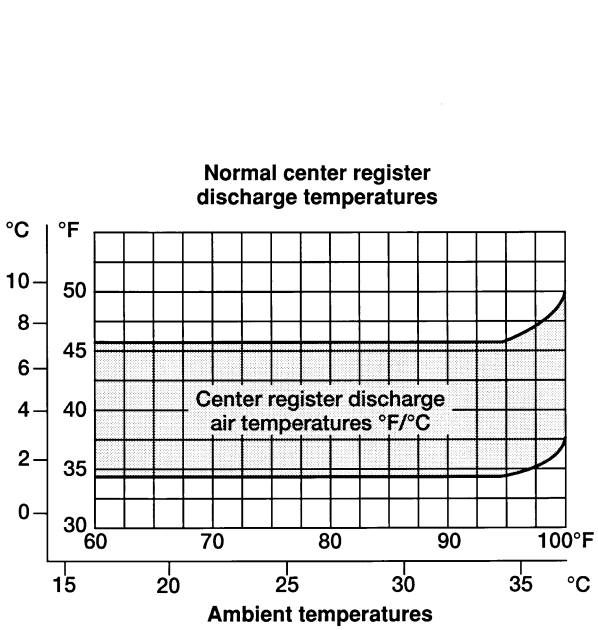
At the bottom of chart (HA-227), additional cause components are listed for poor compressor operation or a damaged compressor condition.

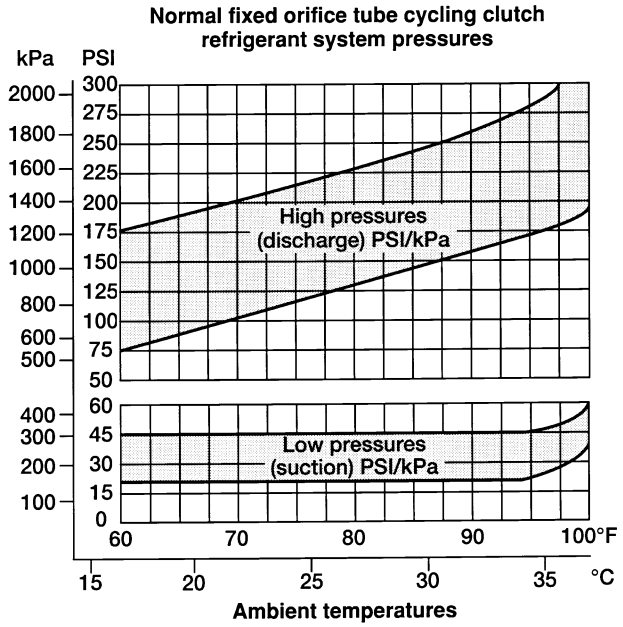
The diagnosis charts provide the most direct and sure way to determine the cause of any concern in a poorly performing refrigerant system. However, if the vehicle is equipped with rear A/C, poor performance of the front or rear system may not cause abnormal pressures or clutch cycle time. In this case, poor performance may indicate a restriction of refrigerant flow to that system, or an evaporator problem.

After servicing and correcting a refrigerant system concern, take additional pressure readings and observe the clutch cycle rate while meeting the conditional requirements (HA-227) to ensure the concern has been corrected.

Normal Fixed Orifice Tube Refrigerant System Pressure/Temperature Relationships

NDHA0082S03

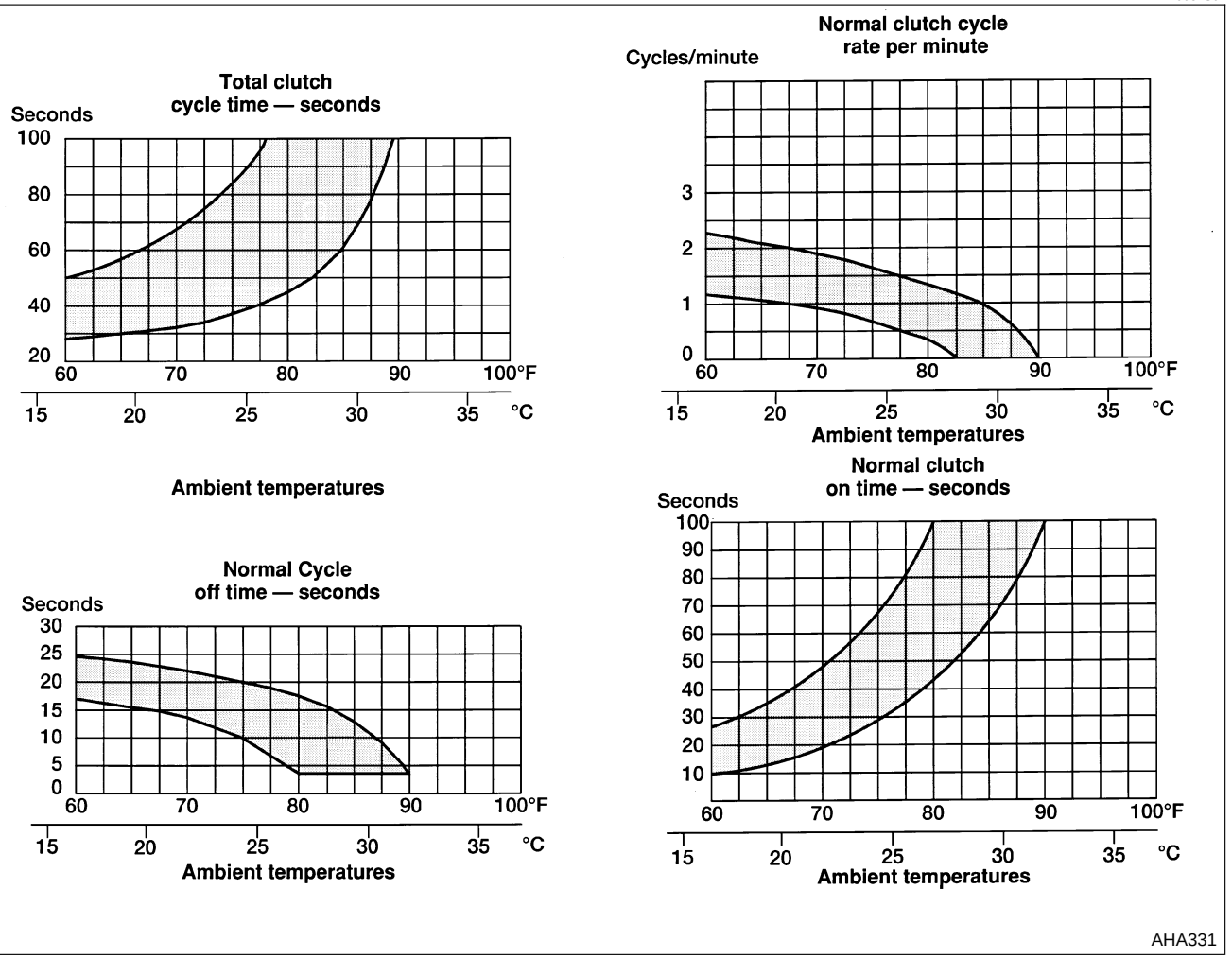




AHA168

Normal Fixed Orifice Tube Refrigerant System Clutch Cycle Timing Rates

NDHA0082S04



Refrigerant System Pressure and Clutch Cycle Timing Evaluation Chart for Fixed Orifice Tube Cycling Clutch Systems

NDHA0082S05

System test conditions must be met to obtain accurate test readings for evaluation. Refer to the normal refrigerant system pressure/temperature and the normal clutch cycle rate and time charts on HA-226.

HIGH (DISCHARGE) PRESSURE	LOW (SUCTION) PRESSURE	CLUTCH CYCLE TIME			COMPONENT — CAUSE
		RATE	ON	OFF	
HIGH	HIGH	CONTINUOUS RUN			CONDENSER — Inadequate Airflow
HIGH	NORMAL TO HIGH				ENGINE OVERHEATING
NORMAL TO HIGH	NORMAL				REFRIGERANT OVERCHARGE (1) AIR IN REFRIGERANT HUMIDITY OR AMBIENT TEMP VERY HIGH (2)
NORMAL	HIGH				FIXED ORIFICE TUBE — Missing O-rings Leaking/Missing
NORMAL TO HIGH	NORMAL TO HIGH	SLOW OR NO CYCLE	LONG OR CONTINUOUS	NORMAL OR NO CYCLE	MOISTURE IN REFRIGERANT SYSTEM EXCESSIVE REFRIGERANT LUBRICANT
NORMAL	LOW	SLOW	LONG	LON	LOW PRESSURE SWITCH — Low Cut-Out

Insufficient Cooling (Cont'd)

HIGH (DISCHARGE) PRESSURE	LOW (SUCTION) PRESSURE	CLUTCH CYCLE TIME			COMPONENT — CAUSE
		RATE	ON	OFF	
NORMAL TO LOW	HIGH	CONTINUOUS RUN			COMPRESSOR — Low Performance
NORMAL TO LOW	NORMAL TO HIGH				A/C SUCTION LINE — Partially Restricted or Plugged (3)
NORMAL TO LOW	NORMAL	FAST	SHORT	NORMAL	EVAPORATOR — Low or Restricted Airflow
			SHORT TO VERY SHORT	NORMAL TO LONG	CONDENSER FIXED ORIFICE TUBE OR A/C LIQUID LINE — Partially Restricted or Plugged
			SHORT TO VERY SHORT	SHORT TO VERY SHORT	LOW REFRIGERANT CHARGE
			SHORT TO VERY SHORT	LONG	EVAPORATOR CORE — Partially Restricted or Plugged
NORMAL TO LOW	LOW	CONTINUOUS RUN			A/C SUCTION LINE — Partially Restricted or Plugged (4) LOW PRESSURE SWITCH — Sticking Closed
—	—	ERRATIC OPERATION OR COMPRESSOR NOT RUNNING			LOW PRESSURE SWITCH — Dirty Contacts or Sticking Open POOR CONNECTION AT A/C CLUTCH CONNECTOR OR CLUTCH CYCLING SWITCH CONNECTOR A/C ELECTRICAL CIRCUIT ERRATIC

ADDITIONAL POSSIBLE CAUSE COMPONENTS
ASSOCIATED WITH INADEQUATE COMPRESSOR OPERATION

- COMPRESSOR DRIVE BELT — Loose
- COMPRESSOR CLUTCH — Slipping
- CLUTCH COIL Open — Shorted or Loose Mounting
- A/C RELAY — Dirty Contacts or Sticking Open
- CLUTCH WIRING CIRCUIT — High Resistance, Open or Blown Fuse
- COMPRESSOR OPERATION INTERRUPTED BY ECM

ADDITIONAL POSSIBLE CAUSE COMPONENTS
ASSOCIATED WITH A DAMAGED COMPRESSOR

- LOW PRESSURE SWITCH — Sticking Closed or Compressor Clutch Seized
- ACCUMULATOR — Lubricant Bleed Hole Plugged
- REFRIGERANT LEAKS

(1) Compressor may make noise on initial run. This is slugging condition caused by excessive liquid refrigerant.

(2) Compressor clutch may not cycle in ambient temperatures above 27°C (80°F) depending on humidity conditions.

(3) Low pressure reading will be normal to high if pressure is taken at accumulator and if restriction is downstream of service valve.

(4) Low pressure reading will be low if pressure is taken near the compressor and restriction is upstream of service valve.

- Fixed orifice tube operation can be checked by touching the line on each side of the locating crimp. One side should be warm the other should be cold.
- If the compressor is repaired due to the noise or seizure, we recommend replacing the fixed orifice tube, accumulator and (if equipped with rear A/C) the rear evaporator inlet filter.

Insufficient Heating

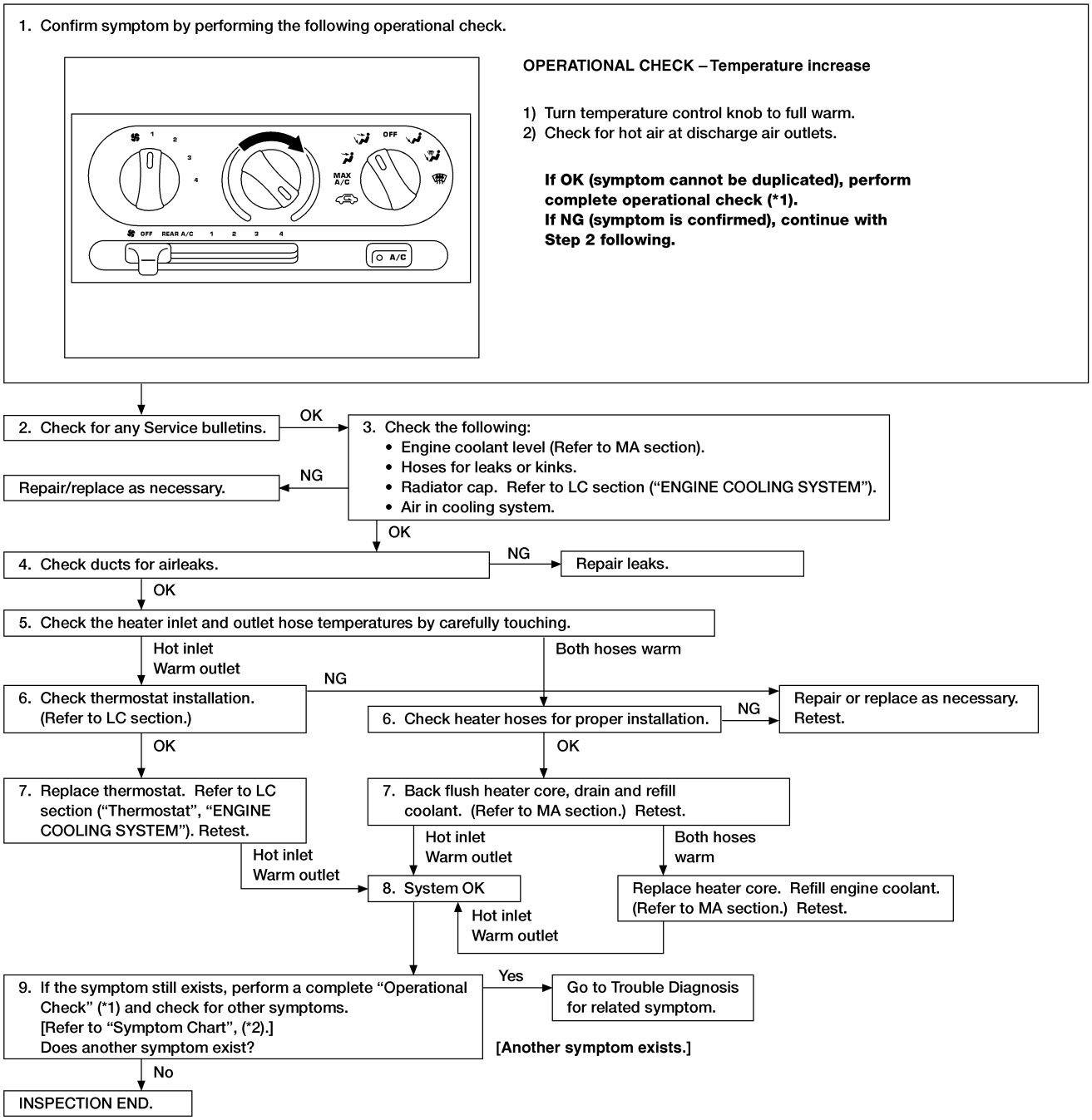
TROUBLE DIAGNOSIS PROCEDURE FOR INSUFFICIENT HEATING

=NDHA0140

Symptom:

- **Insufficient heating**

Inspection Flow



WHA040

*1: HA-179 *2: HA-181

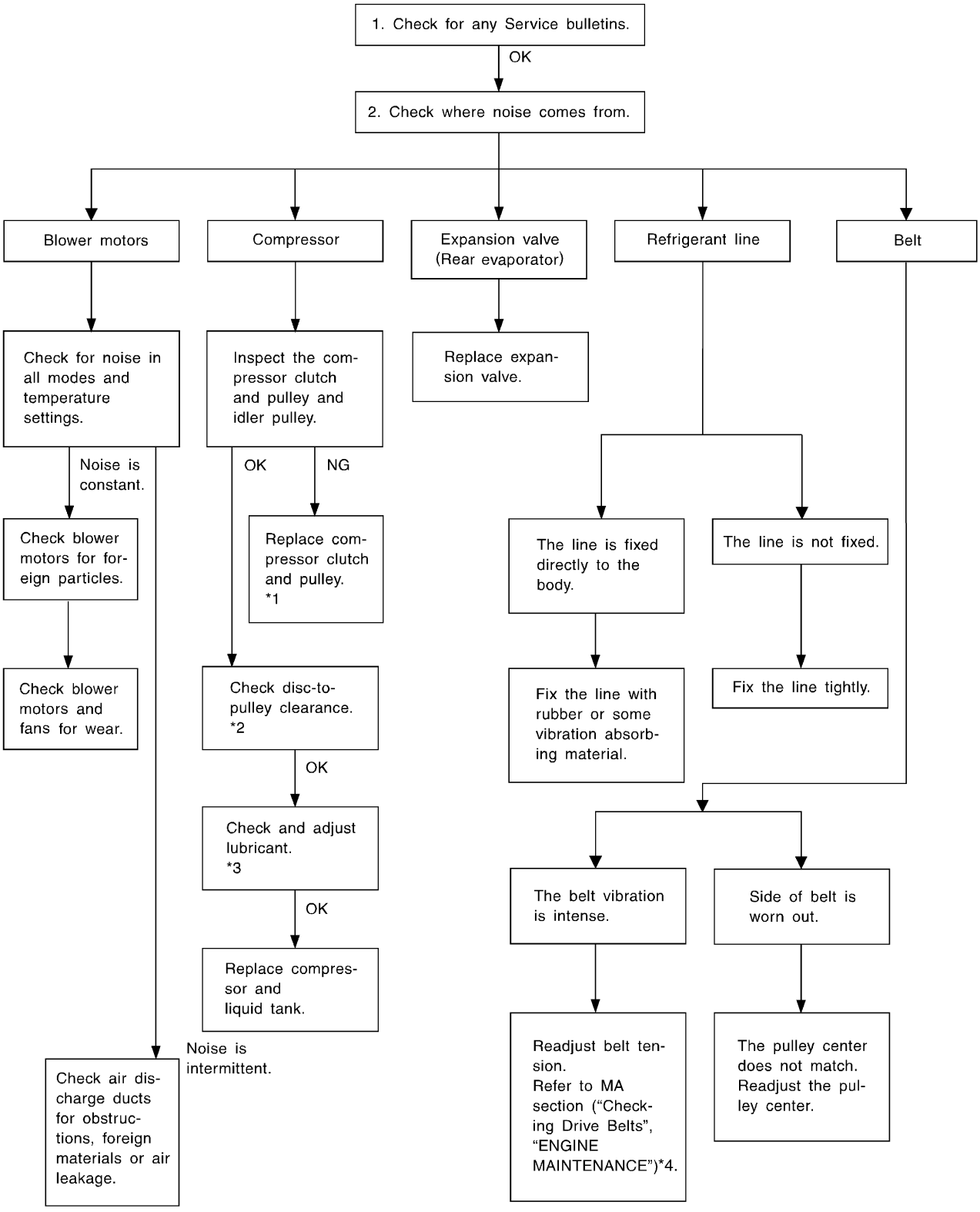
Noise

TROUBLE DIAGNOSIS PROCEDURE FOR NOISE

=NDHA0080

Symptom: ● Noise

Inspection Flow



WHA088

*1: HA-237
*2: HA-238
*3: HA-233
*4: ***MA-13***

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

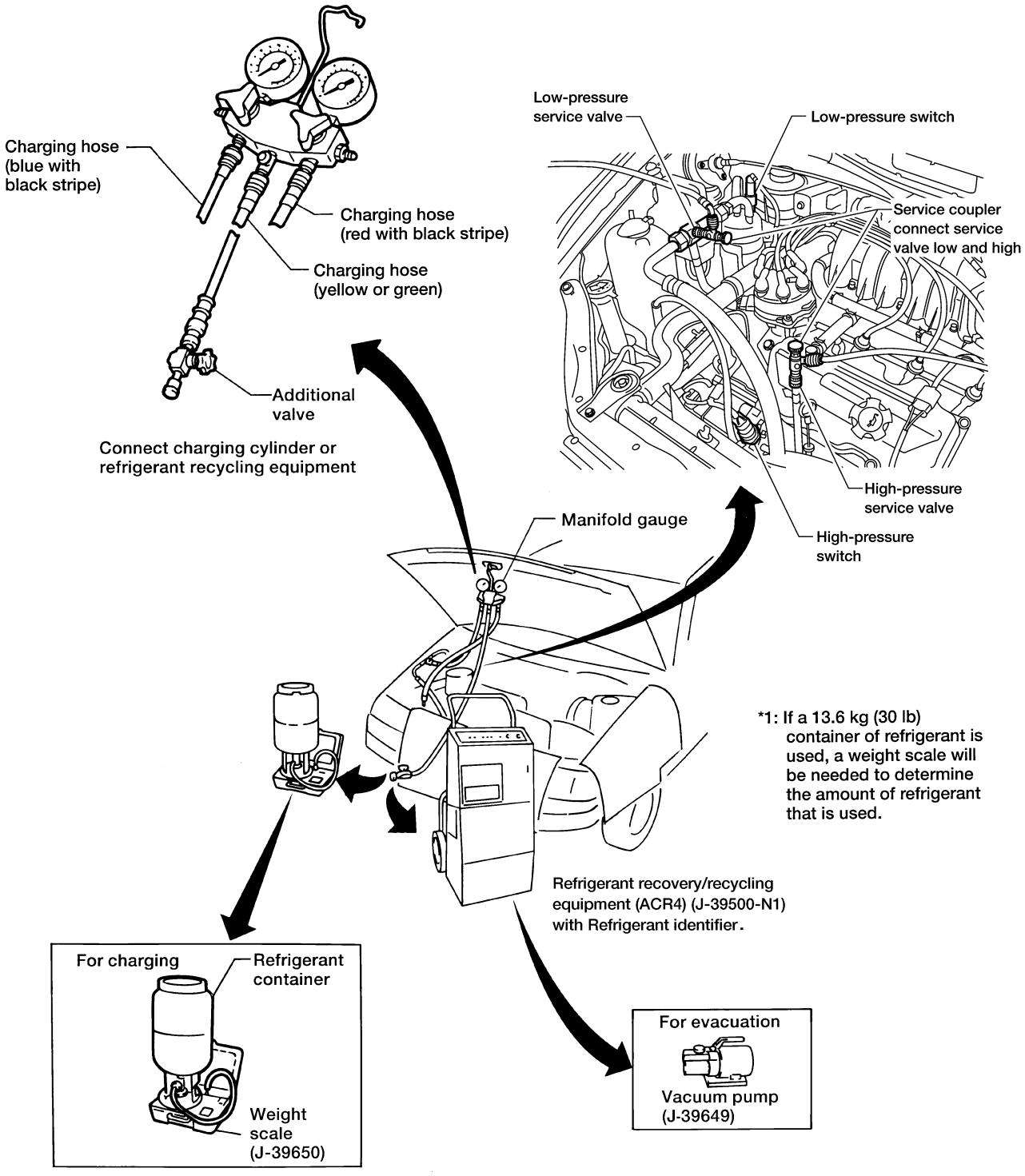
NDHA0094

SETTING OF SERVICE TOOLS AND EQUIPMENT

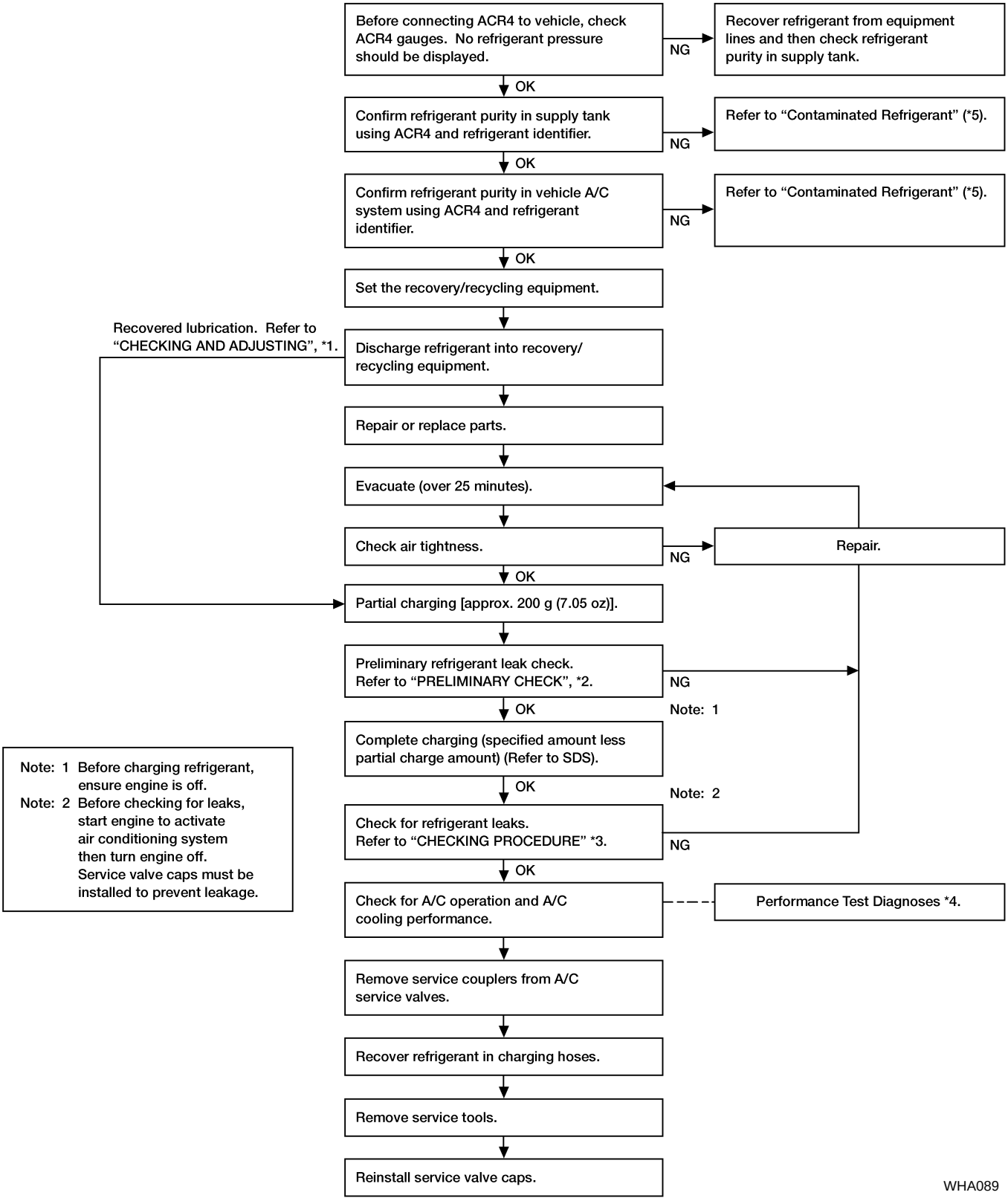
NDHA0094S01

Discharging, Evacuating and Charging Refrigerant

NDHA0094S0101



AHA283A



*1: HA-233
*2: HA-245
*3: HA-246
*4: HA-225

Maintenance of Lubricant Quantity in Compressor

NDHA0095

The lubricant in the compressor circulates through the system with the refrigerant. Add lubricant to compressor when replacing any component or after a large gas leakage occurred. It is important to maintain the specified amount.
If lubricant quantity is not maintained properly, the following malfunctions may result:

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

LUBRICANT

NDHA0095S01

Name: Nissan A/C System Oil Type F
Part numbers*: KLH00-PAGQU and KLH00-PAGQF
*: Always check with the Parts Department for the latest parts information

CHECKING AND ADJUSTING

NDHA0095S02

Adjust the lubricant quantity according to the flowchart shown below.

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

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

3	CHECK COMPRESSOR	
Should the compressor be replaced?		
Yes or No		
Yes	▶	Refer to “Lubricant Adjusting Procedure for Compressor Replacement”, HA-235.
No	▶	GO TO 4.

4	CHECK ANY PART	
Is there any part to be replaced? (Evaporator, condenser, liquid tank or in case there is evidence of a large amount of lubricant leakage.)		
Yes or No		
Yes	▶	Refer to "Lubricant Adjusting Procedure for Components Replacement Except Compressor", HA-235.
No	▶	Carry out the A/C performance test.

Lubricant Adjusting Procedure for Components Replacement Except Compressor

=NDHA0095S0201

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

Amount of lubricant to be added

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

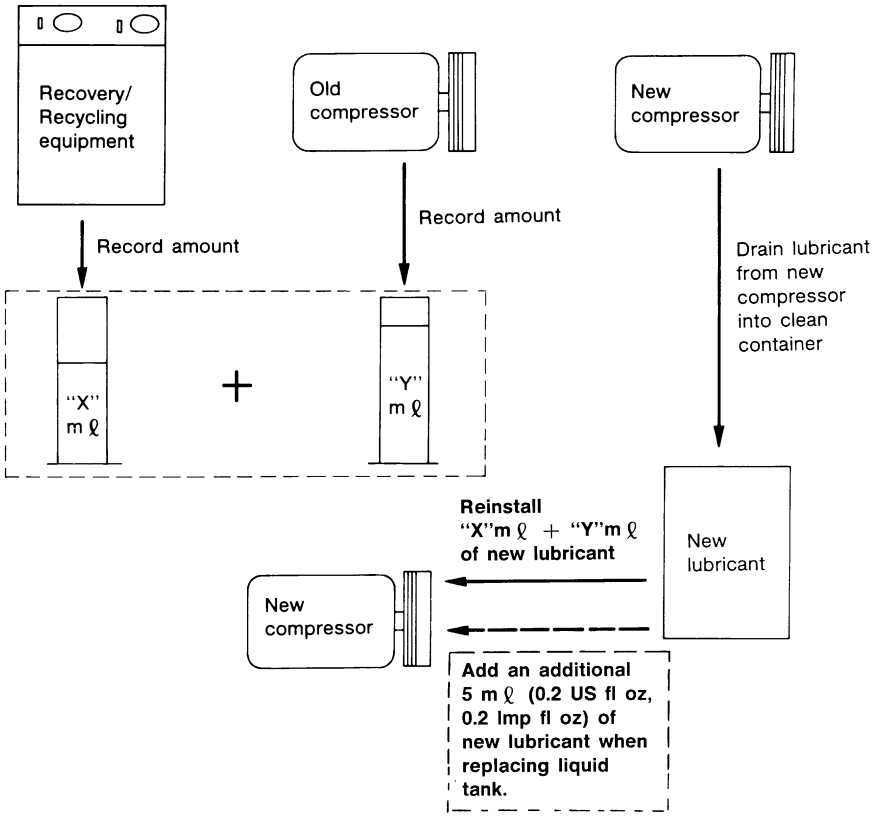
*1: If compressor is replaced, addition of lubricant is included in the flow chart.
*2: If refrigerant leak is small, no addition of lubricant is needed.

Lubricant Adjusting Procedure for Compressor Replacement

NDHA0095S0202

1) Before connecting ACR4 to vehicle, check ACR4 gauges. No refrigerant pressure should be displayed, recover refrigerant from equipment lines and then check refrigerant purity.
2) Confirm refrigerant purity in supply tank using ACR4 and refrigerant identifier. If NG, refer to "Contaminated Refrigerant" (HA-150)
3) Confirm refrigerant purity in vehicle A/C system using ACR4 and refrigerant identifier. If NG, refer to "Contaminated Refrigerant" (HA-150)
4) Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure lubricant discharged into the recovery/recycling equipment.
5) Remove the drain plug of the "old" (removed) compressor. Drain the lubricant into a graduated container and record the amount of drained lubricant.
6) Remove the drain plug and drain the lubricant from the "new" compressor into a separate, clean container.
7) Measure an amount of new lubricant installed equal to amount drained from "old" compressor. Add this lubricant to "new" compressor through the suction port opening.
8) Measure an amount of new lubricant equal to the amount recovered during discharging. Add this lubricant to "new" compressor through the suction port opening.
9) Torque the drain plug.
   Ford Model FS10 compressor:
   18 - 19 N·m (1.8 - 1.9 kg-m, 13 - 14 ft-lb)
10) If the accumulator also needs to be replaced, add an additional 5 mℓ (0.2 US fl oz, 0.2 Imp fl oz) of lubricant at this time.
    Do not add this 5 mℓ (0.2 US fl oz, 0.2 Imp fl oz) of lubricant if only replacing the compressor.

Lubricant adjusting procedure for compressor replacement



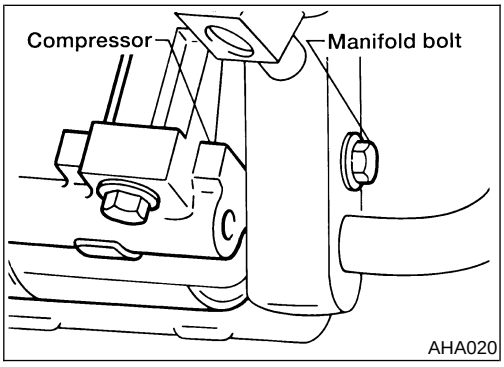
RHA065DD

Compressor

REMOVAL

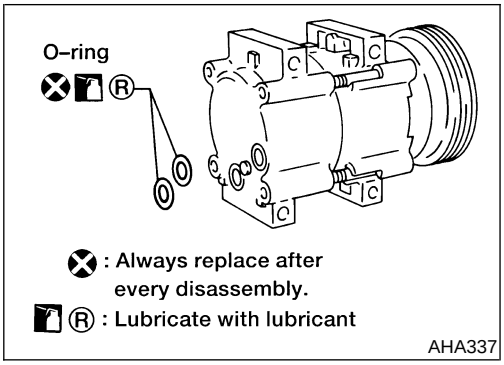
NDHA0096

1. Disconnect battery cable.
2. Discharge refrigerant into refrigerant recycling equipment. Refer to HA-231.



AHA020

3. Remove manifold bolt.
4. Remove manifold and inlet/outlet compressor cap.
5. Loosen idler pulley adjusting bolt.
6. Remove compressor drive belt.
7. Disconnect compressor harness connectors.
8. Remove four compressor fixing bolts.
9. Remove compressor.



10. Remove manifold O-rings from compressor housing.

INSTALLATION

NDHA0167

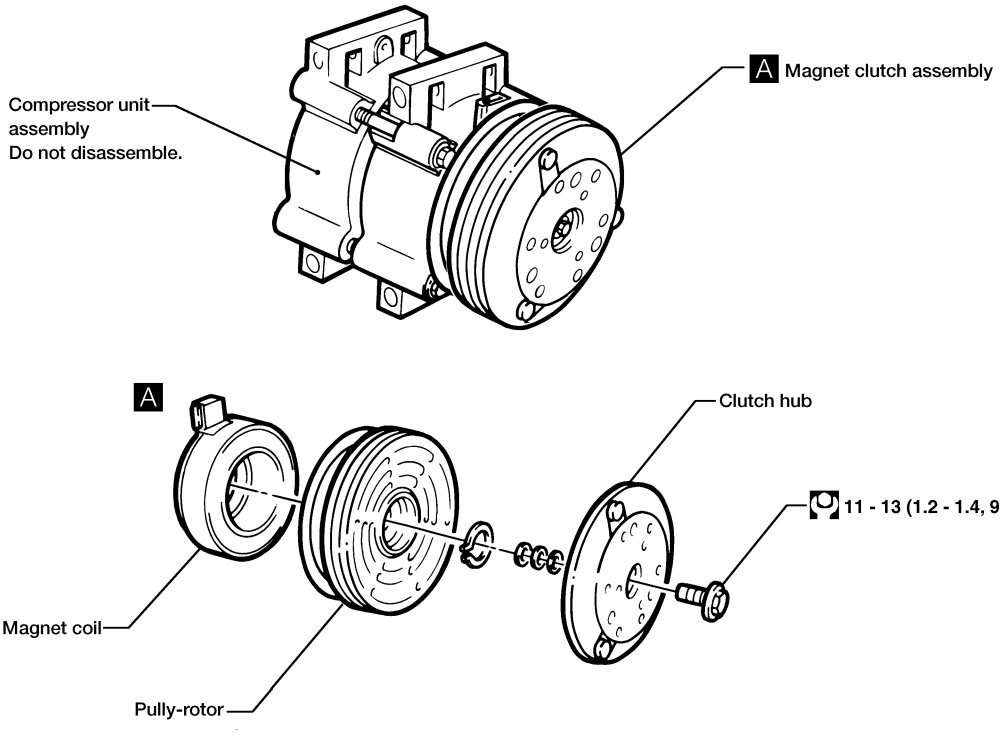
Installation is the reverse order of removal.

Compressor Clutch

REMOVAL

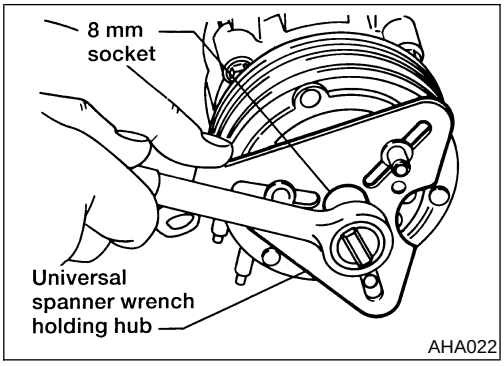
NDHA0098

SEC. 274

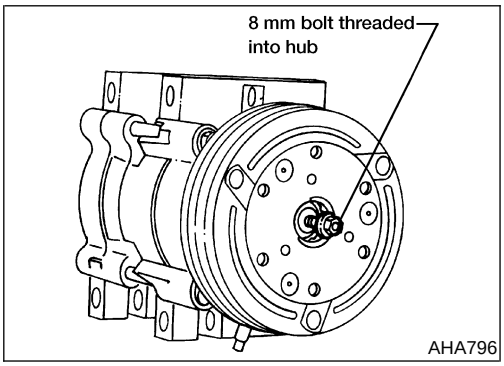


: N·m (kg-m, ft-lb)

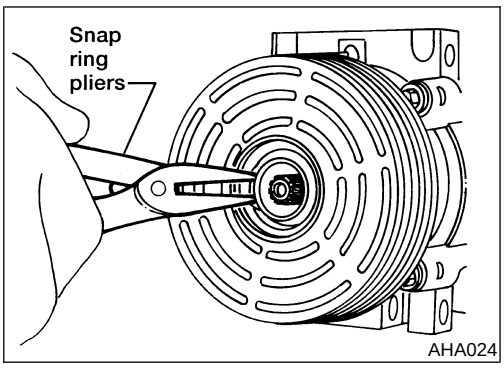
AHA434A



1. Remove the clutch hub retaining bolt. Use Spanner Wrench or equivalent.



2. Remove clutch hub and shims from compressor shaft. If hub cannot be removed from compressor shaft. If hub cannot be removed from compressor shaft, screw an 8 mm bolt into the shaft hole of the clutch hub to force the hub from the shaft.



3. Remove pulley retaining snap ring.
4. Remove the pulley and bearing assembly from compressor.

INSTALLATION

NDHA0100

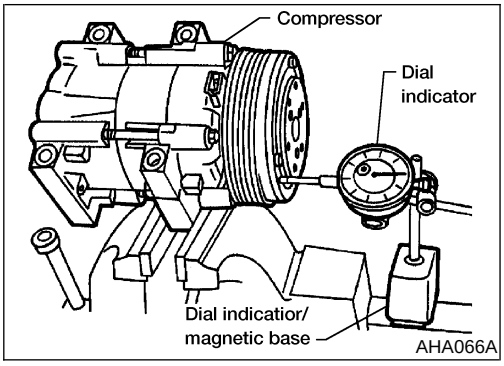
CAUTION:

Do not use air tools.

1. Clean pulley bearing surface of compressor head to remove any dirt or corrosion.
2. Install pulley and bearing assembly on compressor. The bearing is a slip fit on the compressor head and, if properly aligned, it should slip on easily.
3. Install pulley retaining snap ring with bevel side of snap ring out.
4. Install clutch hub onto compressor shaft, together with original shim(s).
5. Thread a new hub retaining bolt into end of compressor shaft.

   Tighten hub retaining bolt:

   11 to 14N·m (1.1 to 1.4 kg-m, 8 to 10 ft-lb).
6. When installing a new clutch, cycle it ten times at idle to burnish the clutch and prevent slippage.



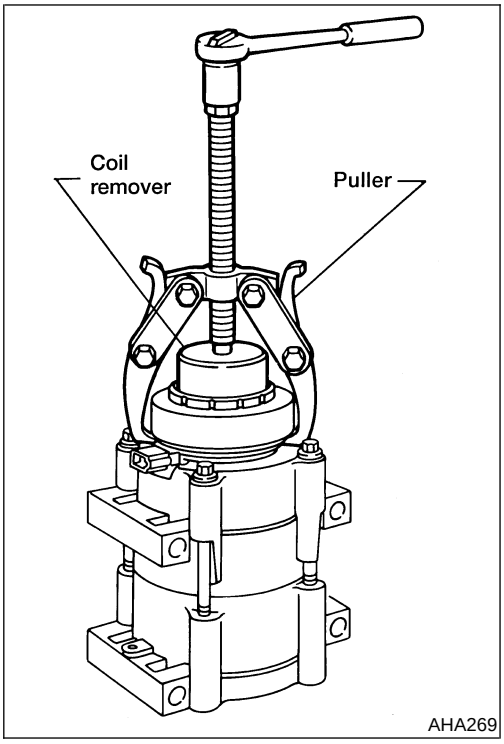
Clutch Air Gap Adjustment

NDHA0177

1. Remove the compressor.
2. Place compressor in a vise.
3. Install dial indicator and set to zero. Make sure the plunger of the dial indicator contacts the A/C compressor clutch disc.
4. Measure A/C compressor clutch disc to pulley clearance using jumper wires to energize the A/C compressor clutch disc.

   Disc to pulley clearance:

   0.45–0.85 mm (0.020–0.033 in)
5. If the specified clearance cannot be obtained, add or remove shims as required.



Magnet Clutch

REMOVAL

NDHA0178

The magnet clutch coil is pressed on the front head of the compressor. Special service tools are required to remove and install the coil.

CAUTION:

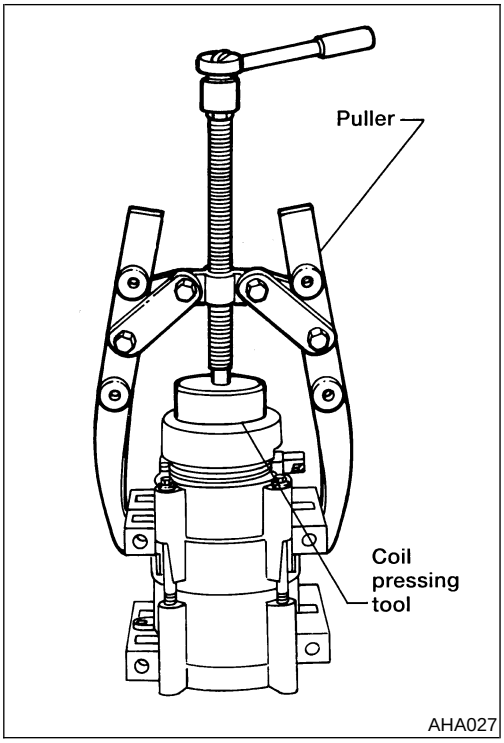
Do not use air tools.

1. Install coil remover Tool on the nose opening of the compressor.
2. Install a puller on the compressor. Place the tip of the puller forcing screw in the center pilot of the coil remover Tool and the jaws of the puller around the back edge of the field coil.

NOTE:

Note the electrical connector location prior to coil removal. There are two possible locations and it is important to align the coil in the correct position during assembly.

3. Tighten the pulley forcing screw to pull the coil from the compressor head.



INSTALLATION

NDHA0179

CAUTION:

Do not use air tools.

1. Clean the coil mounting surface on the front head to remove any dirt or corrosion.
2. With the compressor in a vertical position (nose up), place the magnet coil in position on the compressor front head.
   Check to ensure that the coil electrical connector is positioned correctly.
3. Place the coil pressing (installer) Tool in position over the compressor nose and to the inner radius of the field coil.
4. Position 2–jaw puller Tool on the compressor and the coil pressing Tool as shown in the figure. The jaws of the puller should be firmly engaged with the rear side of the compressor front mounts. The forcing screw must be piloted on the center mark of the pressing tool.
5. Tighten the forcing screw with a hand wrench until the coil is pressed on the compressor front head.
   Check to ensure that the magnet coil bottoms against the head at all points around the coil diameter.
6. Install the clutch pulley and hub on the compressor as outlined. Adjust the air gap, as necessary. Refer to HA-239.

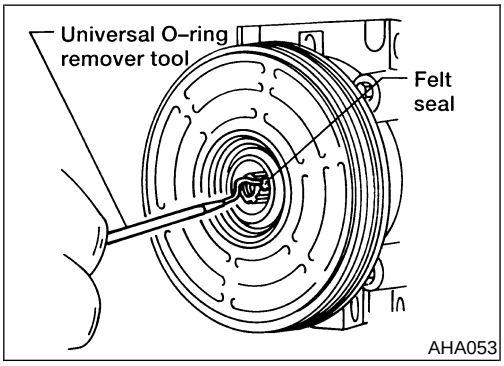
Shaft Seal

NDHA0180

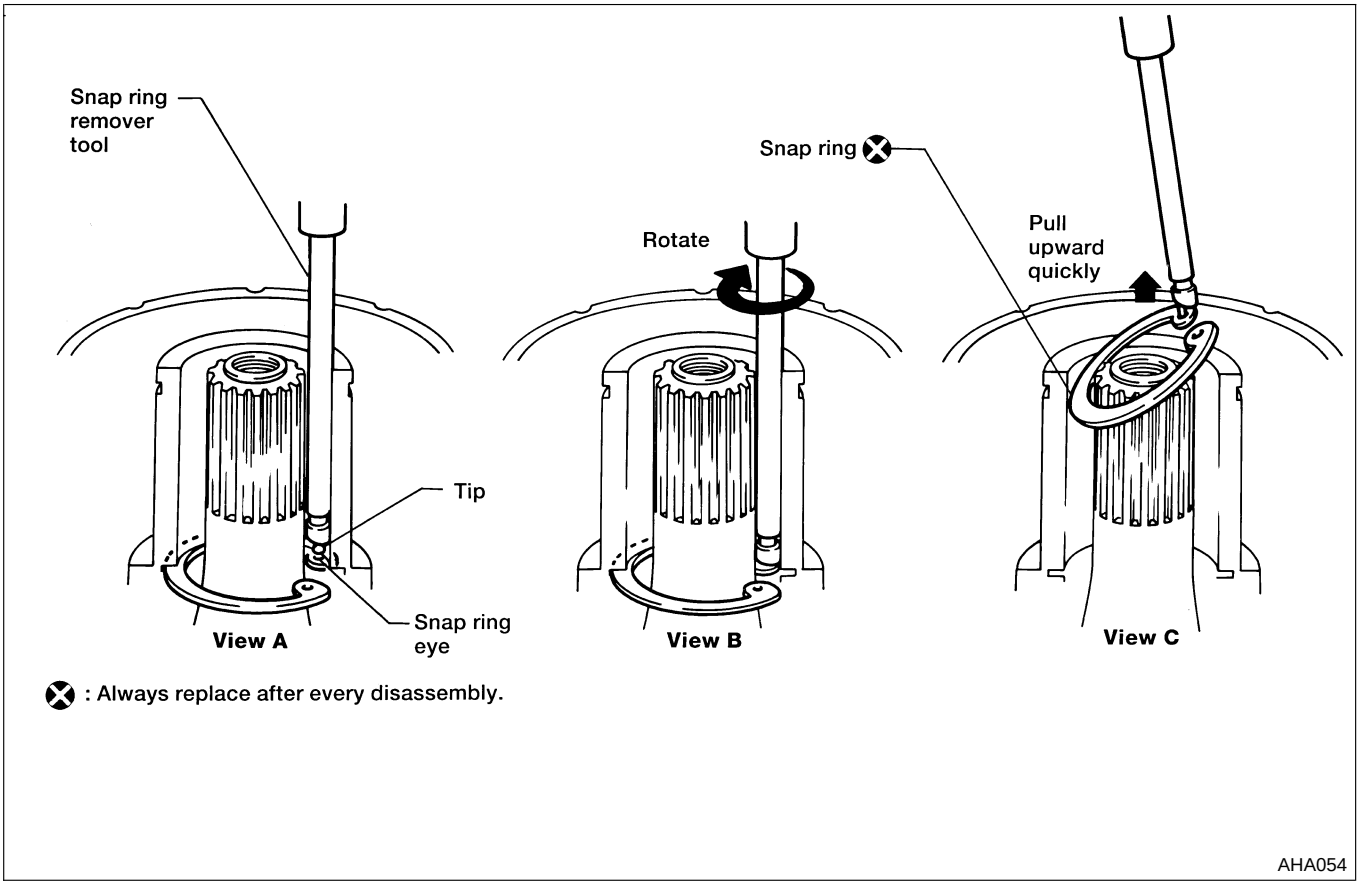
REMOVAL

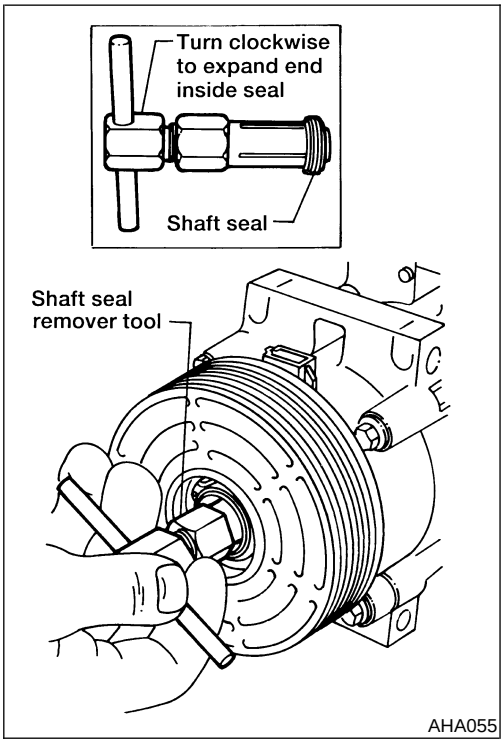
NDHA0180S01

1. Discharge the A/C system. Refer to HA-231.
2. Remove the compressor from the vehicle. Refer to HA-236.
3. Remove the magnet clutch. Refer to HA-239.

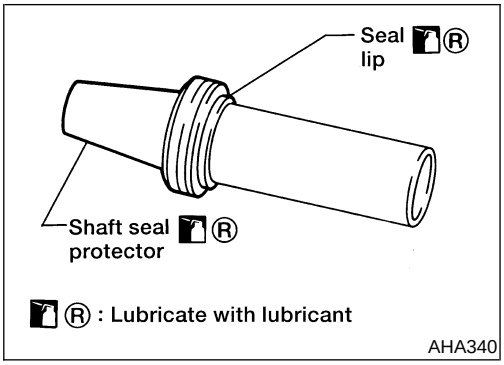


4. Remove the shaft seal felt with universal O-ring remover tool.
5. Remove shaft seal snap ring with snap ring remover.





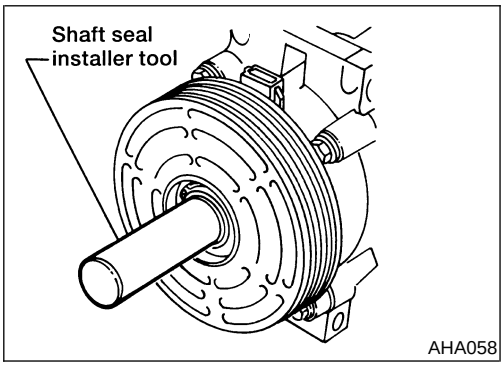
6. Insert end of shaft seal remover tool into nose of compressor. Hold the hex base and turn handle clockwise to expand tool.
7. Remove the shaft seal.



INSTALLATION

NDHA0180S02

1. Dip shaft seal and shaft seal protector in refrigerant lubricant. Install shaft seal on protector with lip of seal facing large end of protector.
2. Install shaft seal protector and shaft seal over end of compressor shaft.



3. Slowly push shaft seal down protector into compressor shaft with shaft seal installer. Be careful that shaft seal is seated properly.
4. Remove shaft seal installer and shaft seal protector from compressor shaft.
5. Install shaft seal snap ring. Be careful that snap ring is correctly seated.
6. Install shaft seal felt in compressor nose.
7. Install clutch hub and pulley.
8. Inspect compressor for refrigerant leaks. Refer to HA-245.

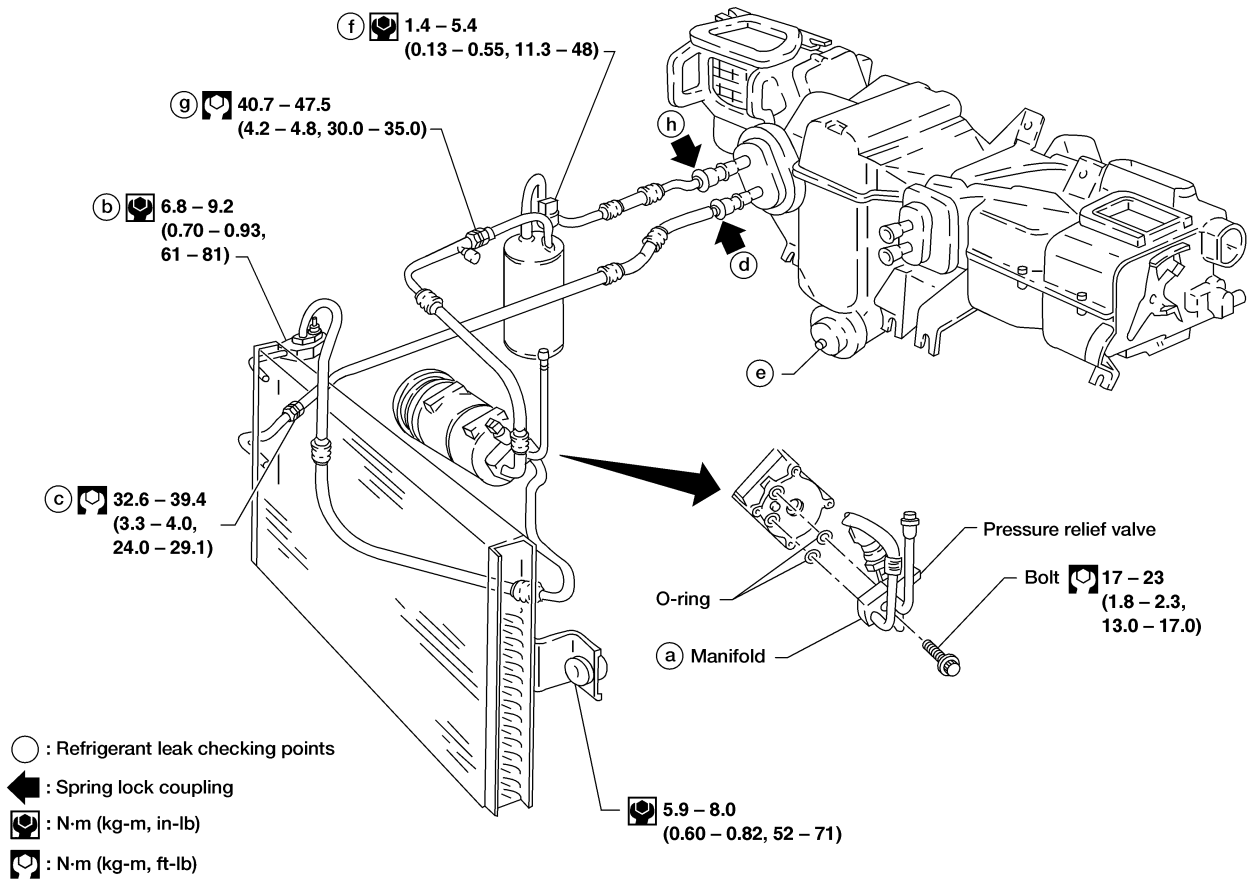
Refrigerant Lines

NDHA0101

MODELS WITHOUT REAR A/C

NDHA0101S02

SEC. 271 • 274 • 276

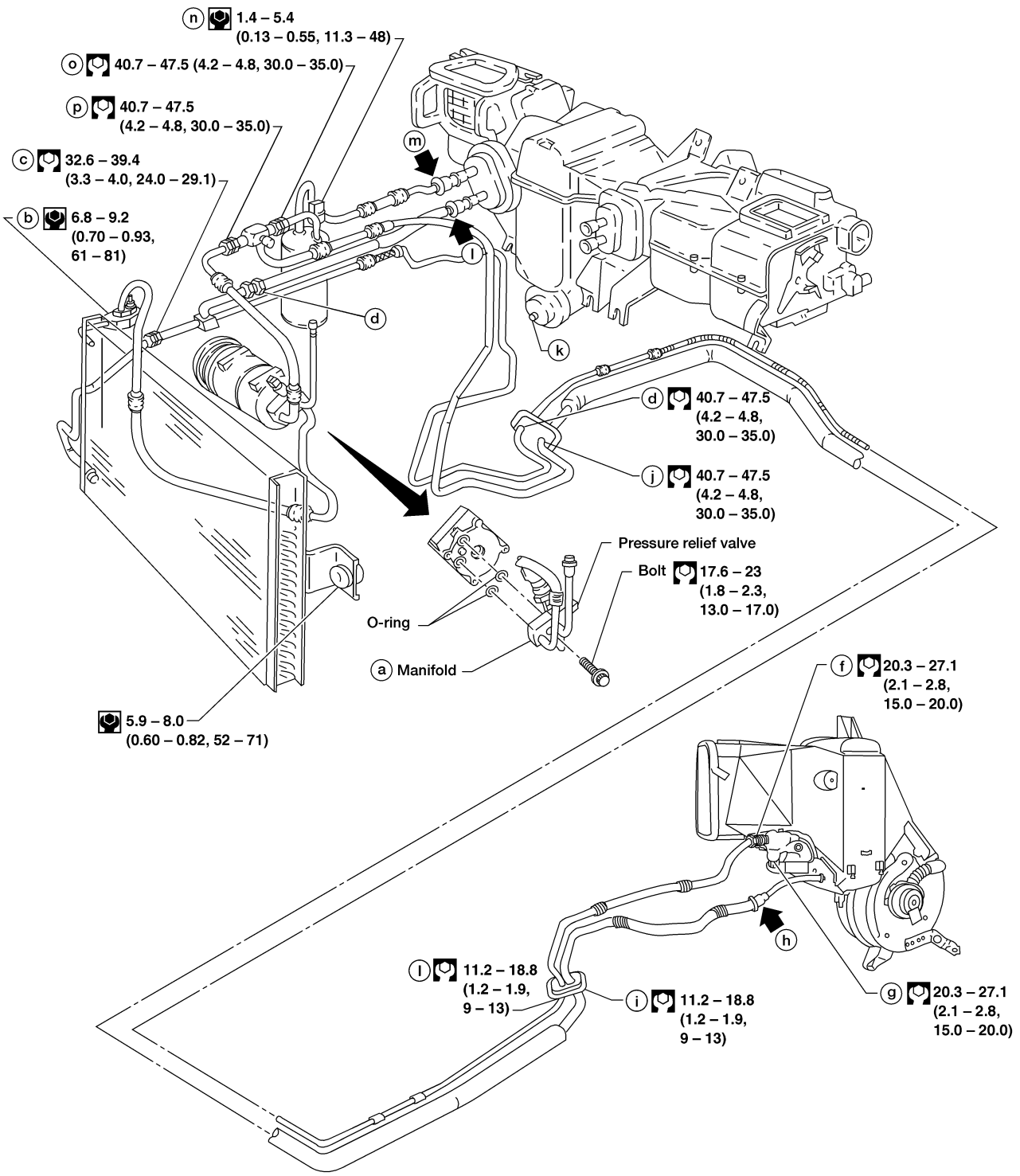


AHA478A

MODELS WITH REAR A/C

NDHA0101S03

SEC. 271 • 274 • 276



: Refrigerant leak checking points

: Spring lock coupling

: N·m (kg-m, in-lb)

: N·m (kg-m, ft-lb)

WHA187

Checking Refrigerant Leaks

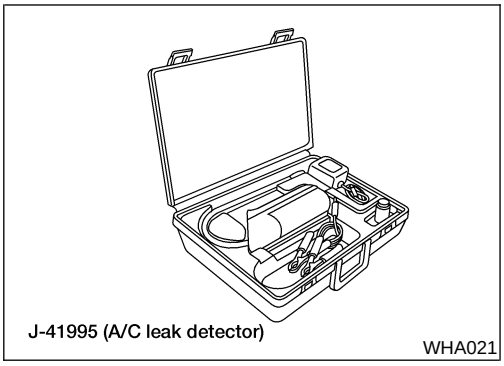
NDHA0102

PRELIMINARY CHECK

NDHA0102S01

- Perform a visual inspection of all refrigeration parts, fittings, hoses and components for signs of A/C lubricant leakage, damage and corrosion. A/C lubricant leakage may indicate an area of refrigerant leakage. Allow extra inspection time in these areas when using either an electronic refrigerant leak detector or fluorescent dye leak detector.
- If dye is observed, confirm the leak with an approved electronic refrigerant leak detector. It is possible a prior leak was repaired and not properly cleaned.
- When searching for leaks, do not stop when one leak is found but continue to check for additional leaks at all system components and connections.
- When searching for refrigerant leaks using an electronic leak detector, move the probe along the suspected leak area at 1 to 2 inches per second an no further than 1/4 inch from the component.

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


J-41995 (A/C leak detector)
WHA021

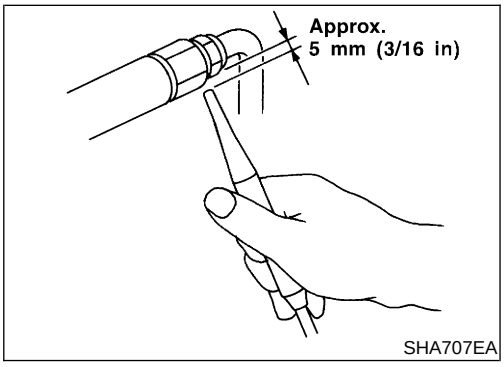
Electronic Refrigerant Leak Detector

NDHA0296

PRECAUTIONS FOR HANDLING LEAK DETECTOR

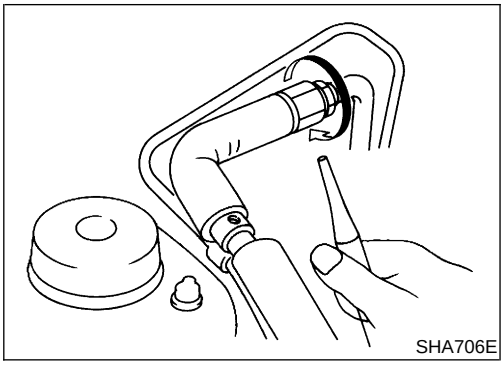
NDHA0296S01

When performing a refrigerant leak check, use a J41995 electronic refrigerant leak detector or equivalent. Ensure that the instrument is calibrated and set properly per the operating instructions.
The leak detector is a delicate device. In order to use the leak detector properly, read the operating instructions and perform any specified maintenance.
Other gases in the work area or substances on the A/C components, for example, anti-freeze, windshield washer fluid, solvents and lubricants, may falsely trigger the leak detector. Make sure the surfaces to be checked are clean. Clean with a dry cloth or blow off with shop air. Do not allow the sensor tip of the detector to contact any substance. This can also cause false readings and may damage the detector.

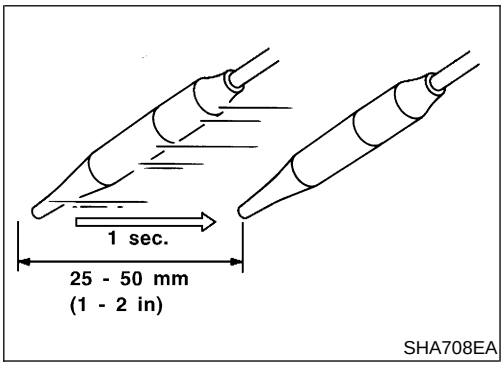


SHA707EA

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


SHA706E

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



SHA708EA

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

CHECKING PROCEDURE

NDHA0296S02

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

1. Turn engine off.
2. Connect a suitable A/C manifold gauge set to the A/C service ports.
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.52 kg/cm^2, 50 psi) above 16°C (61°F). If less than specification, recover/evacuate and recharge the system with the specified amount of refrigerant.

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

4. Conduct the leak test from the high side (compressor discharge **a** to evaporator inlet **d**) to the low side (evaporator drain hose **e** to compressor suction **p**). Refer to HA-243. Perform a leak check for the following areas carefully. Clean the component to be checked and move the leak detector probe completely around the connection/component.

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

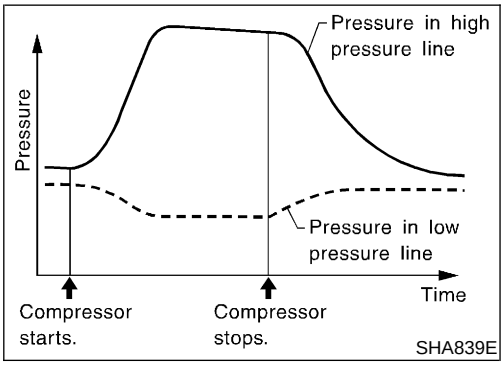
NOTE:
After removing A/C manifold gauge set from service valves, wipe any residue from valves to prevent any false readings by leak detector.

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

5. If a leak detector detects a leak, verify at least once by blowing compressed air into area of suspected leak, then repeat check as outlined above.
6. Do not stop when one leak is found. Continue to check for additional leaks at all system components.
   If no leaks are found, perform steps 7 through 10.
7. Start engine.
8. Set the heater A/C control as follows:

a. A/C switch ON
b. Face mode
c. Recirculation switch ON
d. Max cold temperature
e. Fan speed high

9. Run engine at 1,500 rpm for at least 2 minutes.
10. Turn engine off and perform leak check again following steps 4 through 6 above.



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

11. Before connecting ACR4 to vehicle, check ACR4 gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover refrigerant from equipment lines and then check refrigerant purity.
12. Confirm refrigerant purity in supply tank using ACR4 and refrigerant identifier.
13. Confirm refrigerant purity in vehicle A/C system using ACR4 and refrigerant identifier.
14. Discharge A/C system using approved refrigerant recovery equipment. Repair the leaking fitting or component as necessary.
15. Evacuate and recharge A/C system and perform the leak test to confirm no refrigerant leaks.
16. Conduct A/C performance test to ensure system works properly.

Fluorescent Dye Leak Detector

NDHA0277

PRECAUTIONS FOR FLUORESCENT DYE LEAK DETECTION

NDHA0277S01

- The fluorescent dye leak detector is not a replacement for an electronic refrigerant leak detector. The fluorescent dye leak detector should be used in conjunction with an electronic refrigerant leak detector (J-41995) to pinpoint refrigerant leaks.
- For your safety and your customer's satisfaction, read and follow all manufacturer's operating instructions and precautions prior to performing the work.
- Refer to "Precautions for Leak Detection Dye", HA-150.

CHECKING SYSTEM FOR LEAKS USING THE FLUORESCENT LEAK DETECTOR

NDHA0277S02

1. Check A/C system for leaks using the UV lamp and safety glasses (J-42220) in a low sunlight area (area without windows preferable). Illuminate all components, fittings and lines. The dye will appear as a bright green/yellow area at the point of leakage. Fluorescent dye observed at the evaporator drain opening indicates an evaporator core assembly (tubes, core or TXV) leak.
2. If the suspected area is difficult to see, use an adjustable mirror or wipe the area with a clean shop rag or cloth, then check the cloth with the UV lamp for dye residue.
3. Confirm any suspected leaks with an approved electronic refrigerant leak detector.
4. After the leak is repaired, remove any residual dye using dye cleaner (J-43872) to prevent future misdiagnosis.
5. Perform a system performance check and verify the leak repair with an approved electronic refrigerant leak detector.

DYE INJECTION

NDHA0277S03

(This procedure is only necessary when re-charging the system or when the compressor has seized and was replaced.)
Refer to "Precautions for Leak Detection Dye", HA-150.

1. Check A/C system static (at rest) pressure. Pressure must be at least 345 kPa (50 psi).
2. Pour one bottle (1/4 ounce / 7.4 cc) of the A/C refrigerant dye into the injector tool (J-41459).
3. Connect the injector tool to the A/C LOW PRESSURE side service fitting.
4. Start engine and switch A/C ON.
5. With the A/C operating (compressor running), inject one bottle (1/4 ounce / 7.4 cc) of fluorescent dye through the low-pressure service valve using dye injector tool J-41459 (refer to the manufacturer's operating instructions).
6. With the engine still running, disconnect the injector tool from the service fitting.

CAUTION:
Be careful not to allow dye to spray or drip when disconnecting the injector from the system.

NOTE:
If repairing the A/C system or replacing a component, pour the dye directly into the open system connection and proceed with the service procedures.

7. Operate the A/C system for a minimum of 20 minutes to mix

the dye with the system oil. Depending on the leak size, operating conditions and location of the leak, it may take from minutes to days for the dye to penetrate a leak and become visible.

Belt

TENSION ADJUSTMENT

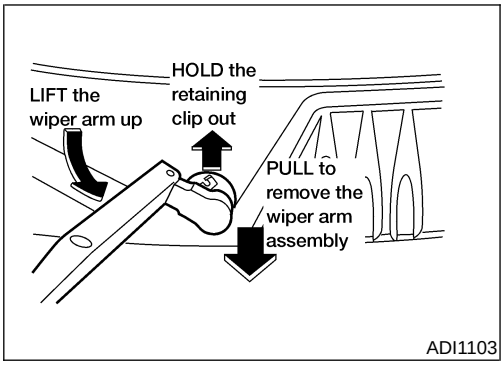
NDHA0103

- **Refer to “Checking Drive Belts”, *MA-13*.**

Cabin Air Filter

NDHA0271

The cabin air filter restricts the entry of airborne dust and pollen particles and reduces some objectionable outside odors. The filter is located just in front of the windshield under the cowl cover on the passenger side of the vehicle.
To replace the filter, perform the following procedure.

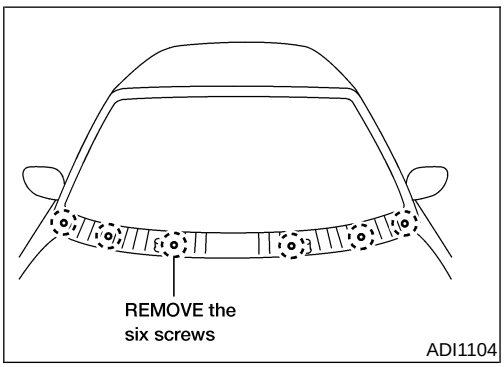


REMOVAL

NDHA0271S01

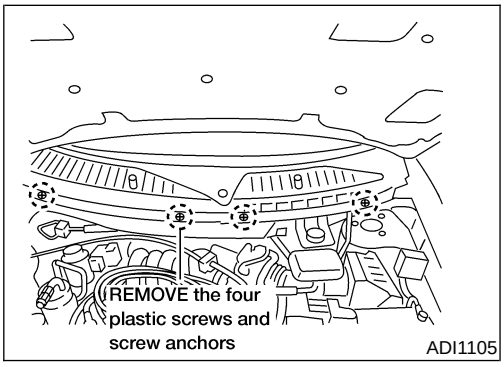
1. Remove the windshield wiper arms.

- Lift the wiper arm away from the windshield surface until the wiper is perpendicular to the windshield.
- Lift and remove the wiper arm while holding the small retaining clip at the base of wiper arm outward.

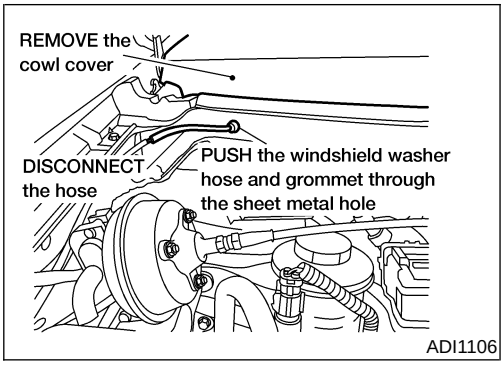


2. Remove the cowl cover.

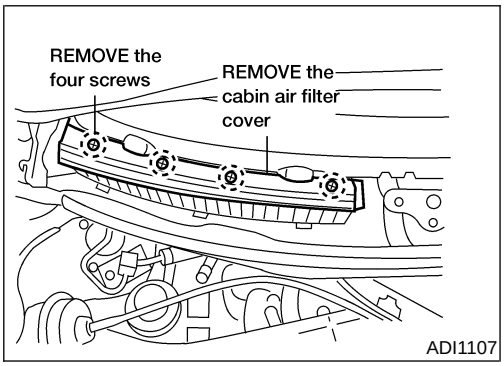
- Remove the six screws.
- Open the hood.



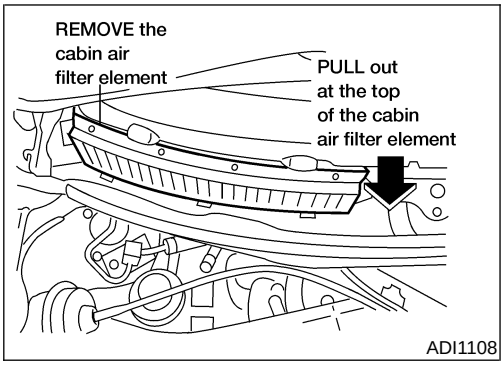
- Remove the four plastic screws from the forward edge of the cowl cover.
- Remove the four plastic screw anchors.



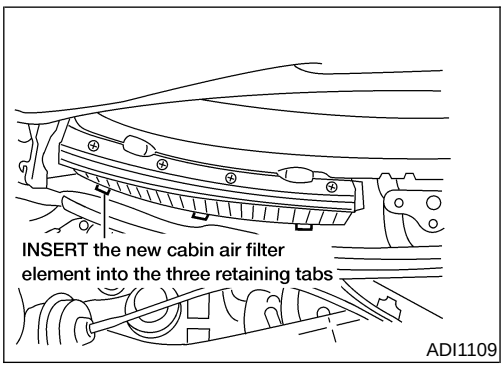
- Disconnect the windshield washer hose at the passenger side rear corner of the engine compartment.
- Push the windshield washer hose and the grommet through the sheet metal hole.
- Lift the cowl cover and remove it from the vehicle.



3. Locate the cabin air filter on the passenger side of the vehicle.
- Remove the four screws from the top surface of the cabin air filter top cover.
- Remove the cabin air filter cover.



- Remove the cabin air filter element by pulling forward on the top surface of the filter and lifting.



INSTALLATION

NDHA0271S02

1. Install the new cabin air filter element into the filter retaining frame, ensure that you insert the three retaining tabs in the bottom of the filter frame.
2. Install the filter top cover and the four screws.
3. Feed the windshield washer hose from the cowl cover through the hole in the sheet metal.
- Ensure that you fully seat the rubber grommet into the sheet metal hole.
4. Reconnect the windshield washer hose.
5. Position the windshield washer hose.
6. Reinstall the four screw anchors and the four screws.
7. Close the hood.
8. Install the six screws in the cowl cover.
9. Install the windshield wiper arms.
- Push the wiper arm downward onto the wiper arm pivot until the small retaining clip snaps into the locked position.
- Lower the wiper arm blade onto the windshield surface.

Fast Idle Control Device (FICD)

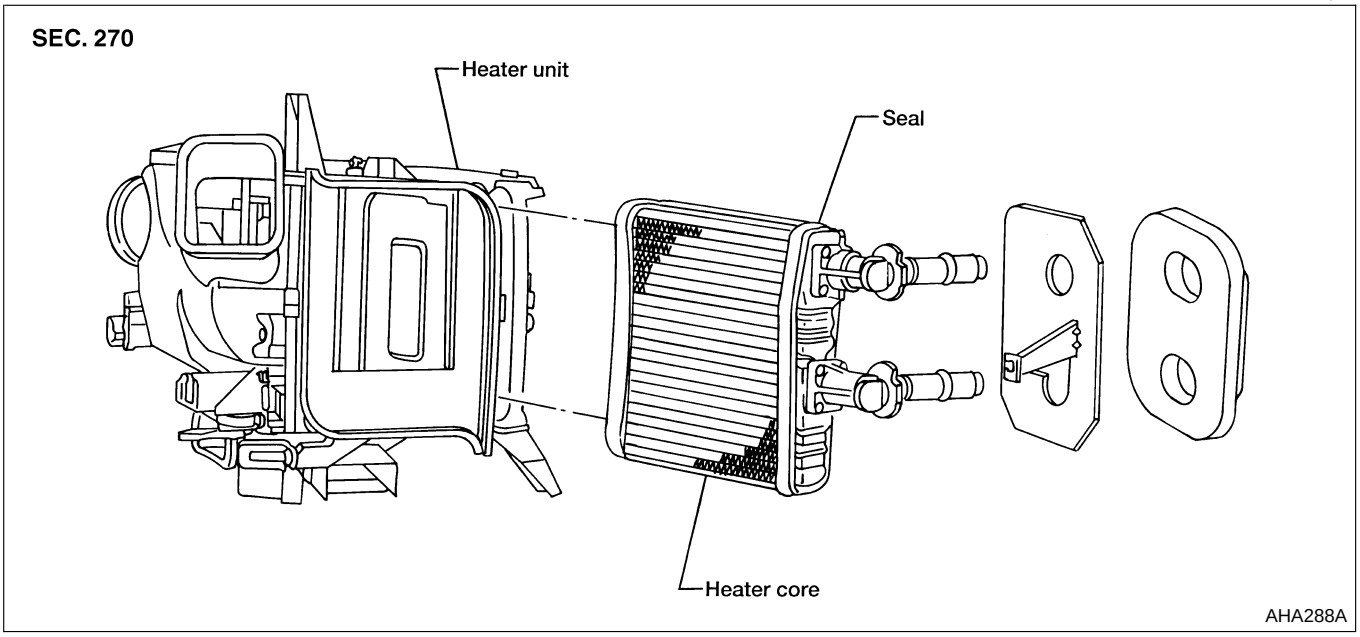
INSPECTION

NDHA0104

- **Refer to “IACV-FICD Solenoid Valve”, *EC-552*.**

Heater Core

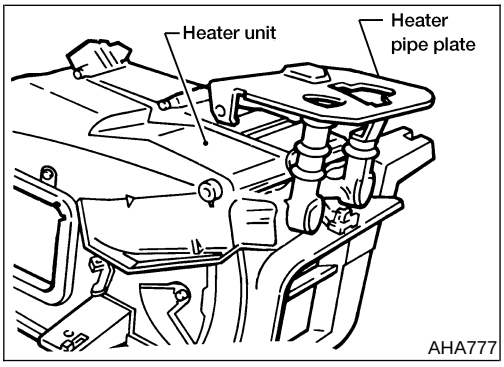
NDHA0171



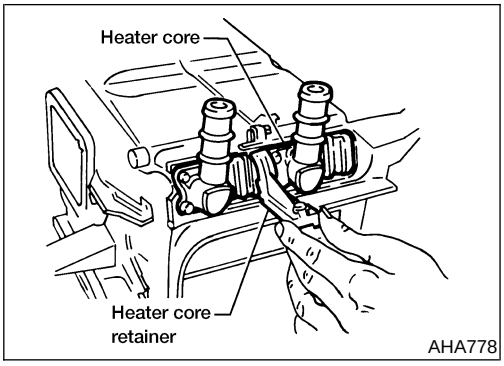
REMOVAL

NDHA0171S01

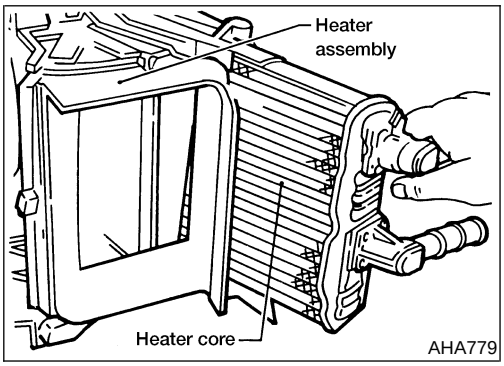
1. Drain cooling system. Refer to “Changing Engine Coolant”, ***MA-14***.
2. Disconnect two heater hoses in engine compartment.
3. Disconnect heater unit ducts.
4. Disconnect heater unit bolts.
5. Disconnect door motor electrical connectors.
6. Remove heater unit.



7. Remove heater pipe plate.



8. Remove heater core retainer.



9. Remove heater core from heater unit.

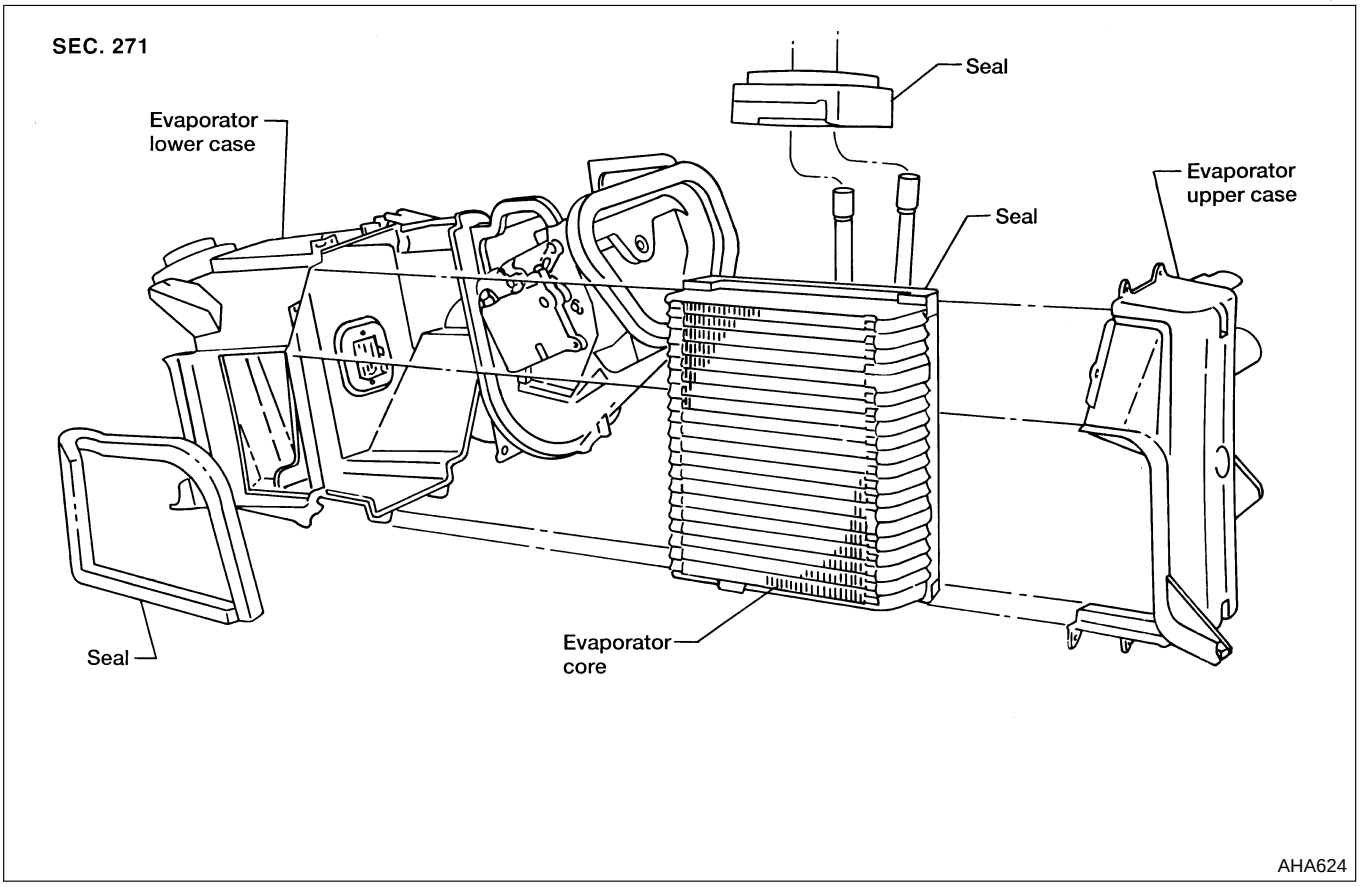
INSTALLATION

NDHA0171S02

Installation is the reverse order of removal. Inspect system for coolant leaks. Refer to "Changing Engine Coolant", ***MA-14***.

Front Evaporator Core

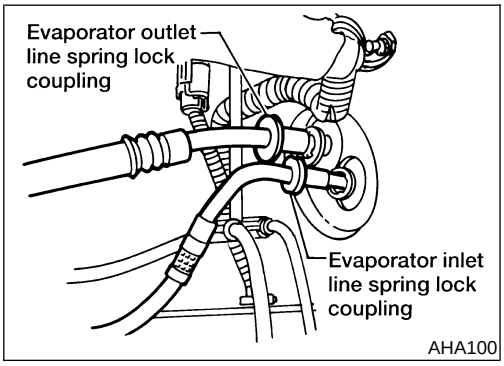
NDHA0172



REMOVAL

NDHA0172S01

1. Discharge the A/C system. Refer to HA-231.



2. Use tool to disconnect spring lock couplings in engine compartment.
3. Remove instrument panel RH.
4. Remove duct from heater unit to register RH.
5. Disconnect blower motor and electrical connector.
6. Remove evaporator.

INSTALLATION

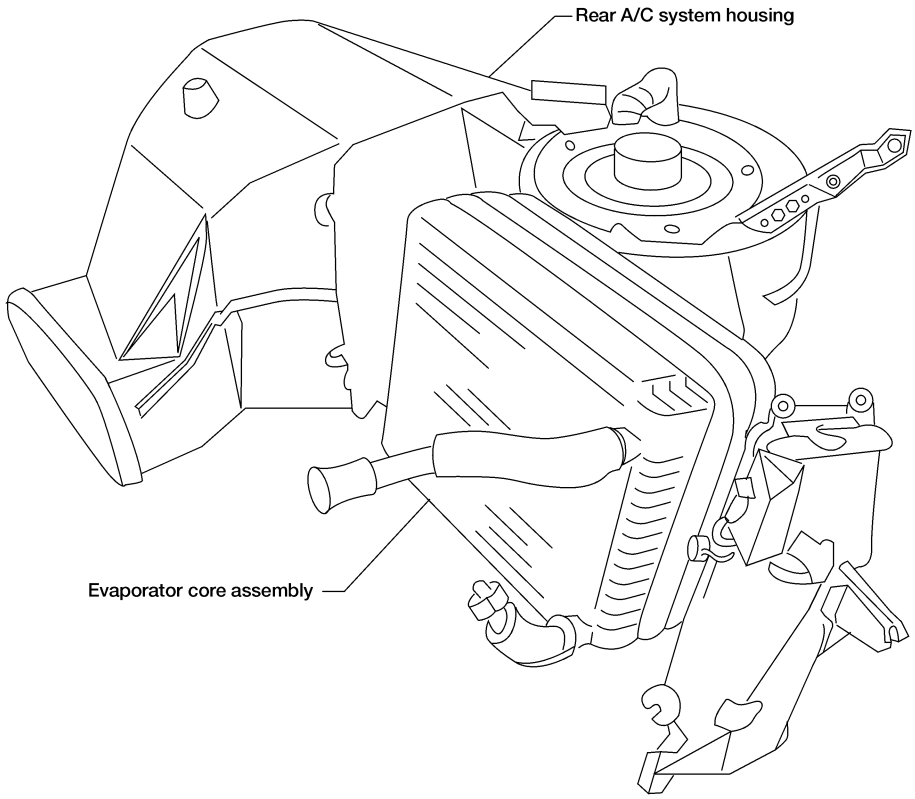
NDHA0172S02

Installation is the reverse order or removal.
Inspect system for refrigerant leaks. Refer to HA-245.

Rear Evaporator Core

NDHA0173

SEC. 270 • 271



AHA416A

REMOVAL

NDHA0173S01

1. Discharge and recover refrigerant from the A/C system. Refer to HA-231.
2. Remove driver's side trim panel and bolts from housing.
3. Remove A/C system housing.
4. Remove evaporator core.

INSTALLATION

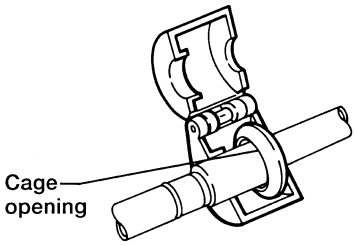
NDHA0173S02

Installation is the reverse order of removal.

Spring Lock Coupling

NDHA0265

- **Refer to "Precautions for Refrigerant Connection" on page HA-151.**
  A plastic indicator ring is used on spring lock couplings during vehicle assembly to indicate that the coupling is connected. After the coupling is connected, the indicator ring is not necessary but will stay near the cage opening.



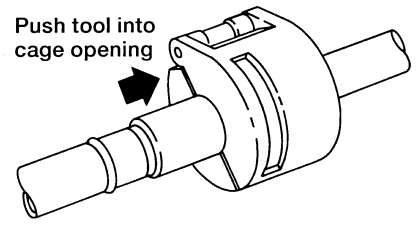
Fit tool to coupling so that tool can enter cage opening to release the garter spring.

AHA011

REMOVAL

NDHA0265S01

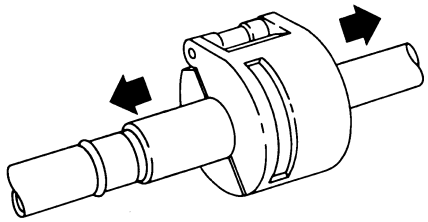
1. Discharge refrigerant from system. Fit spring lock coupling tools (9.53 mm [3/8 in], 12.70 mm [1/2 in], 15.88 mm [5/8 in] or 19.05 mm [3/4 in] to the coupling.



Push the tool into the cage opening to release the female fitting from the garter spring.

AHA012

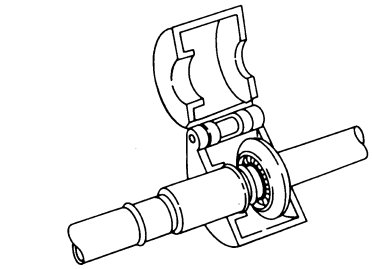
2. Close tool and push into open side of cage to expand garter spring and release female fitting.
   If the tool is cocked while pushing it into the cage opening the garter spring may not release.



Pull the coupling male and female fittings apart.

AHA013

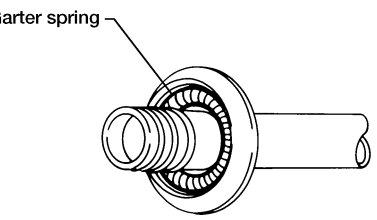
3. After garter spring is expanded, pull fitting apart.



Remove the tool from the disconnected spring lock coupling.

AHA014

4. Remove tool from disconnected coupling.



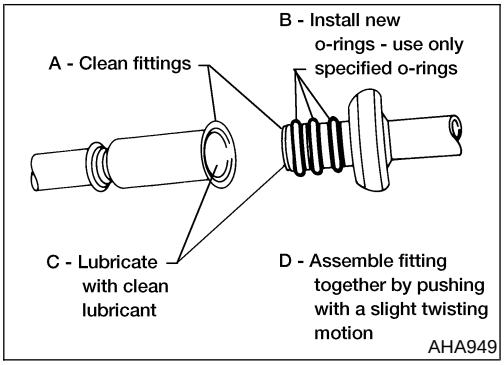
Check for missing or damaged garter spring - remove damaged spring with small hooked wire - install new spring if damaged or missing.

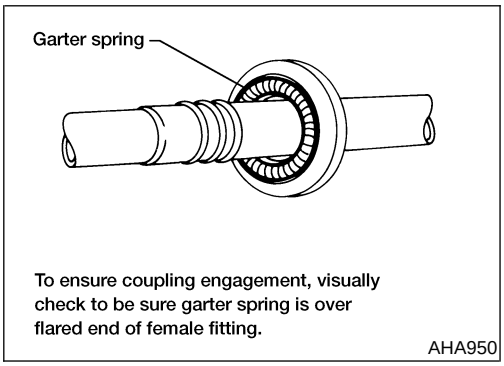
AHA948

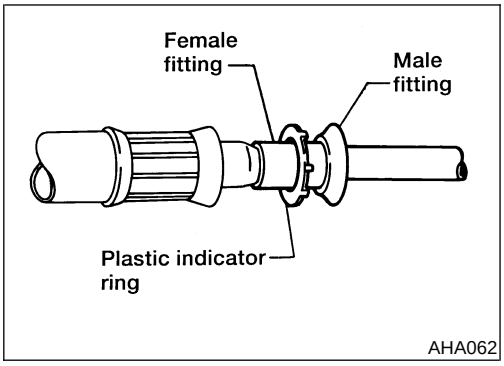
INSTALLATION

NDHA0265S02

1. Check to ensure that garter spring is in cage of male fitting. If garter spring is missing, install a new spring by pushing it into the cage opening. If garter spring is damaged, remove it from cage with a small wire hook (do not use a screwdriver) and install a new spring. Check for burrs on the end of the male tube to avoid scratching the female tube.







2. Clean all dirt of foreign material from both pieces of coupling.
3. Install new O-rings on male fitting.

NOTE:
O-rings are made of a special material. Use only the specified O-rings.

The use of any O-ring other than the specified O-ring may allow the connection to leak intermittently during vehicle operation.

4. Lubricate male fitting and O-rings and inside of female fitting with clean lubricant. Check for scratches on the inner surface of the female fitting.
5. Install plastic indicator ring into cage opening if indicator ring is to be used.
6. Fit female fitting to male fitting and push until garter spring snaps over flared end of female fitting.
   If plastic indicator ring is not used, it will snap out of cage opening when coupling is connected to indicate engagement.
7. If indicator ring is not used, ensure coupling engagement by visually checking to verify garter spring is over flared end of female fitting.

Manual

GENERAL SPECIFICATIONS

=NDHA0169

Compressor

NDHA0169S01

Model	FS-10
Type	Swash plate
Displacement cm^3 (cu in)/rev.	170 (10.37)
Cylinder bore x stroke mm (in)	29.0 x 25.7 (1.142 x 1.012)
Direction of rotation	Clockwise (viewed from drive end)
Drive Belt	Poly V

Lubricant

NDHA0169S02

Model	Only front A/C models	Front & rear A/C models
	FS-10 compressor	
Type	Nissan A/C System Lubricant PAG Type F or equivalent*	
Capacity mℓ (US fl oz, imp fl oz) Total in system	207 (7.0, 7.3)	325 (11.0, 11.5)

*: Suniso 5GS is not acceptable for use in this vehicle.

Refrigerant

NDHA0169S03

Type		R134a
Capacity kg (lb)	Only front A/C models	0.907 (2.0)
	Front A/C & rear A/C models	1.531 (3.376)

INSPECTION AND ADJUSTMENT

NDHA0170

Engine Idling Speed (When A/C is ON)

NDHA0170S01

- Refer to “Idle Speed and Ignition Timing”, ***EC-563***.

Belt Tension

NDHA0170S02

- Refer to “Checking Drive Belts”, ***MA-13***.

Compressor

NDHA0170S03

Model	FS-10
Off Vehicle Clutch hub-pulley clearance mm (in)	0.45-0.85 (0.0177-0.335)