

SECTION

MTC

MANUAL AIR CONDITIONER

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# PRECAUTIONS

## PRECAUTIONS

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

EJS005QE

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

#### **WARNING:**

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

EJS00627

#### **WARNING:**

- CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. These refrigerants must never be mixed, even in the smallest amounts. If the refrigerants are mixed and compressor malfunction is likely occur.
- Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If lubricant other than that specified is used, compressor malfunction is likely to occur.
- The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:
  - When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.
  - 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.
  - 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.
  - Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.
  - Do not allow lubricant (Nissan A/C System Oil Type S) to come in contact with styrofoam parts. Damage may result.

### Contaminated Refrigerant

EJS0063C

If a refrigerant other than pure HFC-134a (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.

# PRECAUTIONS

- If the vehicle is within the warranty period, the air conditioner warranty is void. Please contact NISSAN Customer Affairs for further assistance.

## General Refrigerant Precautions

EJS00628

### 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.
- 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 HFC-134a (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

EJS005FL

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

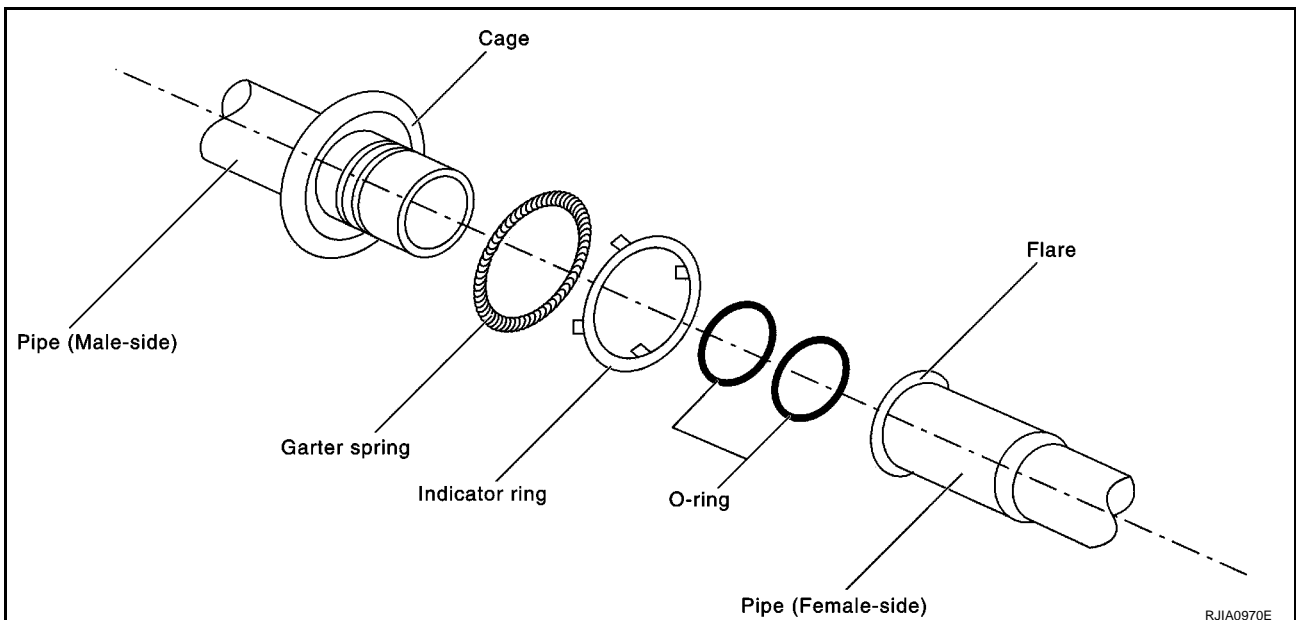
- Expansion valve to cooling unit
- Evaporator pipes to evaporator (inside cooling unit)
- Refrigerant pressure sensor

## ABOUT ONE-TOUCH JOINT

### Description

- One-touch joints are pipe joints which do not require tools during piping connection.
- Unlike conventional connection methods using union nuts and flanges, controlling tightening torque at connection point is not necessary.
- When removing a pipe joint, use a disconnecter.

### COMPONENT PARTS



RJIA0970E

# PRECAUTIONS

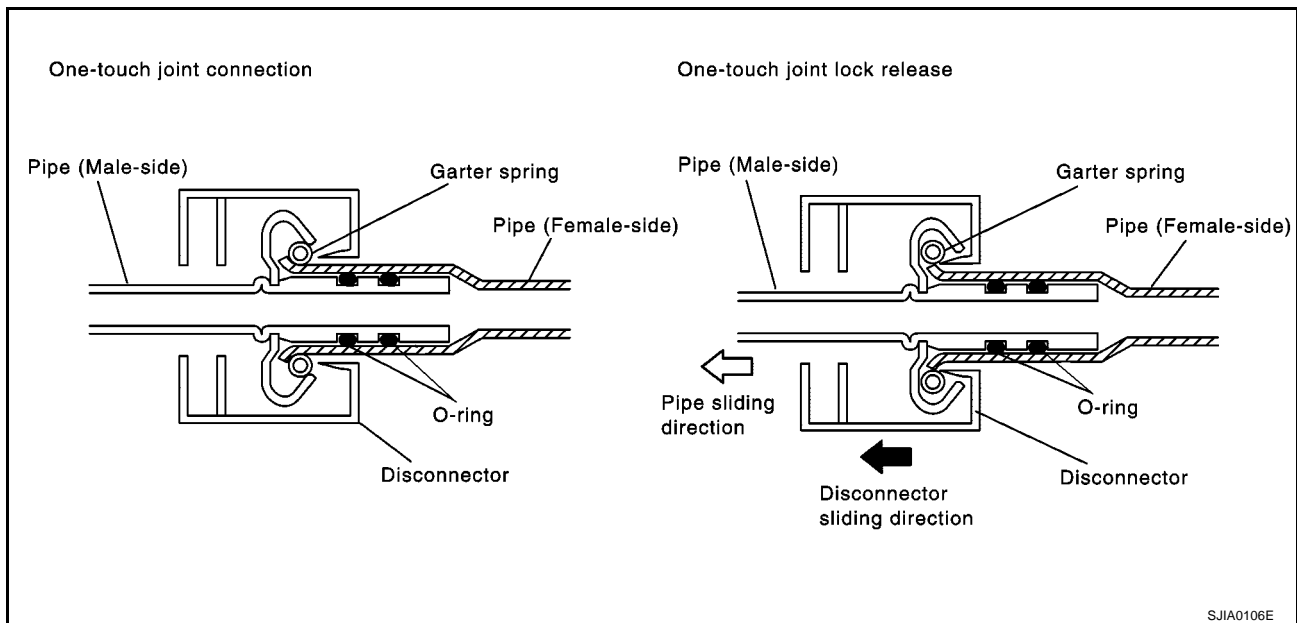
## FUNCTIONS OF COMPONENT PARTS

|                    |   |
|--------------------|---|
| Pipe (Male side)   | <ul style="list-style-type: none"><li>● Retains O-rings.</li><li>● Retains garter spring in cage.</li></ul>   |
| Garter spring      | Anchors female side piping.   |
| Indicator ring     | When connection is made properly, this is ejected from male-side piping. (This part is no longer necessary after connection.)                                 |
| O-ring             | Seals connection point. (Not reusable)  |
| Pipe (Female side) | <ul style="list-style-type: none"><li>● Seals connection by compressing O-rings.</li><li>● Anchors piping connection using flare and garter spring.</li></ul> |

### NOTE:

- Garter spring cannot be removed from cage of male-side piping.
- Indicator ring remains near piping connection point, however, this is not a malfunction. (This is to check piping connection during factory assembly.)

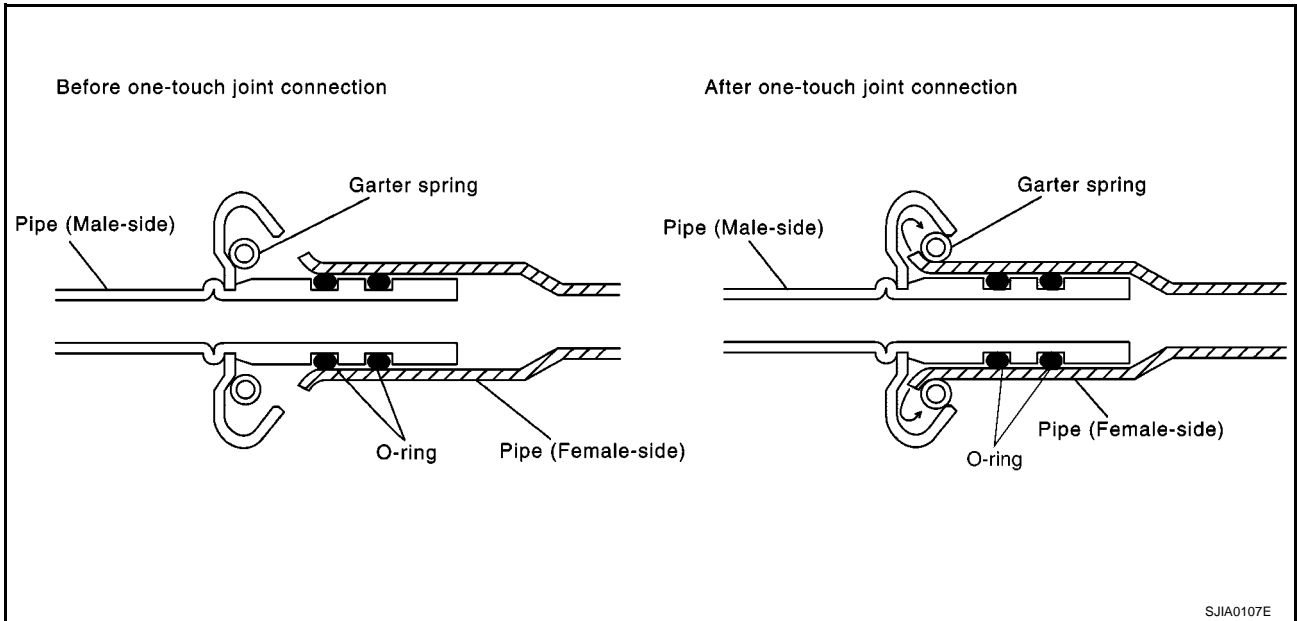
### REMOVAL



1. Clean piping connection point, and set a disconnecter.
2. Slide disconnecter in axial direction of piping, and stretch garter spring with tapered point of disconnecter.
3. Slide disconnecter farther so that inside diameter of garter spring becomes larger than outside diameter of female-side piping flare. Then male-side piping can be disconnected.

# PRECAUTIONS

## INSTALLATION



1. Clean piping connection points, and insert male-side piping into female-side piping.
2. Push inserted male-side piping harder so that female-side piping flare stretches garter spring.
3. If inside diameter of garter spring becomes larger than outside diameter of female-side piping flare, garter spring seats on flare. Then, it fits in between male-side piping cage and female-side piping flare to anchor piping connection point.

### NOTICE:

When garter spring seats on flare, and fits in between male-side piping cage and female-side piping flare, it clicks.

### CAUTION:

- Female-side piping connection point is thin. So, when inserting male-side piping, take care not to deform female-side piping. Slowly insert it in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure connection does not come loose.

### NOTE:

One-touch joint connection is used in points below.

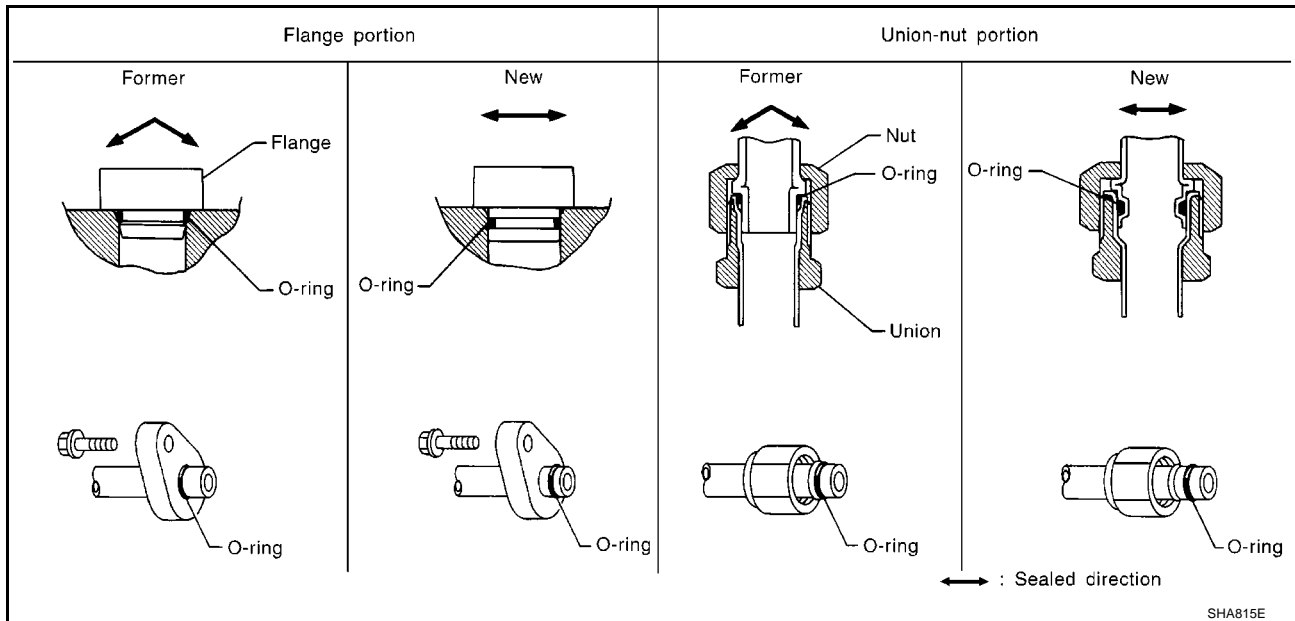
- Low-pressure flexible hose to evaporator (O-ring size: 16)
- High-pressure flexible hose to condenser (O-ring size: 12)
- High-pressure pipe 1 to high-pressure pipe 2 (O-ring size: 8)
- High-pressure pipe 1 to condenser (O-ring size: 8)

## FEATURES OF NEW TYPE REFRIGERANT CONNECTION

- The O-ring has been relocated. It has also been provided with a groove for proper installation. This eliminates the chance of the O-ring being caught in, or damaged by, the mating part. The sealing direction of the O-ring is now set vertically in relation to the contacting surface of the mating part to improve sealing characteristics.

## PRECAUTIONS

- The reaction force of the O-ring will not occur in the direction that causes the joint to pull out, thereby facilitating piping connections.

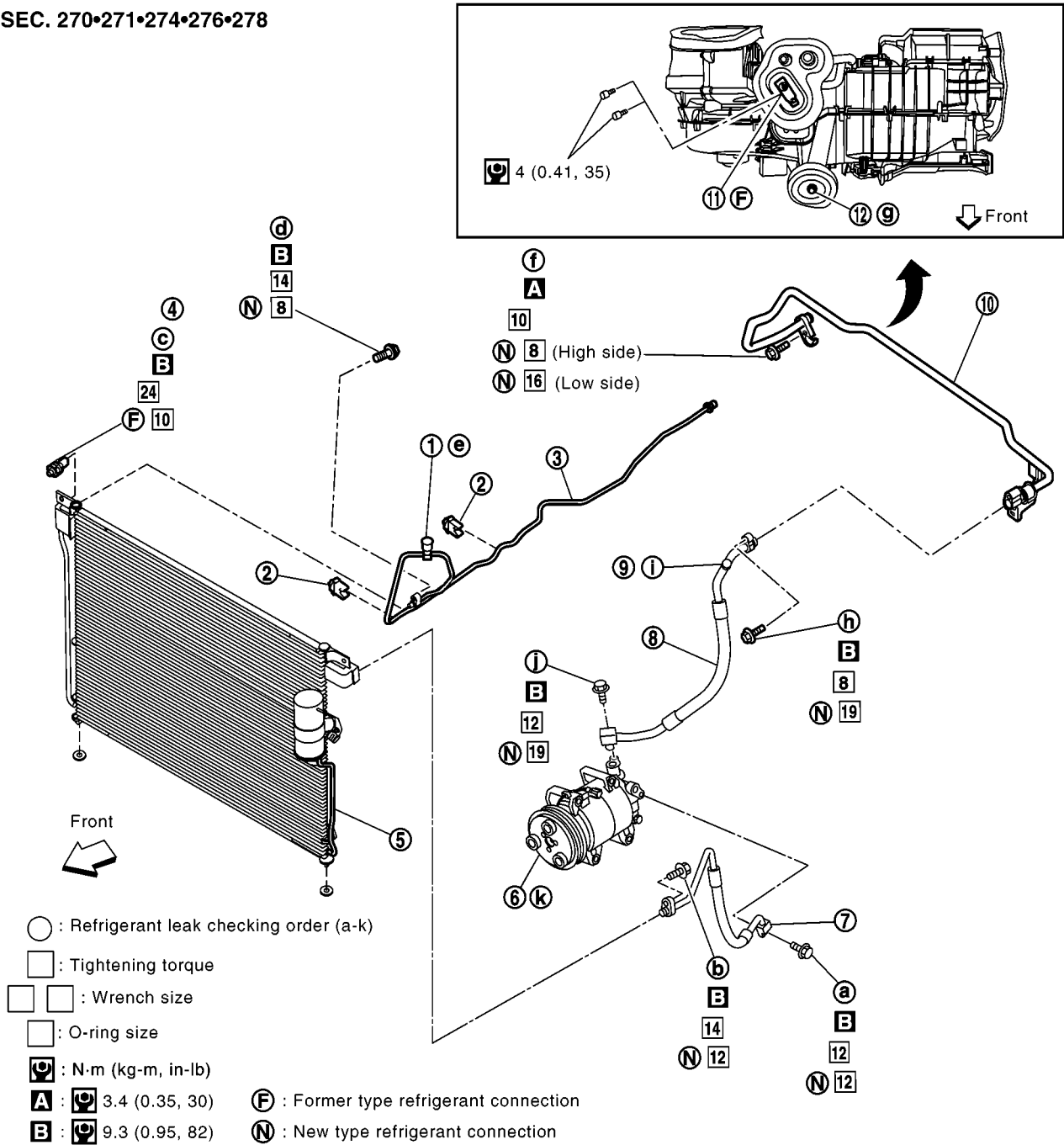


# PRECAUTIONS

## O-RING AND REFRIGERANT CONNECTION

### A/C Compressor and Condenser —LHD Models—

SEC. 270•271•274•276•278



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M

MTC

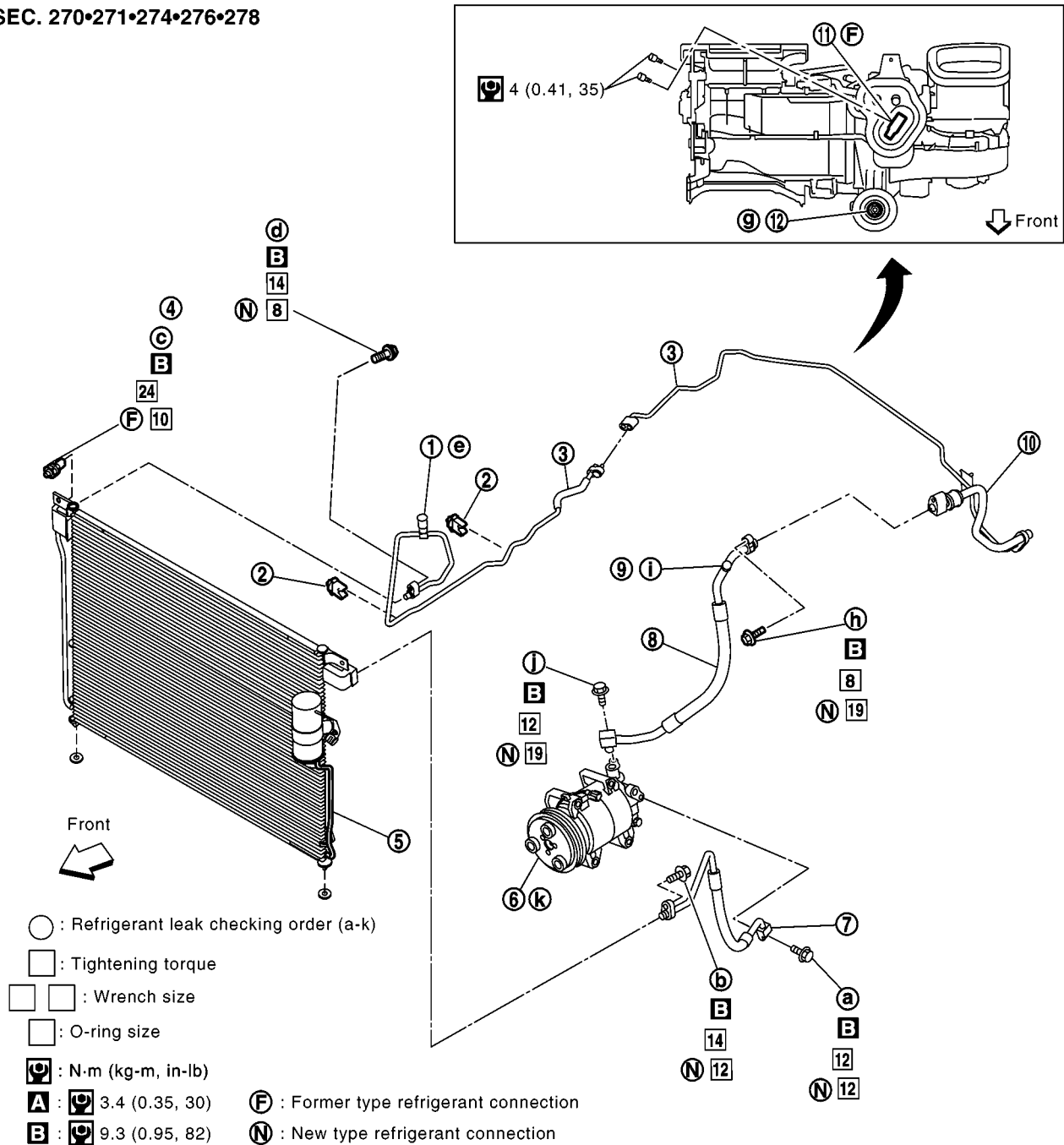
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- |                                    |                                   |                               |
|------------------------------------|-----------------------------------|-------------------------------|
| 1. High-pressure service valve     | 2. Clip                           | 3. High-pressure A/C pipe     |
| 4. Refrigerant pressure sensor     | 5. Condenser                      | 6. Compressor shaft seal      |
| 7. High-pressure flexible A/C hose | 8. Low-pressure flexible A/C hose | 9. Low-pressure service valve |
| 10. Low-pressure A/C pipe          | 11. Expansion valve               | 12. A/C drain hose            |

# PRECAUTIONS

## A/C Compressor and Condenser —RHD Models—

SEC. 270•271•274•276•278



- |                                    |                                   |                               |
|------------------------------------|-----------------------------------|-------------------------------|
| 1. High-pressure service valve     | 2. Clip                           | 3. High-pressure A/C pipe     |
| 4. Refrigerant pressure sensor     | 5. Condenser                      | 6. Compressor shaft seal      |
| 7. High-pressure flexible A/C hose | 8. Low-pressure flexible A/C hose | 9. Low-pressure service valve |
| 10. Low-pressure A/C pipe          | 11. Expansion valve               | 12. A/C drain hose            |

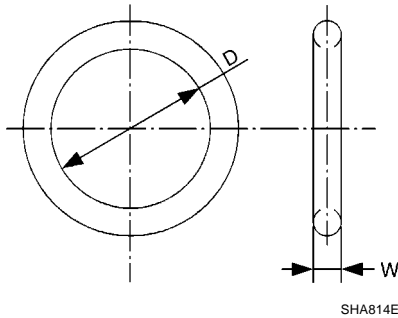
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### CAUTION:

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

# PRECAUTIONS

## O-Ring Part Numbers and Specifications



| Connection type | O-ring size | Part number* | D mm (in)      | W mm (in)     |
|-----------------|-------------|--------------|----------------|---------------|
| New             | 8           | 92471 N8210  | 6.8 (0.268)    | 1.85 (0.0728) |
| Former          | 10          | J2476 89956  | 9.25 (0.3642)  | 1.78 (0.0701) |
| New             | 12          | 92472 N8210  | 10.9 (0.429)   | 2.43 (0.0957) |
| Former          |             | 92475 71L00  | 11.0 (0.433)   | 2.4 (0.094)   |
| New             | 16          | 92473 N8210  | 13.6 (0.535)   | 2.43 (0.0957) |
| Former          |             | 92475 72L00  | 14.3 (0.563)   | 2.3 (0.091)   |
| New             | 19          | 92474 N8210  | 16.5 (0.650)   | 2.43 (0.0957) |
| Former          |             | 92477 N8200  | 17.12 (0.6740) | 1.78 (0.0701) |
| New             | 24          | 92195 AH300  | 21.8 (0.858)   | 2.4 (0.094)   |

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

### WARNING:

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

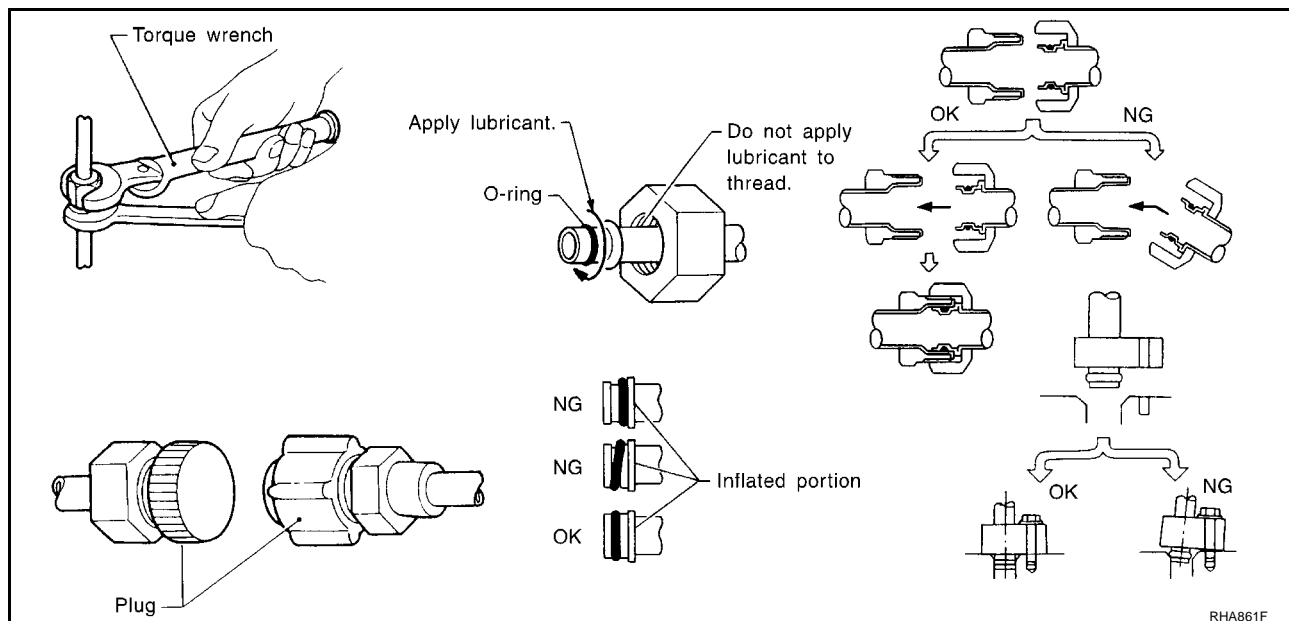
### CAUTION:

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

- When the compressor is removed, store it in the same position as it is when mounted on the car. Failure to do so will cause lubricant to enter the low pressure chamber.
- When connecting tubes, always use a torque wrench and a back-up wrench.
- After disconnecting tubes, immediately plug all openings to prevent entry of dirt and moisture.
- When installing an air conditioner in the vehicle, connect the pipes as the final stage of the operation. Do not remove the seal caps of pipes and other components until just before required for connection.
- Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.
- Thoroughly remove moisture from the refrigeration system before charging the refrigerant.
- Always replace used O-rings.
- When connecting tube, apply lubricant to circle of the O-rings shown in illustration. Be careful not to apply lubricant to threaded portion.  
Lubricant name: NISSAN A/C System Lubricant Type S (DH-PS) or equivalent  
Part number: KLH00-PAGS0
- 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.

## PRECAUTIONS

- After connecting line, conduct leak test and make sure that there is no leakage from connections. When the gas leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.



### Precautions for Servicing Compressor

EJS00629

- 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 [MTC-24, "Maintenance of Lubricant Quantity in Compressor"](#).
- 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 usual operation.

### Precautions for Service Equipment RECOVERY/RECYCLING EQUIPMENT

EJS0062A

Be certain to 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

Be certain to follow the manufacturer's instructions for tester operation and tester maintenance.

# PRECAUTIONS

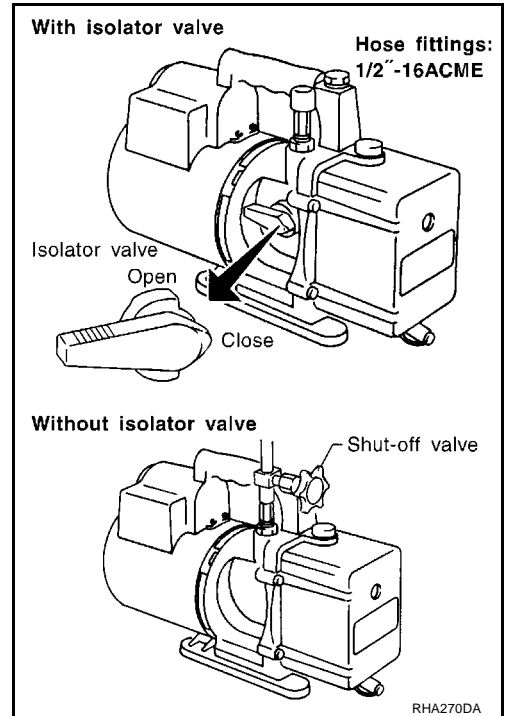
## VACUUM PUMP

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

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

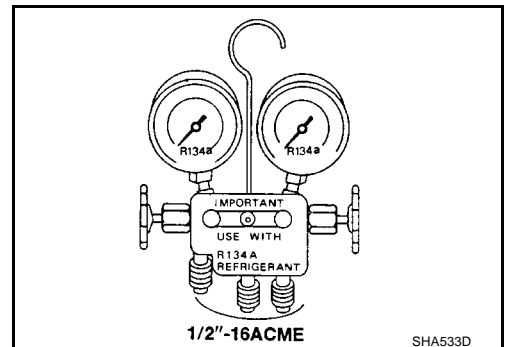
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has 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.



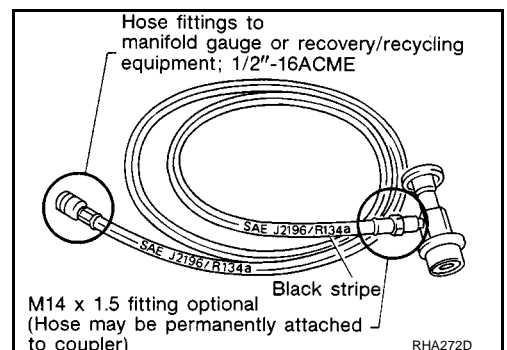
## MANIFOLD GAUGE SET

Be certain that the gauge face indicates HFC-134a or R-134a. Be 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) and specified lubricants.



## SERVICE HOSES

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

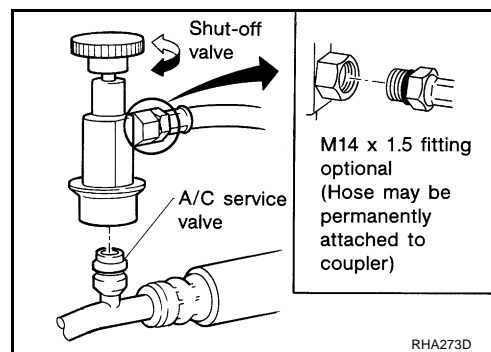


## PRECAUTIONS

### SERVICE COUPLERS

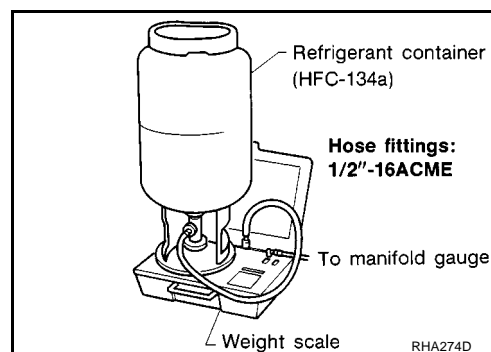
Never attempt to connect HFC-134a (R-134a) service couplers to an CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



### REFRIGERANT WEIGHT SCALE

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

Calibrate the scale every three months.

To calibrate the weight scale on the ACR4:

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 change to **"A2"**.
5. Place a known weight (dumbbell or similar weight), between 4.5 and 8.6 kg (10 and 19 lb.) on the center of the weight scale.
6. Enter the known weight using four digits. (Example 10 lb. = 10.00, 10.5 lb. = 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

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.

### Precautions for Leak Detection Dye

EJS0062B

- 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 goggles to protect your eyes and enhance the visibility of the fluorescent dye.
- 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 pin-point refrigerant leaks.
- For your safety and your customer's satisfaction, read and follow all manufacture's operating instructions and precautions prior to performing the work.

## PRECAUTIONS

- 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 remaining 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 HFC-134a (R-134a) and CFC-12 (R-12) A/C systems are different. Do not use HFC-134a (R-134a) leak detection dye in CFC-12 (R-12) A/C system or CFC-12 (R-12) leak detector dye in HFC-134a (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 malfunction occurs.

### IDENTIFICATION

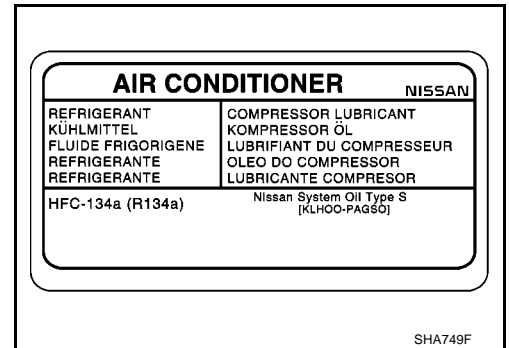
#### NOTE:

Vehicles with factory installed fluorescent dye have a green label.

Vehicles without factory installed fluorescent dye have a blue label.

### IDENTIFICATION LABEL FOR VEHICLE

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



### Wiring Diagrams and Trouble Diagnosis

When you read wiring diagrams, refer to the following:

- [GI-15, "How to Read Wiring Diagrams"](#)
- [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#)

When you perform trouble diagnosis, refer to the following:

- [GI-11, "How to Follow Trouble Diagnoses"](#)
- [GI-24, "How to Perform Efficient Diagnosis for an Electrical Incident"](#)

# PREPARATION

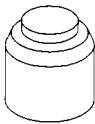
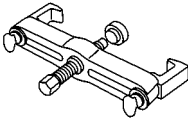
## PREPARATION

PFP:00002

### Special Service Tools

EJS0062C

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

| Tool number<br>Tool name   | Description       |
|--|-------------------|
| KV99106200<br>Pulley installer   | Installing pulley |
|  <p>S-NT235</p> |                   |
| KV99233130<br>Pulley puller  | Removing pulley   |
|  <p>LHA172</p>  |                   |

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

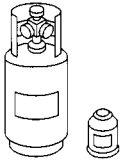

EJS0062D

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

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

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

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

| Tool number<br>Tool name   | Description  |
|--|--|
| HFC-134a (R-134a) refrigerant  | <p>Container color: Light blue<br/>Container marking: HFC-134a (R-134a)<br/>Fitting size: Thread size</p> <ul style="list-style-type: none"> <li>● Large container 1/2"-16 ACME</li> </ul> |
|  <p>S-NT196</p> |  |
| KLH00-PAGS0<br>Nissan A/C System Oil Type S (DH-PS)  | <p>Type: Polyalkylene glycol oil (PAG), type S (DH-PS)<br/>Application: HFC-134a (R-134a) wobble (swash) plate compressors (Nissan only)<br/>Lubricity: 40 mℓ (1.4 Imp fl oz.)</p>         |
|  <p>S-NT197</p> |  |

# PREPARATION

| Tool number<br>Tool name   | Description  | A                  |
|--|--|--------------------|
| Recovery/Recycling/<br>Recharging equipment (ACR4)   | <p>RJIA0195E</p>   | B<br>C<br>D        |
| Electrical leak detector   | <p>A/C leak detector<br/>SHA705EB</p>  | E<br>F<br>G<br>H   |
| (J-43926)<br>Refrigerant dye leak detection kit<br>Kit includes:<br>(J-42220)<br>UV lamp and UV safety goggles<br>(J-41459)<br>HFC-134a (R-134a) dye injector<br>Use with J-41447, 1/4 ounce<br>bottle<br>(J-41447)<br>HFC-134a (R-134a) fluorescent<br>leak detection dye<br>(Box of 24, 1/4 ounce bottles)<br>(J-43872)<br>Refrigerant dye cleaner | <p>             UV lamp w/shield<br/>             Carrying case<br/>             Refrigerant dye cleaner<br/>             Refrigerant dye identification label (24 labels)<br/>             Refrigerant dye (24 bottles)<br/>             Refrigerant dye injector<br/>             UV goggles<br/>             ZHA200H           </p> <p> <b>NOTICE</b><br/>             This A/C refrigerant system contains a fluorescent dye. Injection must be done. Must use UV lamp system (see dte 1)<br/>             KENT-MOORE<br/>             Warren, MI 48090<br/>             1-800-345-2233           </p> | I<br>MTC<br>K<br>L |
| (J-42220)<br>UV lamp and UV safety goggles   | <p>SHA438F</p>   | M                  |
| (J-41447)<br>HFC-134a (R-134a) fluorescent<br>leak detection dye<br>(Box of 24, 1/4 ounce bottles)   | <p>Refrigerant dye (24 bottles)<br/>SHA439F</p>  |                    |

Function: Refrigerant recovery and recycling and recharging

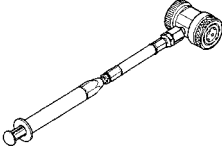

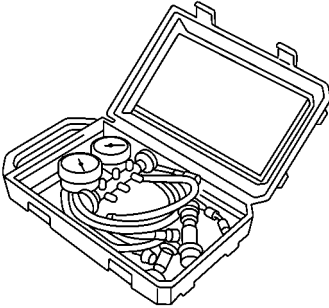
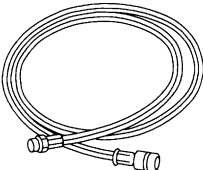
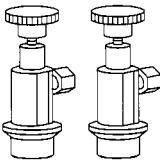

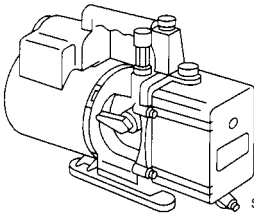
Power supply:  
DC 12V (Cigarette lighter)

Power supply:  
DC 12V (Battery terminal)

Power supply:  
DC 12V (Battery terminal)  
For checking refrigerant leak when fluorescent dye is installed in A/C system  
Includes:  
UV lamp and UV safety goggles

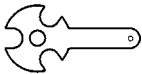
Application: For HFC-134a (R-134a) PAG oil  
Container: 1/4 ounce (7.4 cc) bottle  
(Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)

# PREPARATION

| Tool number<br>Tool name   |   | Description   |
|--|---|---|
| (J-41459)<br>HFC-134a (R-134a) dye injector<br>Use with J-41447, 1/4 ounce bottle  | <br>SHA440F    | For injecting 1/4 ounce of fluorescent leak detection dye into A/C system.  |
| (J-43872)<br>Refrigerant dye cleaner   | <br>SHA441F    | For cleaning dye spills.  |
| Manifold gauge set (with hoses and couplers)   | <br>RJIA0196E | Identification:<br><ul style="list-style-type: none"> <li>The gauge face indicates HFC-134a (R-134a).</li> </ul> Fitting size: Thread size<br><ul style="list-style-type: none"> <li>1/2"-16 ACME</li> </ul>  |
| Service hoses<br><ul style="list-style-type: none"> <li>High-pressure side hose</li> <li>Low-pressure side hose</li> <li>Utility hose</li> </ul> | <br>S-NT201  | Hose color:<br><ul style="list-style-type: none"> <li>Low hose: Blue with black stripe</li> <li>High hose: Red with black stripe</li> <li>Utility hose: Yellow with black stripe or green with black stripe</li> </ul> Hose fitting to gauge:<br><ul style="list-style-type: none"> <li>1/2"-16 ACME</li> </ul> |
| Service couplers<br><ul style="list-style-type: none"> <li>High-pressure side coupler</li> <li>Low-pressure side coupler</li> </ul>              | <br>S-NT202  | Hose fitting to service hose:<br>M14 x 1.5 fitting is optional or permanently attached.   |
| Refrigerant weight scale   | <br>S-NT200  | For measuring of refrigerant<br>Fitting size: Thread size<br>1/2"-16 ACME   |
| Vacuum pump<br>(Including the isolator valve)  | <br>S-NT203  | Capacity:<br><ul style="list-style-type: none"> <li>Air displacement: 4 CFM</li> <li>Micron rating: 20 microns</li> <li>Oil capacity: 482 g (17 oz.)</li> </ul> Fitting size: Thread size<br><ul style="list-style-type: none"> <li>1/2"-16 ACME</li> </ul>   |

PREPARATION

| Commercial Service Tools              |                          | EJS00638 |
|---------------------------------------|--------------------------|----------|
| Tool number<br>Tool name              | Description              |          |
| (J-44614)<br>Clutch disk holding tool | Clutch disk holding tool |          |
| WHA230                                |                          |          |



- A
- B
- C
- D
- E
- F
- G
- H
- I
- MTC
- K
- L
- M

# REFRIGERATION SYSTEM

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## REFRIGERATION SYSTEM

PFP:KA990

### Refrigerant Cycle REFRIGERANT FLOW

EJS0062E

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

### FREEZE PROTECTION

Under usual 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.

### Refrigerant System Protection REFRIGERANT PRESSURE SENSOR

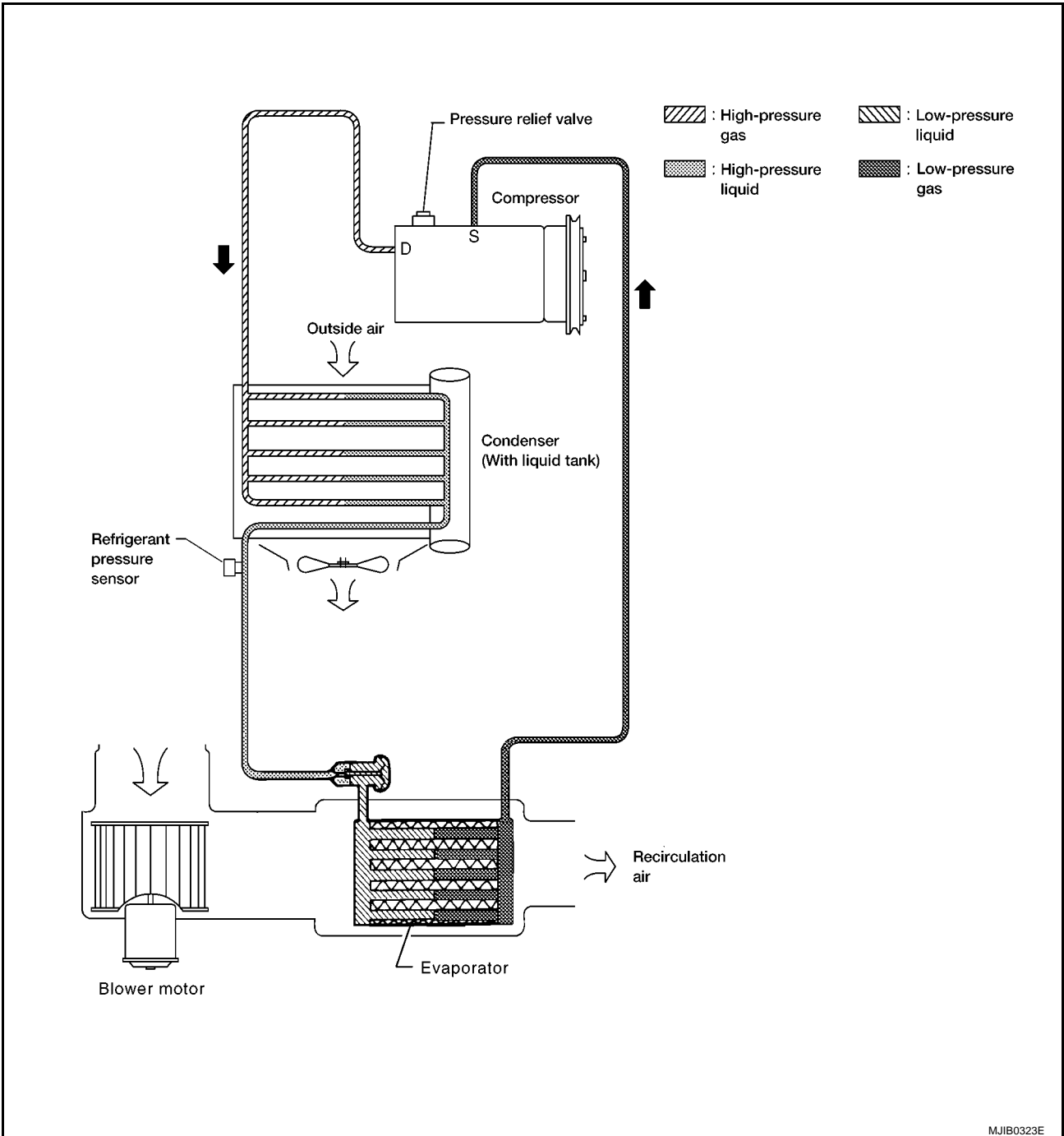
EJS005FT

The refrigerant system is protected against excessively high or low pressures by the refrigerant pressure sensor, located on the condenser. If the system pressure rises above or falls below the specifications, the refrigerant pressure sensor detects the pressure inside the refrigerant line and sends a voltage signal to the ECM. The ECM de-energizes the A/C relay to disengage the magnetic compressor clutch when pressure on the high pressure side detected by refrigerant pressure sensor is over about 2,746 kPa (28 kg/cm<sup>2</sup> , 398 psi), or below about 120 kPa (1.22 kg/cm<sup>2</sup> , 17.4 psi).

# REFRIGERATION SYSTEM

## PRESSURE RELIEF VALVE

The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. When the pressure of refrigerant in the system increases to an abnormal level [more than 2,990 kPa (30.5 kg/cm<sup>2</sup> , 433.6 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.

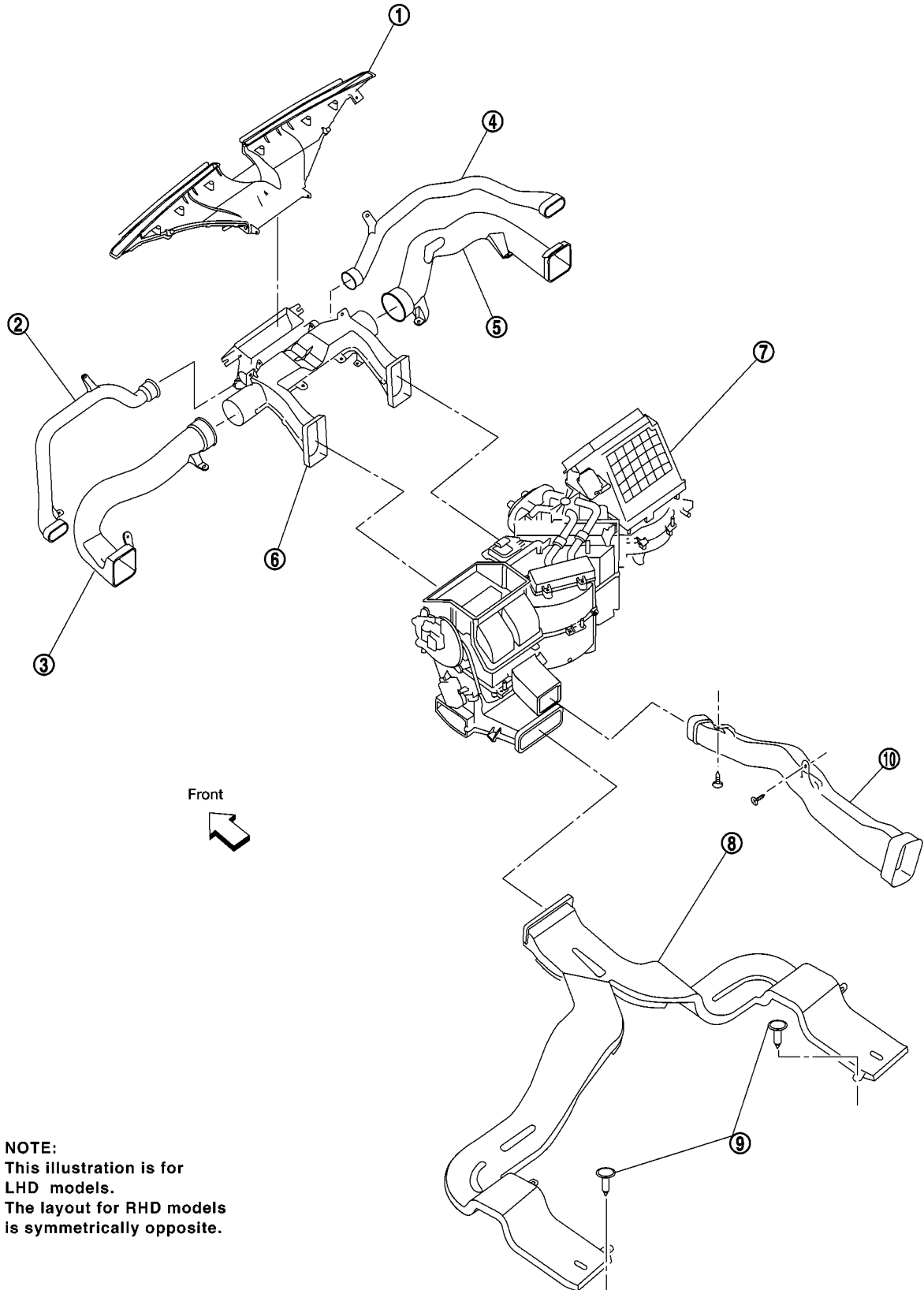


# REFRIGERATION SYSTEM

## Component Layout REFRIGERATION SYSTEM

EJS005FU

SEC. 270•271



**NOTE:**  
This illustration is for  
LHD models.  
The layout for RHD models  
is symmetrically opposite.

MJIB0217E

REFRIGERATION SYSTEM

|                                     |                          |                           |     |
|-------------------------------------|--------------------------|---------------------------|-----|
| 1. Defroster nozzle                 | 2. LH side demister duct | 3. LH ventilator duct     | A   |
| 4. RH side demister duct            | 5. RH ventilator duct    | 6. Center ventilator duct | B   |
| 7. Heater and cooling unit assembly | 8. Floor duct            | 9. Clips                  | C   |
| 10. Heat duct                       |                          |                           | D   |
|                                     |                          |                           | E   |
|                                     |                          |                           | F   |
|                                     |                          |                           | G   |
|                                     |                          |                           | H   |
|                                     |                          |                           | I   |
|                                     |                          |                           | MTC |
|                                     |                          |                           | K   |
|                                     |                          |                           | L   |
|                                     |                          |                           | M   |

## LUBRICANT

PFP:KLG00

## Maintenance of Lubricant Quantity in Compressor

EJS005FV

The lubricant in the compressor circulates through the system with the refrigerant. Add lubricant to compressor when replacing any component or after a large refrigerant leakage has 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

**Name: NISSAN A/C System Lubricant Type S (DH-PS)**

**Part number: KLH00-PAGS0**


## CHECKING AND ADJUSTING

**CAUTION:**

**If excessive lubricant leakage is noted, do not perform the lubricant return operation.**

Start the engine and set the following conditions:

**test condition**

- **Engine speed: Idling to 1,200 rpm**
- **A/C switch: On**
- **Blower speed: Max. position**
- **Temp. control: Optional [Set so that intake air temperature is 25° to 30° C (77° to 86°F).]**
- **Intake position: Recirculation (  )**
- **Perform lubricant return operation for about ten minutes**

Adjust the lubricant quantity according to the following table.

**Lubricant Adjusting Procedure for Components Replacement Except Compressor**

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

**Amount of lubricant to be added**

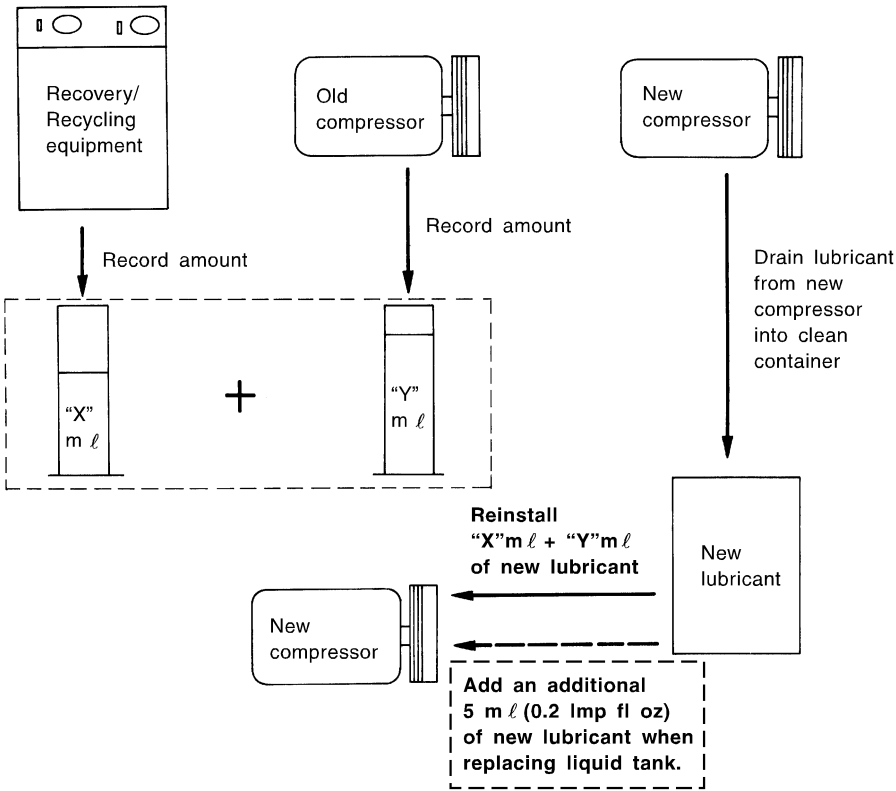
| Part replaced               | Lubricant to be added to system        | Remarks                            |
|-----------------------------|--|------------------------------------|
|                             | Amount of lubricant<br>m ℓ (Imp fl oz) |                                    |
| Evaporator                  | 75 (2.6)                               | —                                  |
| Condenser                   | 75 (2.6)                               | —                                  |
| Liquid tank                 | 5 (0.2)                                | Add if compressor is not replaced. |
| In case of refrigerant leak | 30 (1.1)                               | Large leak                         |
|                             | —                                      | Small leak *1                      |

- \*1: If refrigerant leak is small, no addition of lubricant is needed.

**Lubricant Adjustment Procedure for Compressor Replacement**

1. Before connecting recovery/recycling equipment to vehicle, check recovery/recycling equipment gauges. No refrigerant pressure should be displayed. If NG, recover refrigerant from equipment lines.
2. Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure lubricant discharged into the recovery/recycling equipment.
3. Drain the lubricant from the “old” (removed) compressor into a graduated container and recover the amount of lubricant drained.
4. Drain the lubricant from the “new” compressor into a separate, clean container.
5. 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.
6. Measure an amount of new lubricant equal to the amount recovered during discharging. Add this lubricant to “new” compressor through the suction port opening.
7. If the liquid tank also needs to be replaced, add an additional 5 m ℓ (0.2 Imp fl oz) of lubricant at this time.  
**Do not add this 5 m ℓ (0.2 Imp fl oz) of lubricant if only replacing the compressor.**

LUBRICANT



RHA065DI

MTC

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## AIR CONDITIONER CONTROL

PFP:27500

### Description

EJS005FW

The front air control provides regulation of the vehicle's interior temperature. The system is based on the position of the front air controls temperature switch selected by the driver. This is done by utilizing a microcomputer, also referred to as the front air control, which receives input signals from the following three sensors:

- Intake sensor
- PBR (Position Balanced Resistor).

The front air control uses these signals (including the set position of the temperature switch) to control:

- Outlet air volume
- Air temperature
- Air distribution

The front air control is used to select:

- Outlet air volume
- Air temperature/distribution

### Operation

EJS005FX

#### AIR MIX DOOR CONTROL

The air mix door is controlled so that in-vehicle temperature changed based on the position of the temperature switch.

#### BLOWER SPEED CONTROL

Blower speed is controlled based on front blower switch settings.

When blower switch is turned, the blower motor starts and increases air flow volume each time the blower switch is turned counterclockwise, and decreases air flow volume each time the blower switch is turned counterclockwise.

When engine coolant temperature is low, the blower motor operation is delayed to prevent cool air from flowing.

#### INTAKE DOORS CONTROL

The intake doors are controlled by the recirculation switch setting, and the mode (defroster) switch setting.

#### MODE DOOR CONTROL

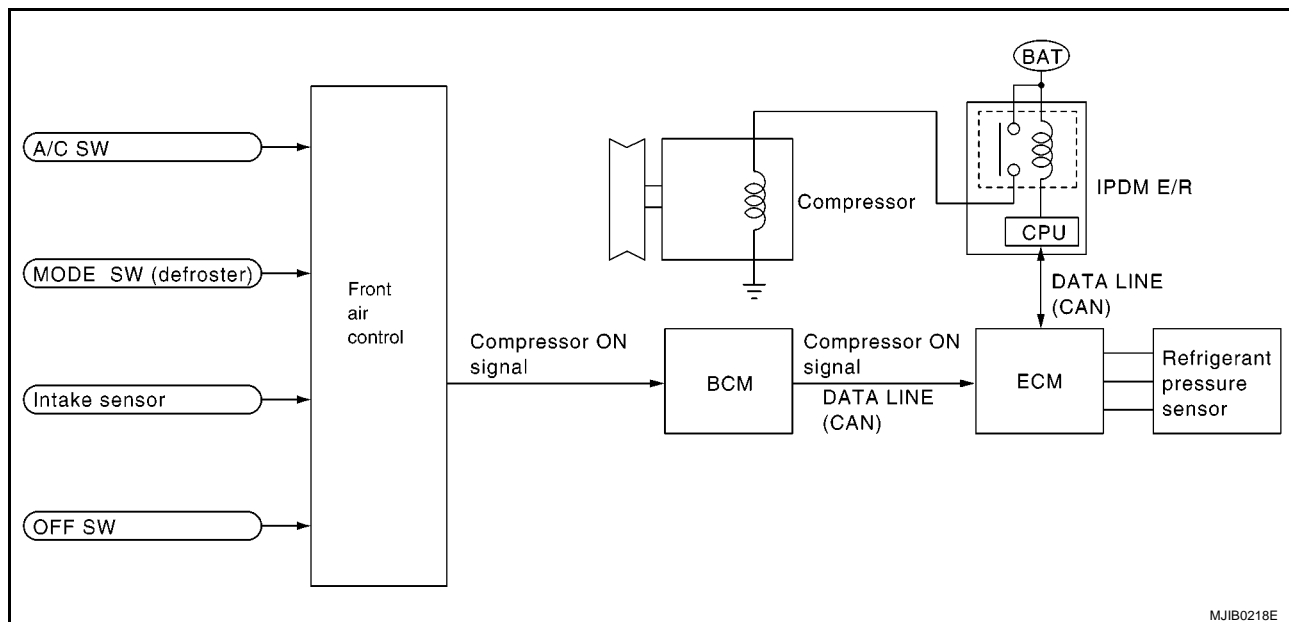
The mode door is controlled by the position of the mode switch.

#### DEFROSTER DOOR CONTROL

The defroster door is controlled by: Turning the defroster dial to front defroster.

# AIR CONDITIONER CONTROL

## MAGNET CLUTCH CONTROL



When the A/C switch is pressed, or the mode switch is turned to the defroster position, the front air control outputs a compressor ON signal to BCM.

The BCM then sends a compressor ON signal to ECM, via CAN communication line.

ECM judges whether compressor can be turned ON, based on each sensor status (refrigerant pressure sensor signal, throttle angle sensor, etc.). If it judges compressor can be turned ON, it sends compressor ON signal to IPDM E/R, via CAN communication line.

Upon receipt of compressor ON signal from ECM, IPDM E/R turns air conditioner relay ON to operate compressor.

## SELF-DIAGNOSTIC SYSTEM

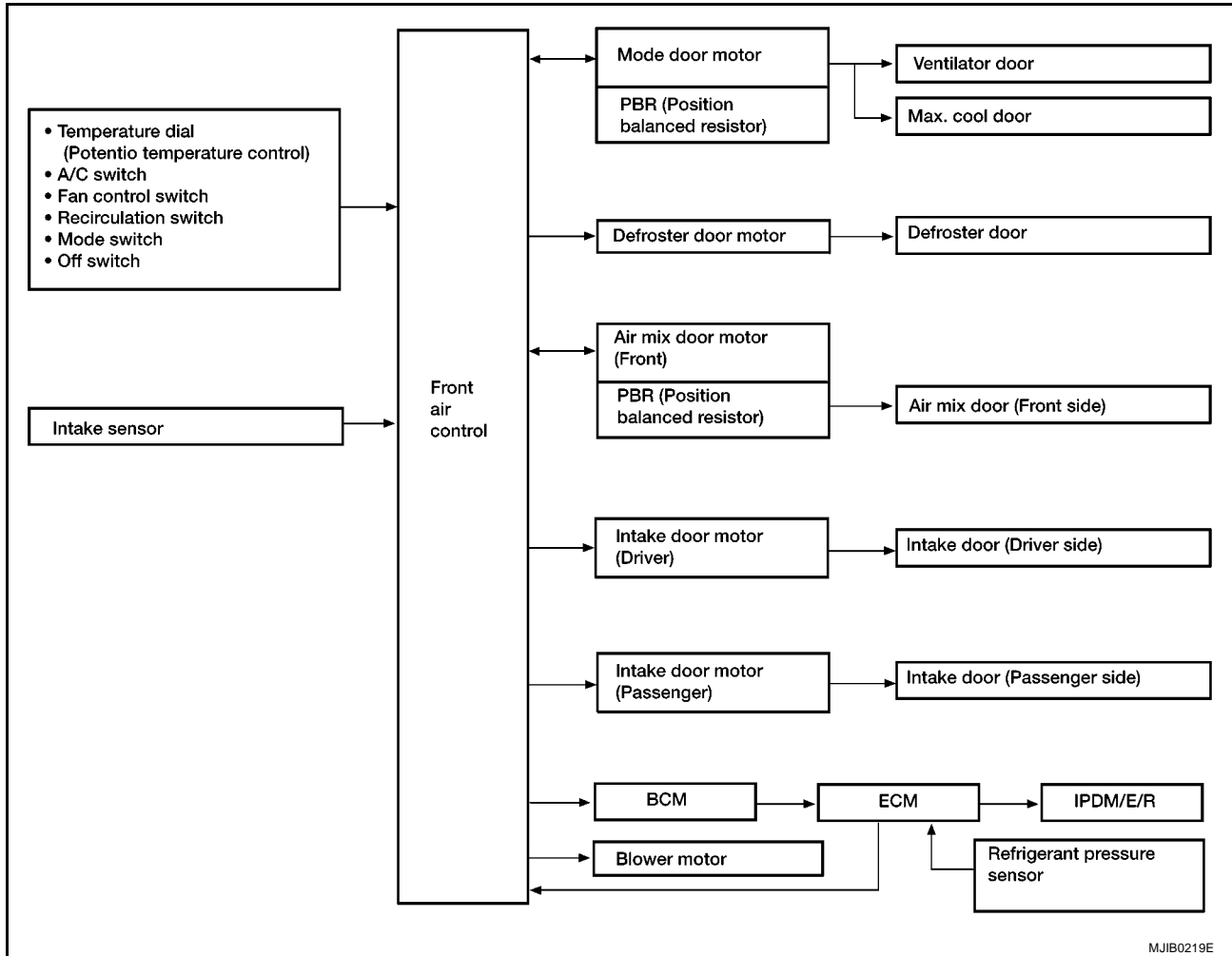
The self-diagnostic system is built into the front air control to quickly locate the cause of symptoms. Refer to [MTC-51, "A/C System Self-diagnosis Function"](#).

# AIR CONDITIONER CONTROL

## Description of Control System

EJS005FY

The control system consists of input sensors, switches, the front air control (microcomputer) and outputs. The relationship of these components is shown in the figure below:

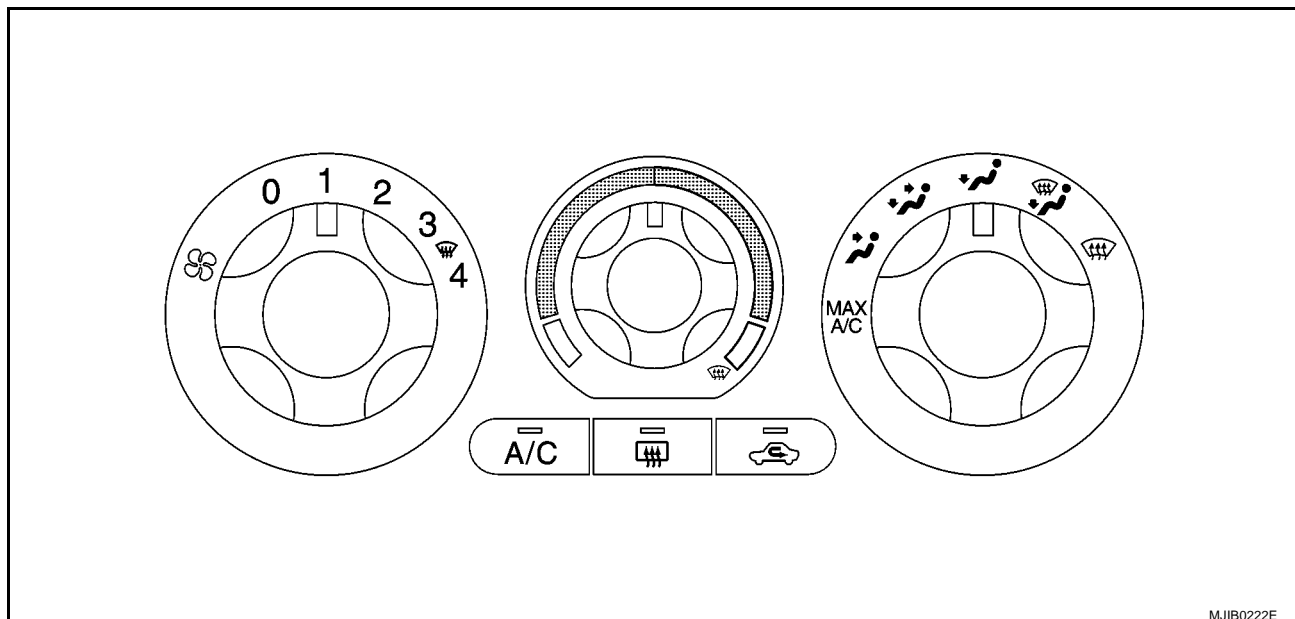


MJIB0219E

## Control Operation

EJS005FZ

### Front air control



MJIB0222E

# AIR CONDITIONER CONTROL

## DISPLAY SCREEN

Displays the operational status of the system.

A

## TEMPERATURE SWITCH (TEMPERATURE CONTROL) (FRONT)

Increases or decreases the set temperature.

B

## RECIRCULATION ( ) SWITCH

- When REC switch is ON, REC switch indicator turns ON, and air inlet is set to REC.
- When REC switch is turned OFF, or when compressor is turned from ON to OFF, REC switch is automatically turned OFF. REC mode can be re-entered by pressing REC switch again.
- REC switch is not operated when DEF switch is turned ON, or at the D/F position.

C

D

## REAR WINDOW DEFOGGER SWITCH

When switch is ON, rear window is defogged.

E

## OFF SWITCH (BLOWER SPEED SET TO 0)

The compressor and blower are OFF, the intake doors are set to the outside air position, and the air outlet doors are set to the foot (75% foot and 25% defrost) position.

F

## A/C SWITCH

The compressor is ON or OFF.

G

## MODE SWITCH

Controls the air discharge outlets through control of the mode and defroster doors.

H

I

MTC

K

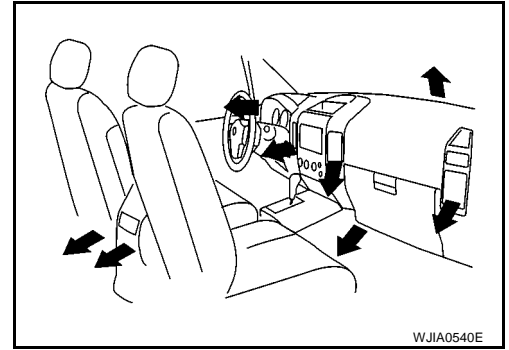
L

M

# AIR CONDITIONER CONTROL

## Discharge Air Flow FRONT

EJS005G0



### Discharge air flow

| Mode door position | Air outlet/distribution |      |           |
|--------------------|-------------------------|------|-----------|
|                    | Vent                    | Foot | Defroster |
|                    | 100%                    | —    | —         |
|                    | 60%                     | 40%  | —         |
|                    | 18%                     | 64%  | 18%       |
|                    | 14%                     | 53%  | 33%       |
|                    | —                       | 13%  | 83%       |

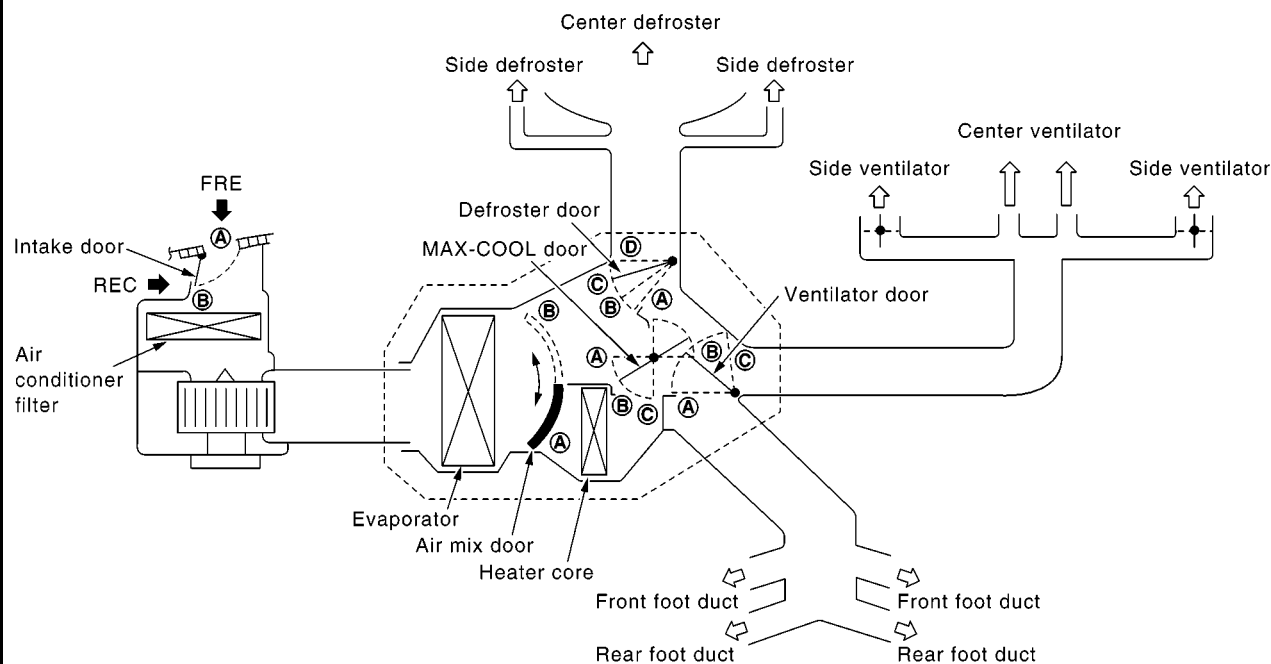
MJIB0284E

# AIR CONDITIONER CONTROL

## System Description SWITCHES AND THEIR CONTROL FUNCTION

EJS005G1

A  
B  
C  
D  
E  
F  
G  
H  
I

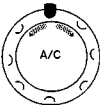









⋯ : For models with temperature adjustment, the structure of dotted area is independent in RH and LH sides. Driver side and passenger side are divided by a partition.

MJIB0220E

MTC

K  
L  
M

| Door \ Position or switch | MODE SW   |   |   |   | DEF SW  |     | REC SW   |     | Temperature switch  |   |     | OFF SW   |
|---------------------------|---|---|---|---|---|-----|--|-----|---|---|-----|--|
|                           | VENT  | B/L   | FOOT  | D/F   | ON  | OFF | ON   | OFF |  |   |     | <br>OFF |
|                           |  |  |  |  |  |     |  |     | COLD  | ~ | HOT |  |
| Ventilator door           | Ⓐ   | Ⓑ   | Ⓒ   | Ⓒ   | Ⓒ   | —   | —  |     | —   |   |     | Ⓒ  |
| MAX-COOL door             | Ⓐ   | Ⓑ   | Ⓑ   | Ⓑ   | Ⓒ   |     | —  |     | —   |   |     | Ⓑ  |
| Defroster door            | Ⓓ   | Ⓓ   | Ⓓ <sub>or</sub> Ⓒ   | Ⓑ   | Ⓐ   |     | —  |     | —   |   |     | Ⓒ  |
| Intake door               | —   |   |   |   | Ⓑ   |     | Ⓐ  | Ⓑ   | —   |   |     | Ⓑ  |
| Air mix door              | —   |   |   |   | —   |     | —  |     | Ⓐ   |   | Ⓑ   | —  |

WJIA0532E

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## CAN Communication System Description

EJS005G3

Refer to [LAN-23, "CAN COMMUNICATION"](#) .

# TROUBLE DIAGNOSIS

## TROUBLE DIAGNOSIS

PFP:00004

### CONSULT-II

EJS005G4

CONSULT-II can display each diagnostic item using the diagnostic test modes shown following.

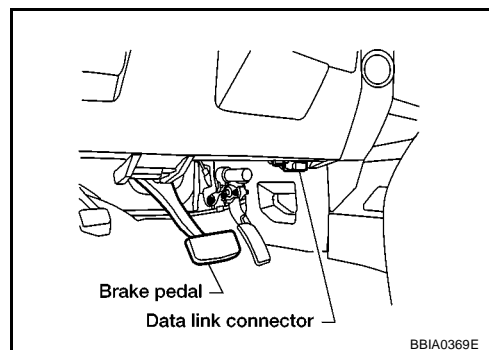
| System part | Check item, diagnosis mode | Description                           |
|-------------|----------------------------|---------------------------------------|
| BCM         | Data monitor               | Displays BCM input data in real time. |

### CONSULT-II BASIC OPERATION

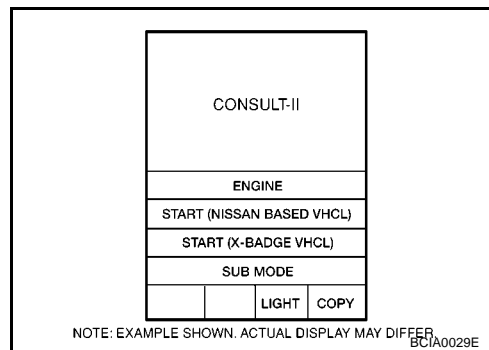
#### CAUTION:

If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

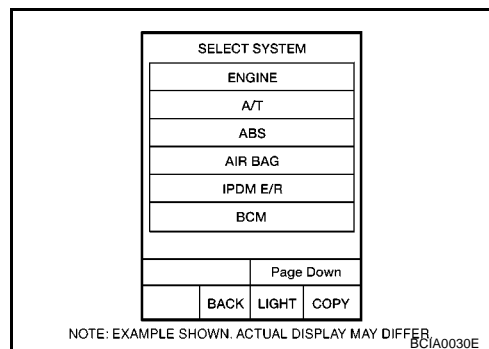
1. With the ignition switch OFF, connect CONSULT-II and "CONSULT-II converter" to the data link connector, and turn the ignition switch ON.



2. Touch "START (NISSAN BASED VHCL)".



3. Touch "BCM" on "SELECT SYSTEM" screen. If "BCM" is not indicated, go to [GI-50, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

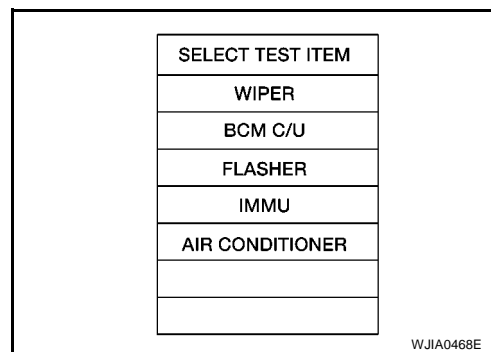


# TROUBLE DIAGNOSIS

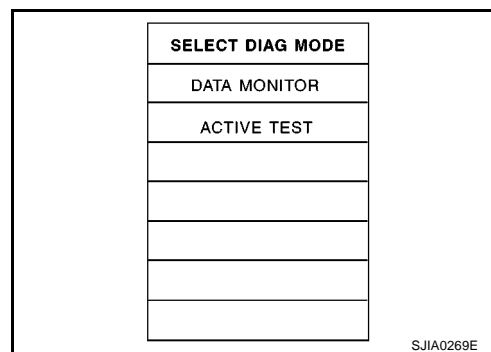
## DATA MONITOR

### Operation Procedure

1. Touch "AIR CONDITIONER" on "SELECT TEST ITEM" screen.



2. Touch "DATA MONITOR" on "SELECT DIAG MODE" screen.



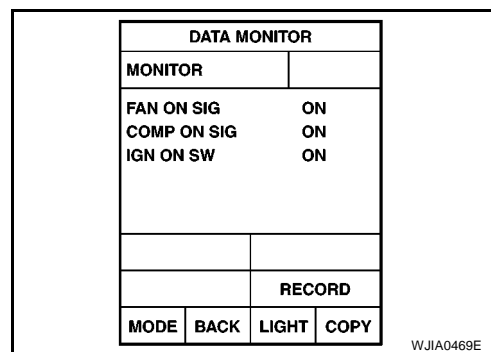
3. Touch either "ALL SIGNALS" or "SELECTION FROM MENU" on "DATA MONITOR" screen.

|                     |  |
|---------------------|--|
| All signals         | Monitors all the items.                            |
| Selection from menu | Selects and monitors the individual item selected. |

4. Touch "START".

5. When "SELECTION FROM MENU" is selected, touch items to be monitored. When "ALL SIGNALS" is selected, all the items will be monitored.

6. Touch "RECORD" while monitoring, then the status of the monitored item can be recorded. To stop recording, touch "STOP".



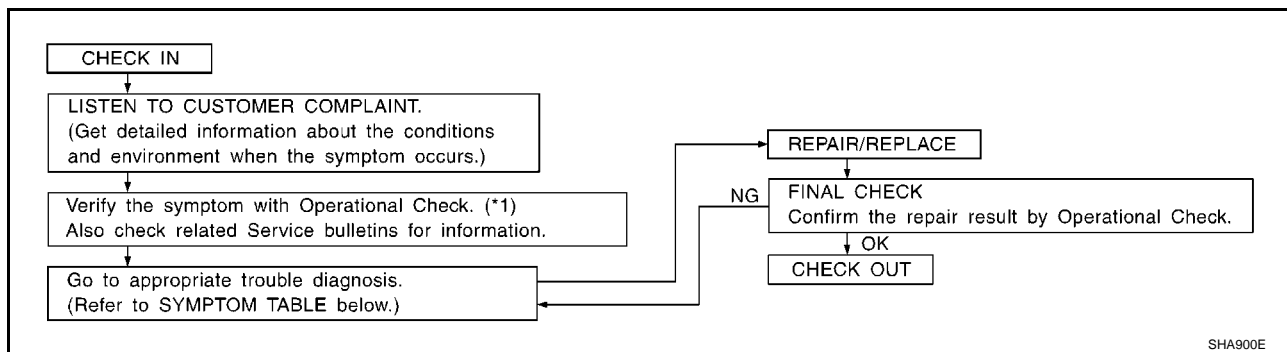
### Display Item List

| Monitor item name "operation or unit" | Contents   |
|---------------------------------------|--|
| IGN ON SW "ON/OFF"                    | Displays "IGN Position (ON)/OFF, ACC Position (OFF)" status as judged from ignition switch signal. |
| COMP ON SIG "ON/OFF"                  | Displays "COMP (ON)/COMP (OFF)" status as judged from air conditioner switch signal.               |
| FAN ON SIG "ON/OFF"                   | Displays "FAN (ON)/FAN (OFF)" status as judged from blower motor switch signal.                    |

# TROUBLE DIAGNOSIS

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

EJS005G5



\*1 [MTC-53. "Operational Check"](#)

## SYMPTOM TABLE

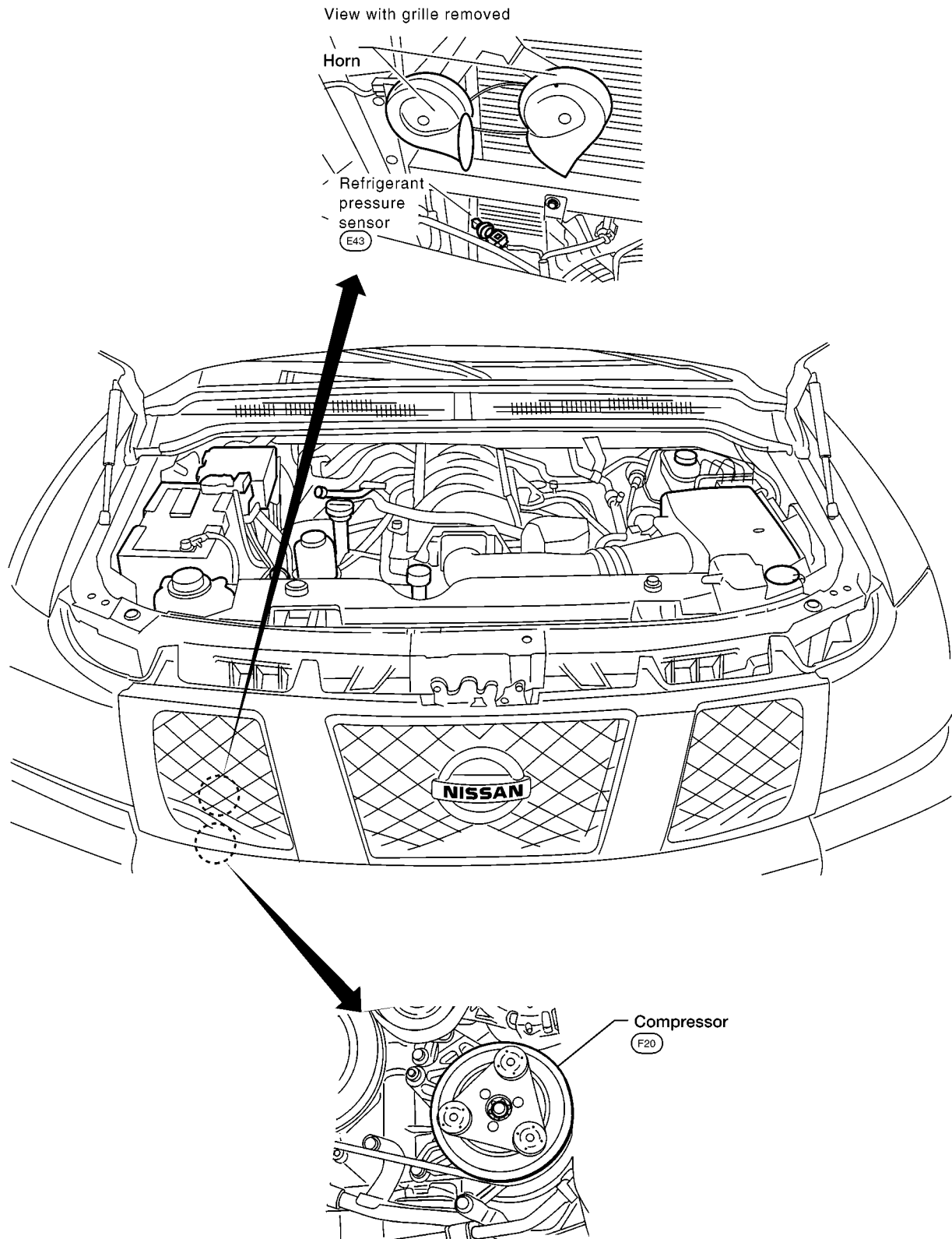
| Symptom                                    | Reference Page  |                        |
|--|---|------------------------|
| A/C system does not come on.               | Go to Trouble Diagnosis Procedure for A/C System.           | <a href="#">MTC-55</a> |
| A/C system cannot be controlled.           | Go to Self-diagnosis Function.                              | <a href="#">MTC-51</a> |
| Air outlet does not change.                | Go to Trouble Diagnosis Procedure for Mode Door Motor.      | <a href="#">MTC-58</a> |
| Mode door motor is malfunctioning.         |   |                        |
| Discharge air temperature does not change. | Go to Trouble Diagnosis Procedure for Air Mix Door Motor.   | <a href="#">MTC-63</a> |
| Air mix door motor is malfunctioning.      |   |                        |
| Intake door does not change.               | Go to Trouble Diagnosis Procedure for Intake Door Motor.    | <a href="#">MTC-68</a> |
| Intake door motor is malfunctioning.       |   |                        |
| Blower motor operation is malfunctioning.  | Go to Trouble Diagnosis Procedure for Blower Motor.         | <a href="#">MTC-71</a> |
| Magnet clutch does not engage.             | Go to Trouble Diagnosis Procedure for Magnet Clutch.        | <a href="#">MTC-79</a> |
| Insufficient cooling                       | Go to Trouble Diagnosis Procedure for Insufficient Cooling. | <a href="#">MTC-86</a> |
| Insufficient heating                       | Go to Trouble Diagnosis Procedure for Insufficient Heating. | <a href="#">MTC-93</a> |
| Noise                                      | Go to Trouble Diagnosis Procedure for Noise.                | <a href="#">MTC-94</a> |
| Self-diagnosis cannot be performed *1.     | Go to Trouble Diagnosis Procedure for Self-diagnosis.       | <a href="#">MTC-95</a> |

\*1: Self-diagnosis not available on vehicles not equipped with navigation system display screen.

# TROUBLE DIAGNOSIS

## Component Parts and Harness Connector Location ENGINE COMPARTMENT

EJS005G6

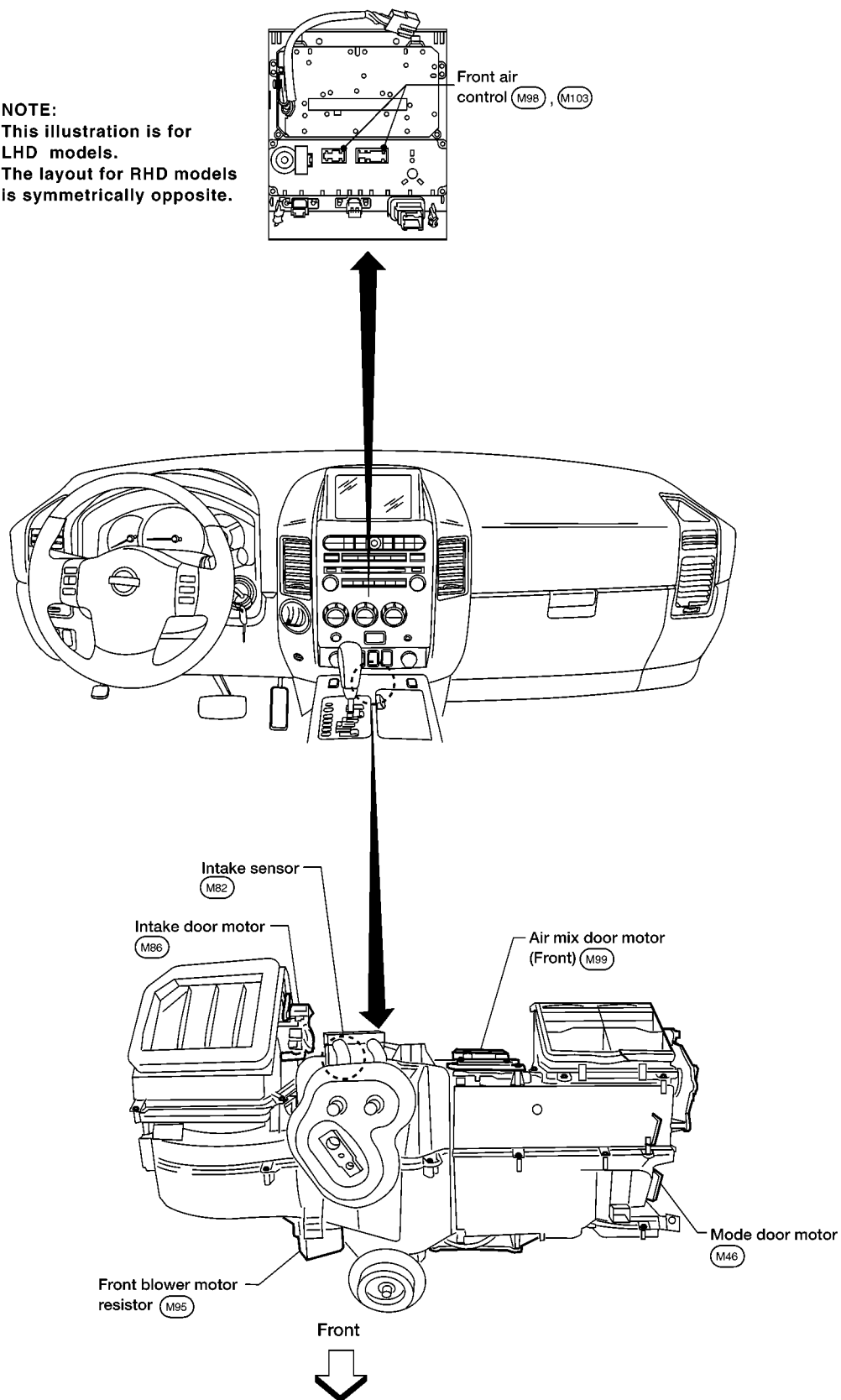


MJIB0318E

# TROUBLE DIAGNOSIS

## FRONT PASSENGER COMPARTMENT

**NOTE:**  
This illustration is for  
LHD models.  
The layout for RHD models  
is symmetrically opposite.



A

B

C

D

E

F

G

H

I

MTC

K

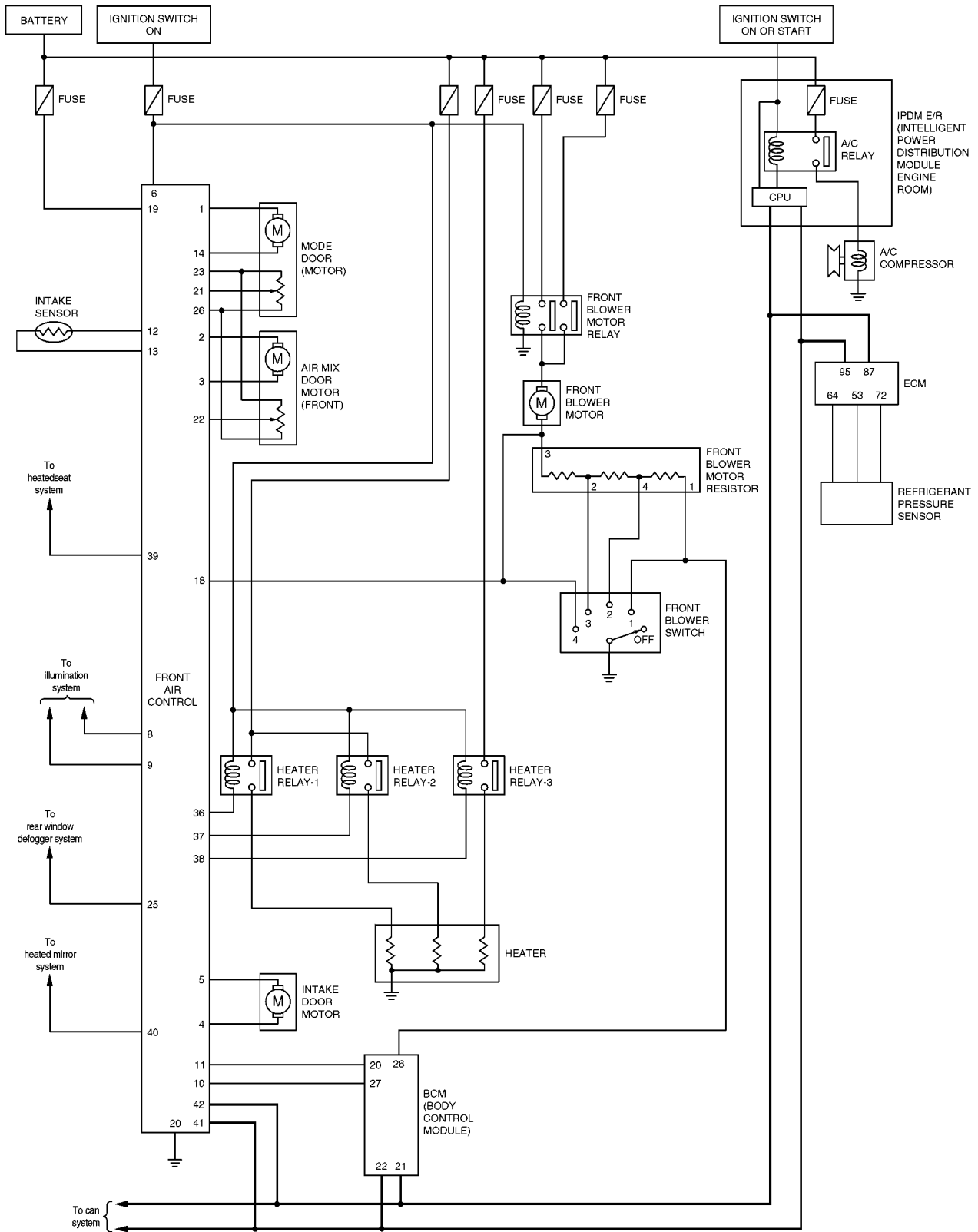
L

M

# TROUBLE DIAGNOSIS

## Schematic —LHD MODELS—

EJS005G7



MJWA0200E

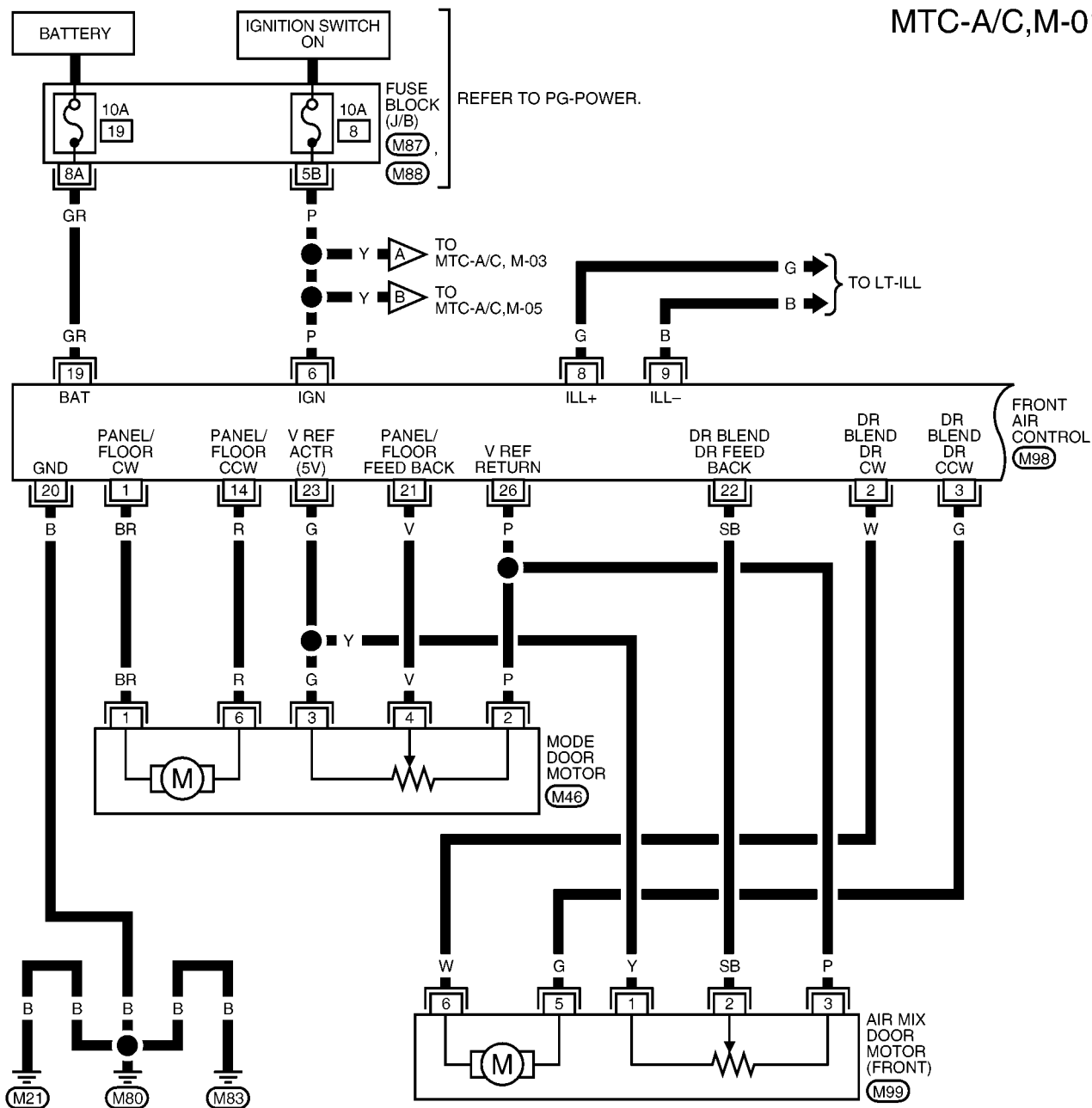
# TROUBLE DIAGNOSIS

## Wiring Diagram —A/C— —LHD MODELS—

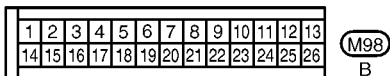
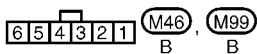
EJS005G8

MTC-A/C,M-01

A  
B  
C  
D  
E  
F  
G  
H  
I  
MTC  
K  
L  
M

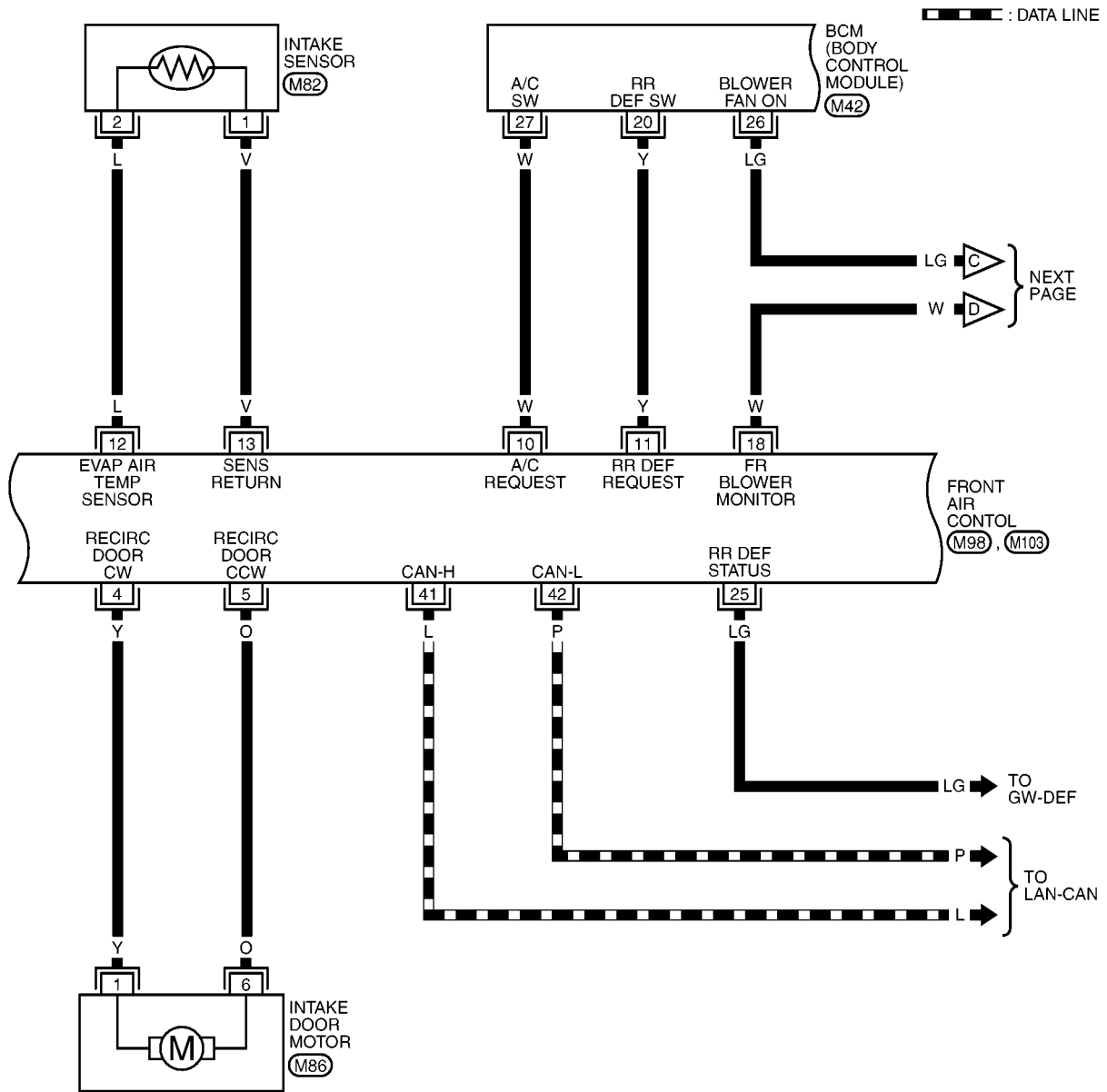


REFER TO THE FOLLOWING.  
(M87), (M88) - FUSE BLOCK-  
JUNCTION BOX (J/B)



# TROUBLE DIAGNOSIS

MTC-A/C,M-02



|    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |

M42  
B

2 1

M82  
GR

6 5 4 3 2 1  
M86  
B

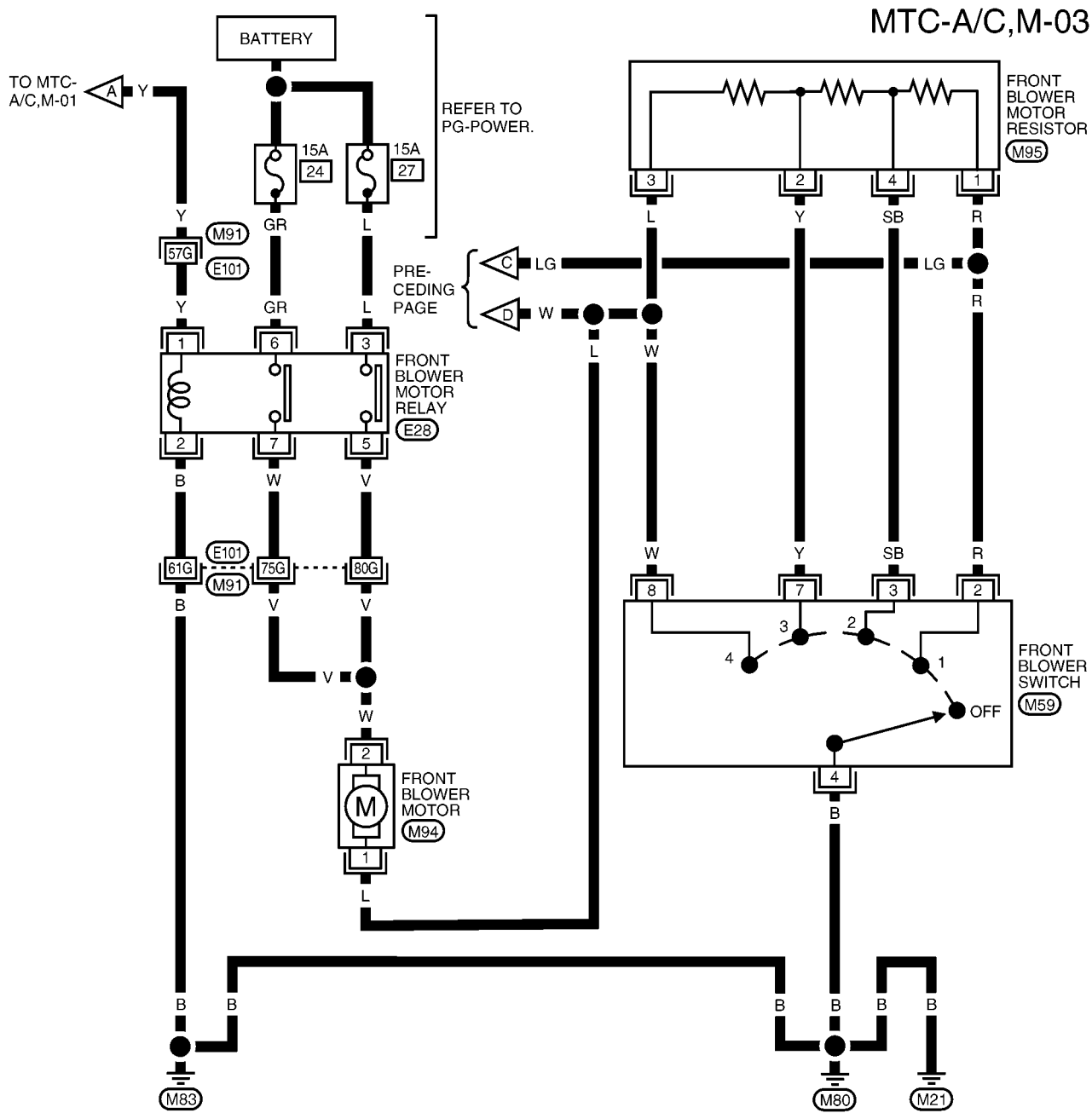
|    |    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |

M98  
B

|    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|
| 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 |
| 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 |

M103  
W

# TROUBLE DIAGNOSIS



|   |   |   |   |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |

(M59)  
W

|   |   |
|---|---|
| 2 | 1 |
|---|---|

(M94)

|   |   |   |   |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
|---|---|---|---|

(M95)  
W

|   |   |
|---|---|
| 1 | 2 |
| 3 | 6 |
| 5 | 7 |

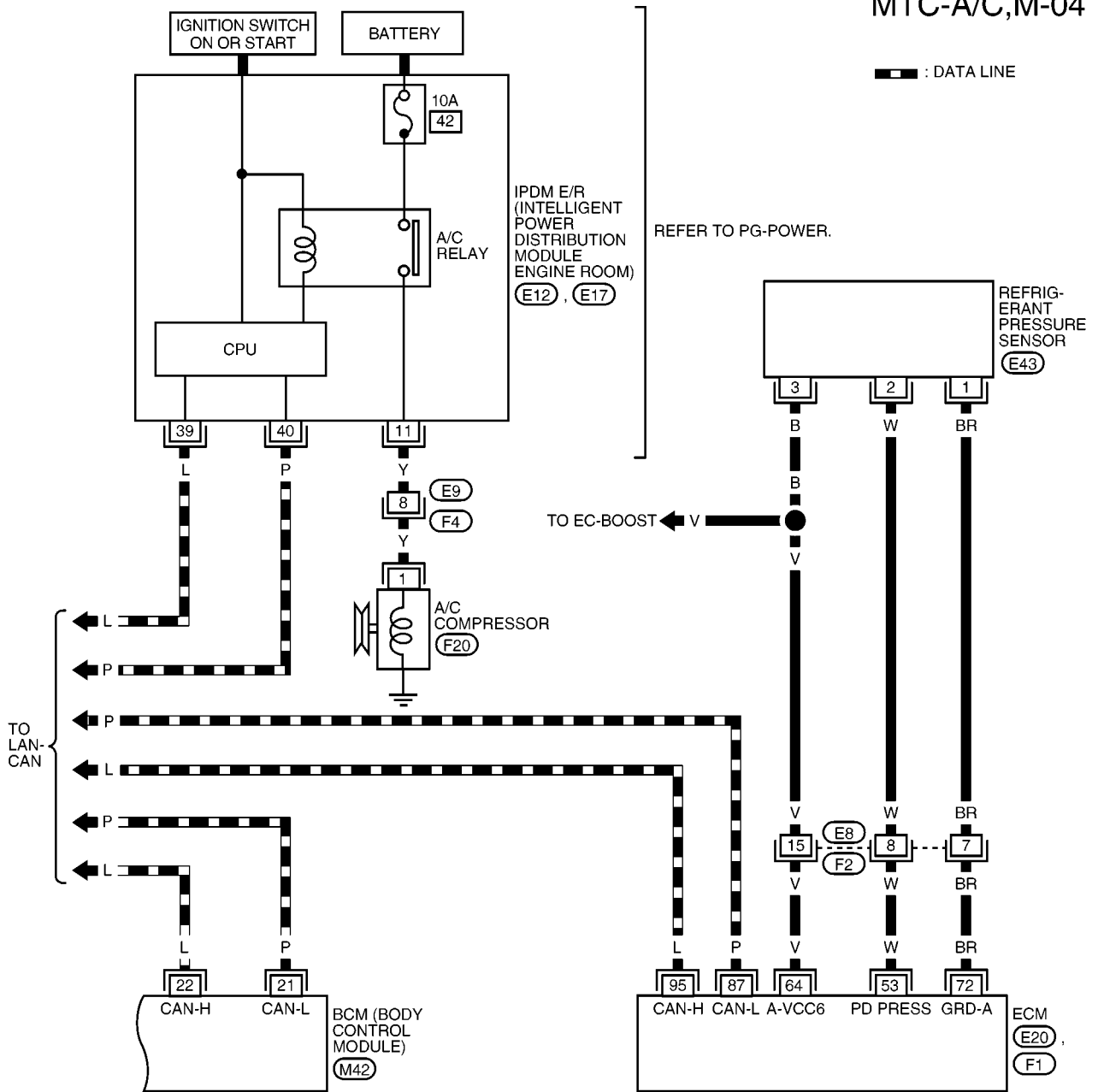
(E28)  
BR

REFER TO THE FOLLOWING.  
(M91) - SUPER MULTIPLE  
JUNCTION (SMJ)

# TROUBLE DIAGNOSIS

MTC-A/C,M-04

DATA LINE



|    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |

M42  
B

|    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|
| 9  | 8  | 7  | 6  | 5  | 4  | 3  |
| 18 | 17 | 16 | 15 | 14 | 13 | 12 |

|    |    |    |    |    |    |
|----|----|----|----|----|----|
| 42 | 41 | 40 | 39 | 38 | 37 |
| 48 | 47 | 46 | 45 | 44 | 43 |

H.S.

3 2 1 E43  
B

|    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |

F2  
W

|   |   |    |    |    |    |    |
|---|---|----|----|----|----|----|
| 1 | 2 | 3  | 4  | 5  | 6  | 7  |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |

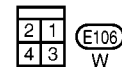
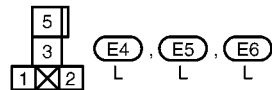
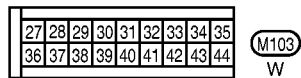
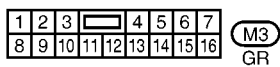
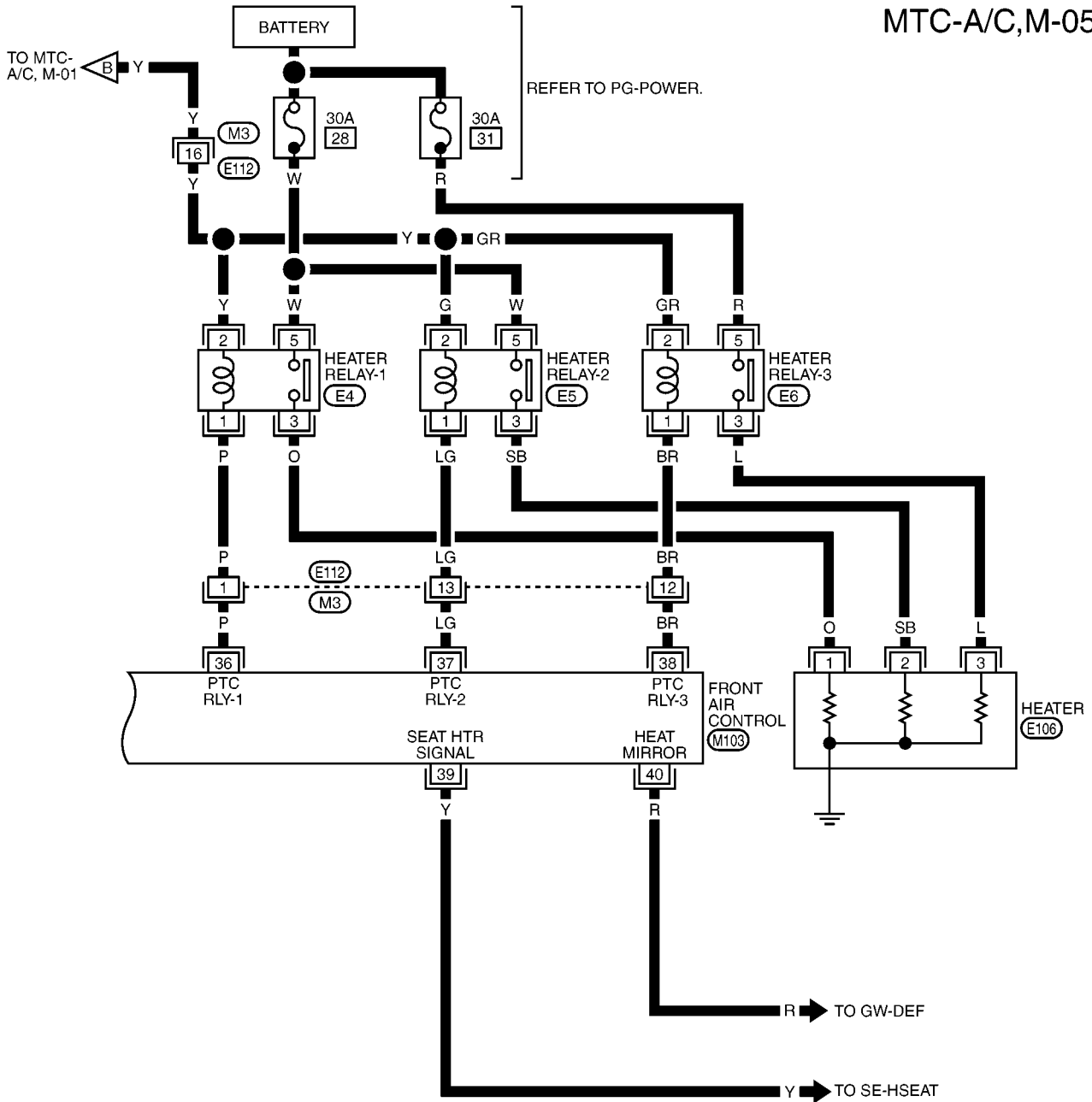
F4  
W

1 F20  
B

REFER TO THE FOLLOWING.  
E20, F1 - ELECTRICAL  
UNITS

MJWA0193E

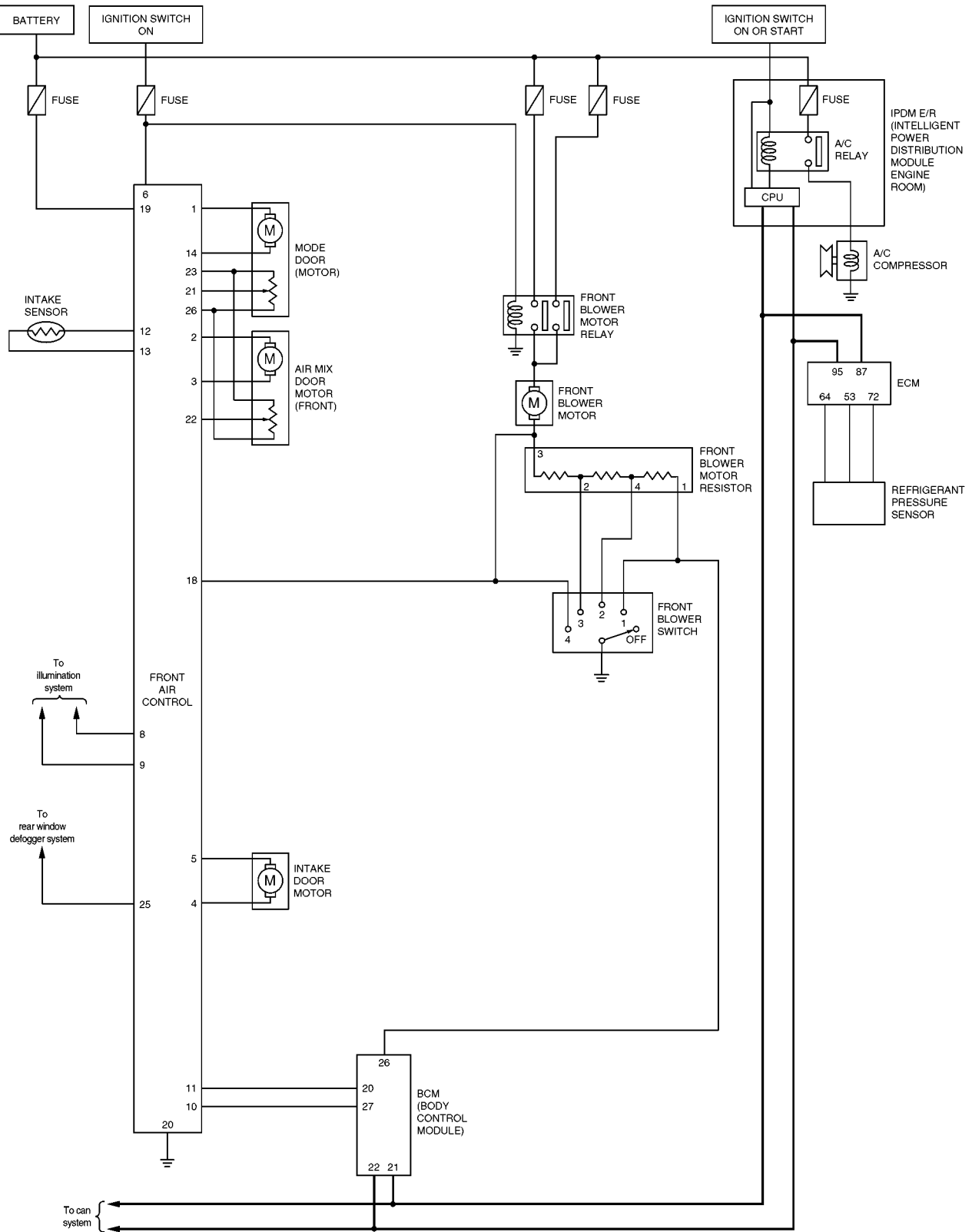
MTC-A/C,M-05



# TROUBLE DIAGNOSIS

## Schematic —RHD MODELS—

EJS006D6



MJWA0201E

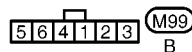
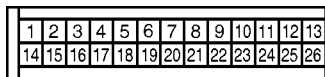
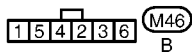
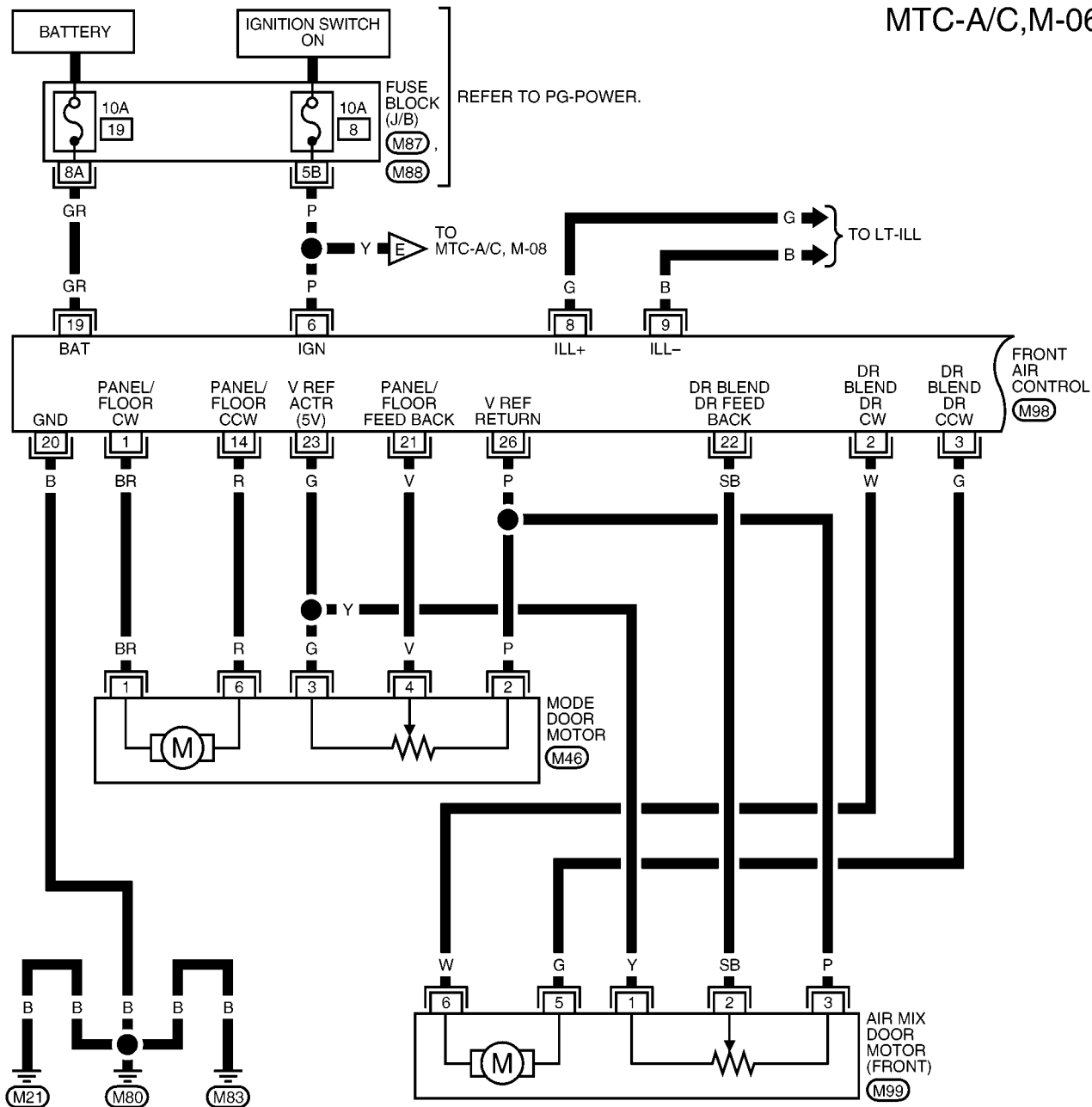
# TROUBLE DIAGNOSIS

## Wiring Diagram —A/C— —RHD MODELS—

EJS006D7

MTC-A/C,M-06

A  
B  
C  
D  
E  
F  
G  
H  
I  
MTC  
K  
L  
M

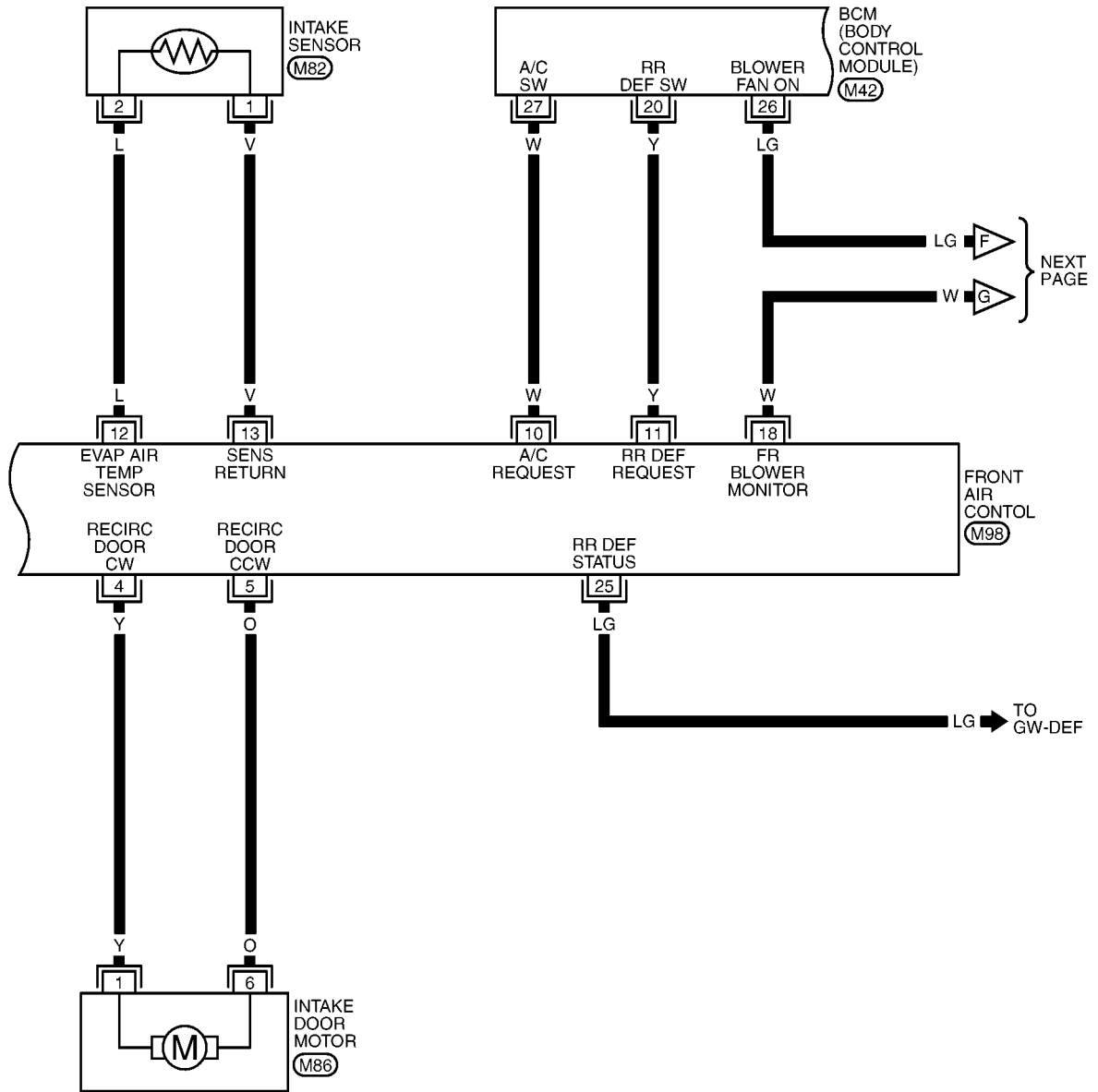


REFER TO THE FOLLOWING.  
(M87), (M88) - FUSE BLOCK-JUNCTION BOX (J/B)

MJWA0195E

# TROUBLE DIAGNOSIS

MTC-A/C,M-07



|    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |

(M42)  
B

(2 1)  
(M82)  
GR

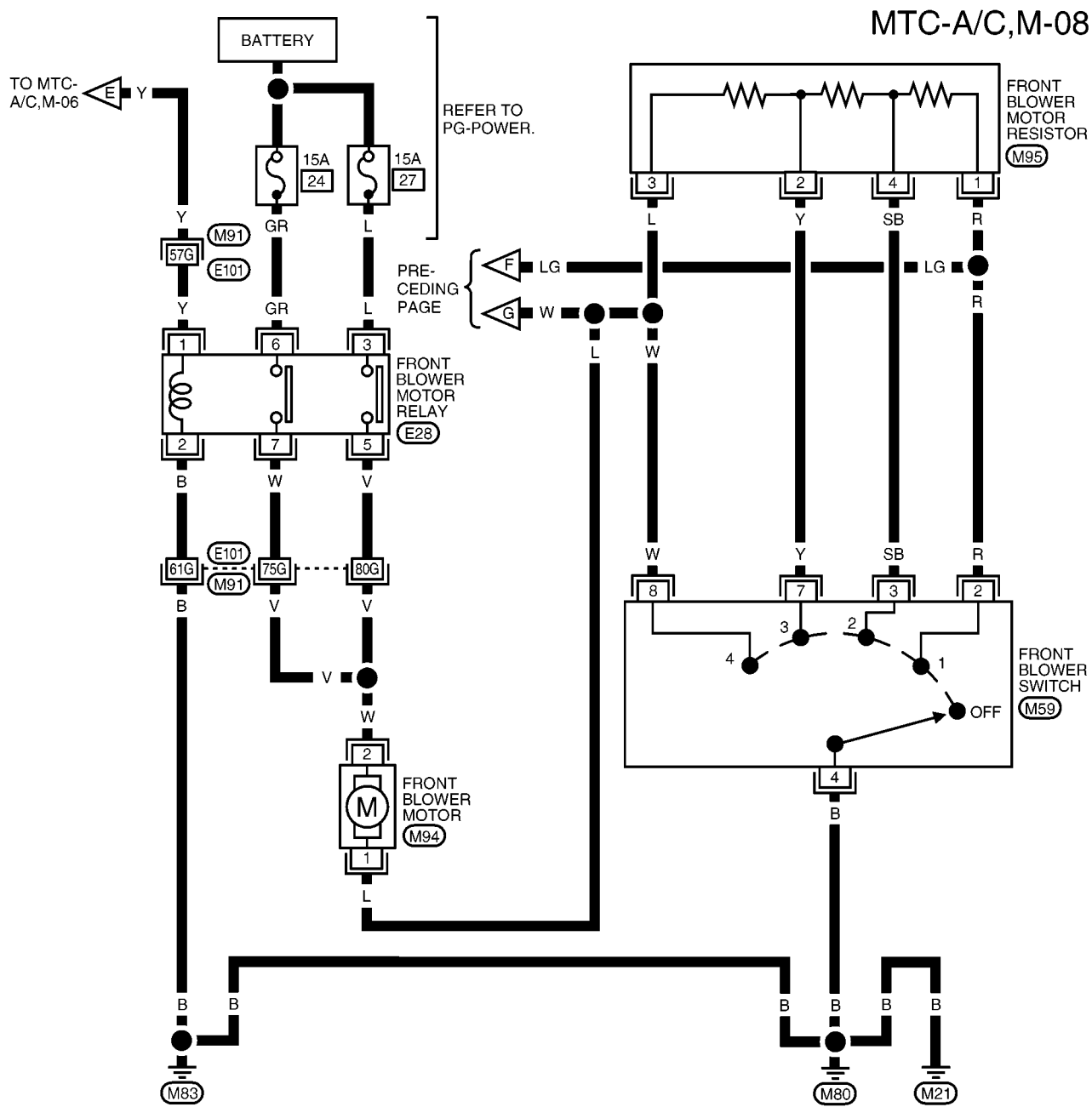
(1 2 3 4 5 6)  
(M86)  
B

|    |    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |

(M98)  
B

MJWA0196E

# TROUBLE DIAGNOSIS



|   |   |   |   |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |

(M59)  
W

|   |   |
|---|---|
| 2 | 1 |
|---|---|

(M94)

|   |   |   |   |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
|---|---|---|---|

(M95)  
W

|   |   |
|---|---|
| 1 | 2 |
| 3 | 6 |
| 5 | 7 |

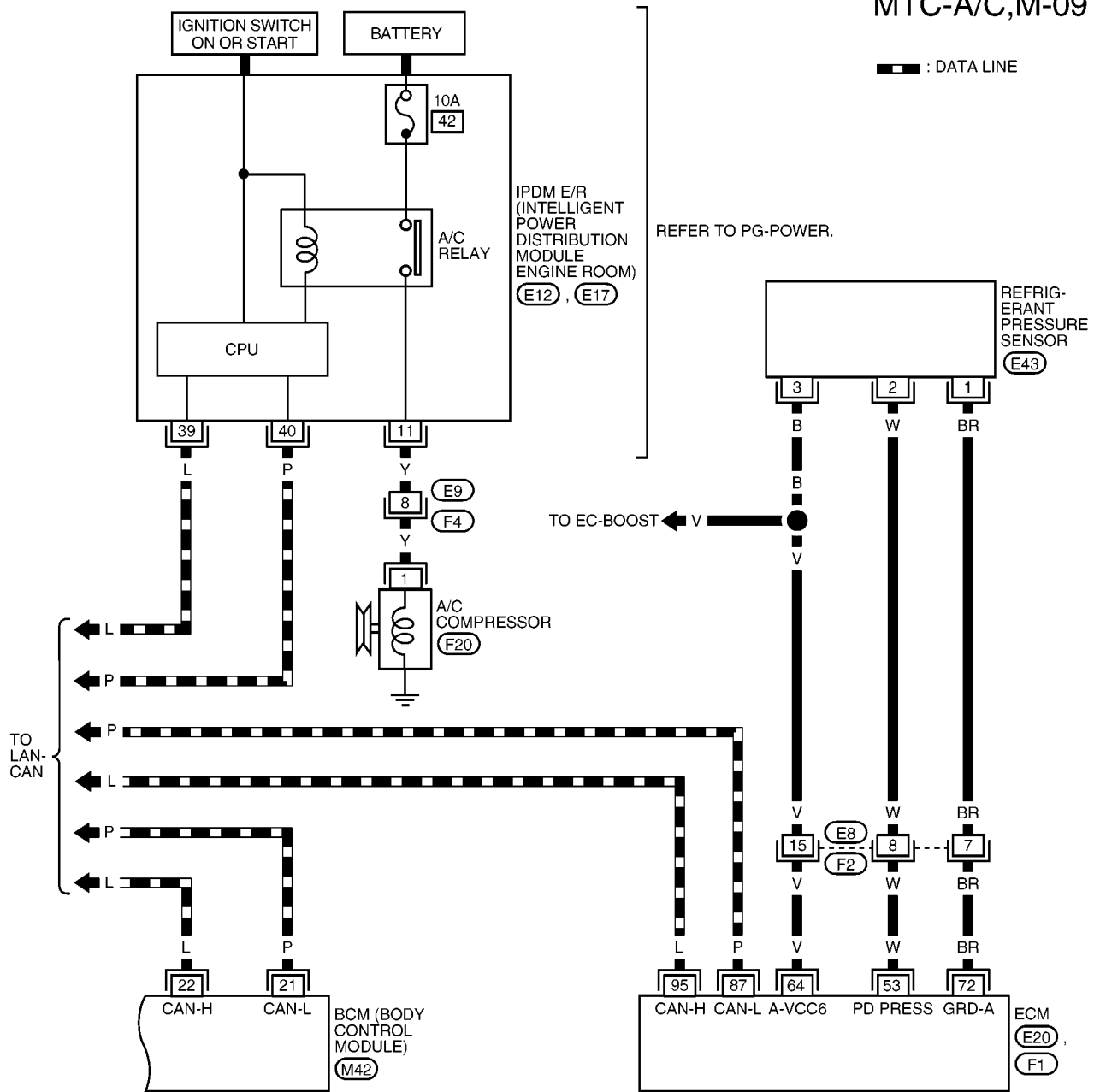
(E28)  
BR

REFER TO THE FOLLOWING.  
(M91) - SUPER MULTIPLE  
JUNCTION (SMJ)

# TROUBLE DIAGNOSIS

MTC-A/C,M-09

— : DATA LINE



|    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |

(M42)  
B

|    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|
| 9  | 8  | 7  | 6  | 5  | 4  | 3  |
| 18 | 17 | 16 | 15 | 14 | 13 | 12 |

|    |    |    |    |    |    |
|----|----|----|----|----|----|
| 42 | 41 | 40 | 39 | 38 | 37 |
| 48 | 47 | 46 | 45 | 44 | 43 |

(E12) W

(E17) W



(E43) B

|    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |

(F2) W

|   |   |    |    |    |    |    |
|---|---|----|----|----|----|----|
| 1 | 2 | 3  | 4  | 5  | 6  | 7  |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |

(F4) W

(F20) B

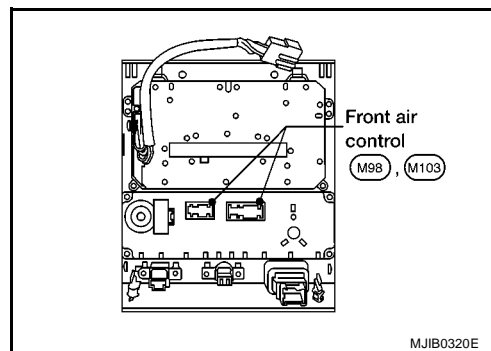
REFER TO THE FOLLOWING.  
(E20, F1) - ELECTRICAL UNITS

# TROUBLE DIAGNOSIS

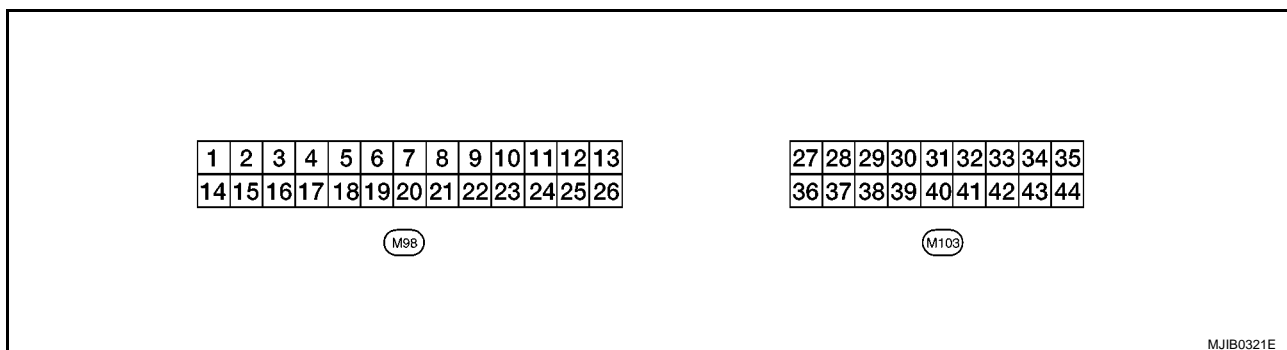
## Front Air Control Terminals and Reference Value

EJS005G9

Measure voltage between each terminal and ground by following Terminals and Reference Value for front air control.



## PIN CONNECTOR TERMINAL LAYOUT



## TERMINALS AND REFERENCE VALUE FOR FRONT AIR CONTROL

| Terminal No. | Wire color | Item                   | Ignition switch | Condition                 | Voltage (V) (Approx.)                       |
|--------------|------------|------------------------|-----------------|---------------------------|---|
| 1            | BR         | Mode door motor CW     | ON              | Clockwise rotation        | Battery voltage                             |
| 2            | W          | Air mix door motor CW  | ON              | Clockwise rotation        | Battery voltage                             |
| 3            | G          | Air mix door motor CCW | ON              | Counterclockwise rotation | Battery voltage                             |
| 4            | Y          | Intake door motor CW   | ON              | Clockwise rotation        | Battery voltage                             |
| 5            | O          | Intake door motor CCW  | ON              | Counterclockwise rotation | Battery voltage                             |
| 6            | P          | Power supply for IGN   | ON              | —                         | Battery voltage                             |
| 8            | G          | Illumination +         | ON              | Park lamps ON             | Battery voltage                             |
| 9            | B          | Illumination –         | —               | Park lamps ON             | <div> (V) 15 10 5 0 200 ms PIIA2344E </div> |
| 10           | W          | Compressor ON signal   | ON              | A/C switch OFF            | 5V  |
|              |            |                        | ON              | A/C switch ON             | 0V  |
| 11           | Y          | Rear defroster request | ON              | —                         | Battery voltage                             |
| 12           | L          | Intake sensor          | ON              | —                         | 0 - 5V                                      |
| 13           | V          | Intake sensor return   |                 |                           |   |
| 14           | R          | Mode door motor CCW    | ON              | Counterclockwise rotation | Battery voltage                             |
| 18           | W          | Blower monitor         | ON              | Blower motor OFF          | Battery voltage                             |
|              |            |                        |                 | Blower motor ON           | 0V  |
| 19           | GR         | Power supply for BAT   | —               | —                         | Battery voltage                             |
| 20           | B          | Ground                 | —               | —                         | 0V  |

## TROUBLE DIAGNOSIS

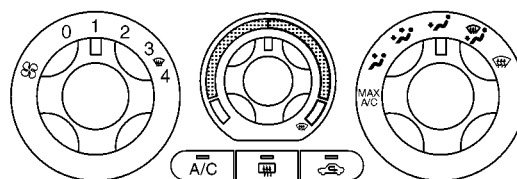
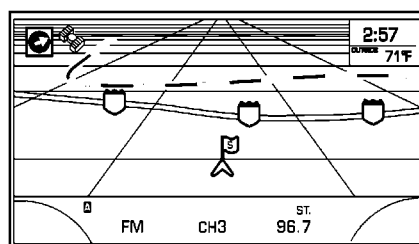
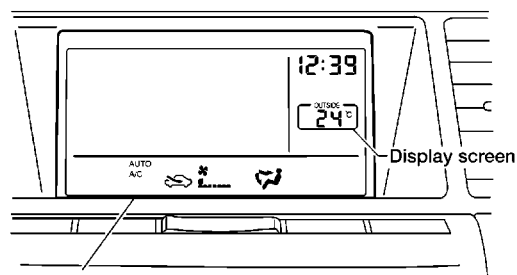
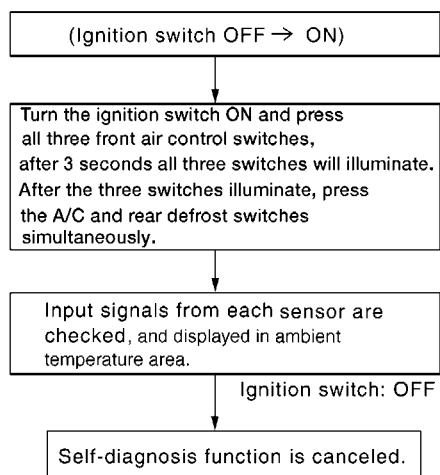
| Terminal No. | Wire color | Item                               | Ignition switch | Condition         | Voltage (V)<br>(Approx.) |
|--------------|------------|------------------------------------|-----------------|-------------------|--------------------------|
| 21           | V          | Mode door motor feedback           | ON              | —                 | 0 - 5V                   |
| 22           | SB         | Air mix door motor feedback        | ON              | —                 | 0 - 5V                   |
| 23           | G          | Sensor power                       | ON              | —                 | 5V                       |
| 25           | LG         | Rear defroster status              |                 |                   |                          |
| 26           | P          | Sensor return                      | ON              | —                 | 0 - 5V                   |
| 36           | P          | PTC heater relay 1<br>(LHD models) | ON              | Relay ON          | Battery voltage          |
|              |            |                                    |                 | Relay OFF         | 0V                       |
| 37           | LG         | PTC heater relay 2<br>(LHD models) | ON              | Relay ON          | Battery voltage          |
|              |            |                                    |                 | Relay OFF         | 0V                       |
| 38           | BR         | PTC heater relay 3<br>(LHD models) | ON              | Relay ON          | Battery voltage          |
|              |            |                                    |                 | Relay OFF         | 0V                       |
| 39           | Y          | Seat heater<br>(LHD models)        | ON              | Seat heater ON    | Battery voltage          |
|              |            |                                    |                 | Seat heater OFF   | 0V                       |
| 40           | R          | Mirror heater<br>(LHD models)      | ON              | Mirror heater ON  | Battery voltage          |
|              |            |                                    |                 | Mirror heater OFF | 0V                       |
| 41           | L          | CAN-H<br>(LHD models)              | ON              | —                 | 0 - 5V                   |
| 42           | P          | CAN-L<br>(LHD models)              | ON              | —                 | 0 - 5V                   |

## A/C System Self-diagnosis Function

EJS005GA

### DESCRIPTION

The self-diagnostic system diagnoses sensors, door motors, blower motor, etc. Refer to applicable sections (items) for details. Shifting from usual control to the self-diagnostic system is accomplished by turning the ignition switch ON and pressing all three front air control switches, after 3 seconds all three switches will illuminate. After the three switches illuminate, press the A/C and rear defrost switches simultaneously. The blower bars will flash and the ambient temperature display will indicate 0° during the self-diagnosis. Fault codes (if any are present) will be displayed in the ambient temperature display area. Refer to [MTC-52, "SELF-DIAGNOSIS CODE CHART"](#).



MJIB0189E

# TROUBLE DIAGNOSIS

## SELF-DIAGNOSIS CODE CHART

| Code No. | Reference page  |  |
|----------|---|--|
| 02       | EE changed by calibration                             |  |
| 04       | Mode switch circuit open or short                     | <a href="#">MTC-58, "Mode Door Motor Circuit"</a>          |
| 05       | Blower motor failure                                  | <a href="#">MTC-71, "Blower Motor Circuit"</a>             |
| 20       | BCM not responding to A/C request                     | <a href="#">MTC-79, "Magnet Clutch Circuit"</a>            |
| 21       | BCM not responding to rear defroster request          | <a href="#">GW-47, "REAR WINDOW DEFOGGER"</a>              |
| 22       | Air mix door motor (front) circuit failure            | <a href="#">MTC-63, "Air Mix Door Motor Circuit"</a>       |
| 34       | Front potentiometer temperature control (PTC) failure |  |
| 36       | Air mix door motor (front) PBR circuit failure        | <a href="#">MTC-63, "Air Mix Door Motor Circuit"</a>       |
| 38       | Air mix door motor (rear) circuit failure             | <a href="#">MTC-63, "Air Mix Door Motor Circuit"</a>       |
| 56       | Intake sensor circuit short                           | <a href="#">MTC-95, "Intake Sensor Circuit"</a>            |
| 57       | Intake sensor circuit open                            |  |
| 62       | Defroster door motor circuit failure                  |  |
| 80       | CAN bus fault   | <a href="#">LAN-3, "Precautions When Using CONSULT-II"</a> |
| 81       | BCM CAN message missing                               |  |
| 82       | Intake door motor circuit failure                     | <a href="#">MTC-68, "Intake Door Motor Circuit"</a>        |
| 90       | Stuck switch  |  |
| 92       | Mode door motor circuit failure                       | <a href="#">MTC-58, "Mode Door Motor Circuit"</a>          |

# TROUBLE DIAGNOSIS

## Operational Check

EJS005GB

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

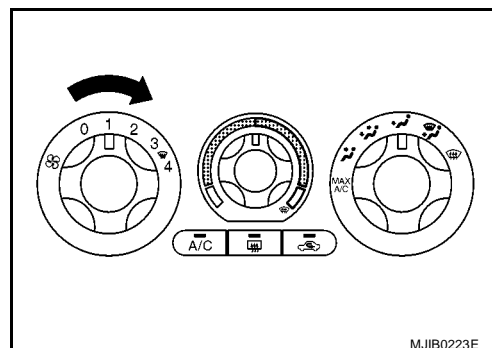
**Conditions** : Engine running and at normal operating temperature

### CHECKING BLOWER

1. Turn blower control switch clockwise. Blower should operate on low speed. The blower symbol should have one blade lit (on display).
2. Turn the blower control switch again, and continue checking blower speed and blower symbol until all speeds are checked.
3. Leave blower on MAX speed.

If NG, go to trouble diagnosis procedure for

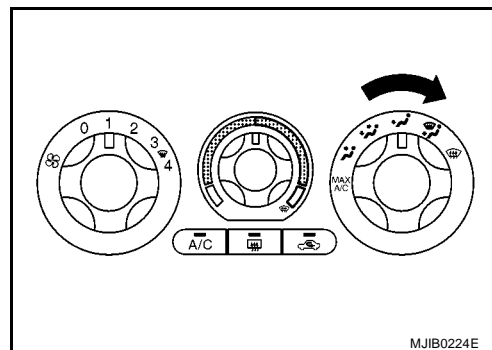
If OK, continue with next check.



MJIB0223E

### CHECKING DISCHARGE AIR

1. Turn the mode switch.
2. Each position indicator should change shape (on display, if equipped).



MJIB0224E

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

Mode door position is checked in the next step.



If NG, go to trouble diagnosis procedure for [MTC-58, "Mode Door Motor Circuit"](#).

If OK, continue with next check.

#### NOTE:

Confirm that the compressor clutch is engaged (sound or visual inspection) and intake door position is at fresh when the DEF or D/F is selected.

### CHECKING RECIRCULATION






1. Press recirculation (  ) switch one time. Recirculation indicator should illuminate.
2. Press recirculation (  ) switch one more time. Recirculation indicator should go off.
3. Listen for intake door position change (blower sound should change slightly).

If NG, go to trouble diagnosis procedure for [MTC-68, "Intake Door Motor Circuit"](#).

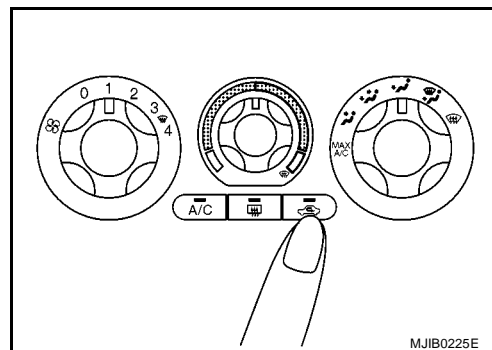
If OK, continue with next check.

#### NOTE:

Confirm that the compressor clutch is engaged (sound or visual inspection) and intake door position is at fresh when the DEF or D/F is selected.

| Discharge air flow  |                         |      |           |
|---|-------------------------|------|-----------|
| Mode door position  | Air outlet/distribution |      |           |
|   | Vent                    | Foot | Defroster |
|  | 100%                    | —    | —         |
|  | 60%                     | 40%  | —         |
|  | 18%                     | 64%  | 18%       |
|  | 14%                     | 53%  | 33%       |
|  | —                       | 13%  | 83%       |

MJIB0284E



MJIB0225E

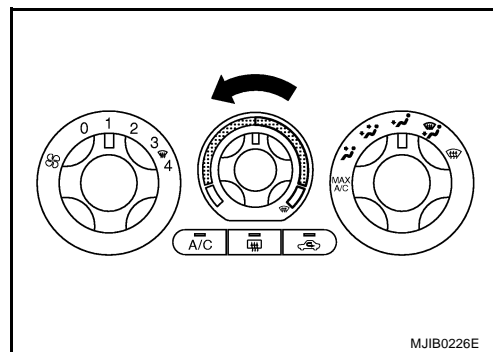
## TROUBLE DIAGNOSIS

### CHECKING TEMPERATURE DECREASE

1. Rotate temperature dial counterclockwise.
2. Check for cold air at appropriate discharge air outlets.

If NG, listen for sound of air mix door motor operation if OK, go to trouble diagnosis procedure for [MTC-86, "Insufficient Cooling"](#). If air mix door motor appears to be malfunctioning, go to [MTC-63, "Air Mix Door Motor Circuit"](#).

If OK, continue with next check.

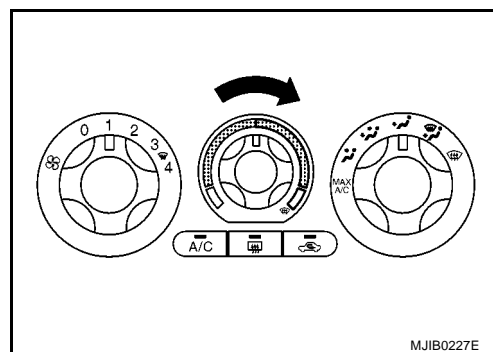


### CHECKING TEMPERATURE INCREASE

1. Rotate temperature dial clockwise.
2. Check for hot air at appropriate discharge air outlets.

If NG, listen for sound of air mix door motor operation. If OK, go to trouble diagnosis procedure for [MTC-93, "Insufficient Heating"](#). If air mix door motor appears to be malfunctioning, go to [MTC-63, "Air Mix Door Motor Circuit"](#).

If OK, continue with next check.

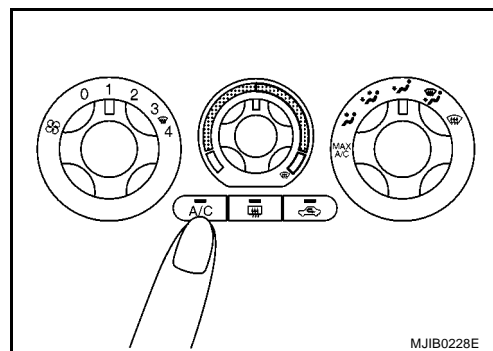


### CHECK A/C SWITCH

1. Press A/C switch with the blower switch ON.
2. A/C switch indicator will turn ON.
  - Confirm that the compressor clutch engages (sound or visual inspection).

If NG, go to trouble diagnosis procedure for [MTC-79, "Magnet Clutch Circuit"](#).

If OK, continue with next check.



# TROUBLE DIAGNOSIS

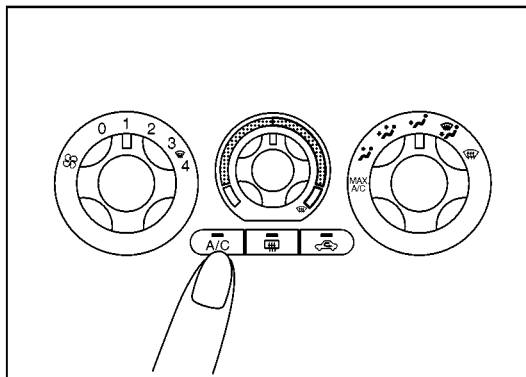
## Power Supply and Ground Circuit for Front Air Control

EJS005GD

SYMPTOM: A/C system does not come on.

### INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



#### OPERATIONAL CHECK –

- Press A/C. switch.
- Display should indicate A/C.  
Confirm that the compressor clutch engages  
(Sound or visual inspection).

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)

5. Replace front air control.

MJIB0229E

\*1 [MTC-55, "Power Supply and Ground Circuit for Front Air Control"](#). \*2 [MTC-53, "Operational Check"](#)

# TROUBLE DIAGNOSIS

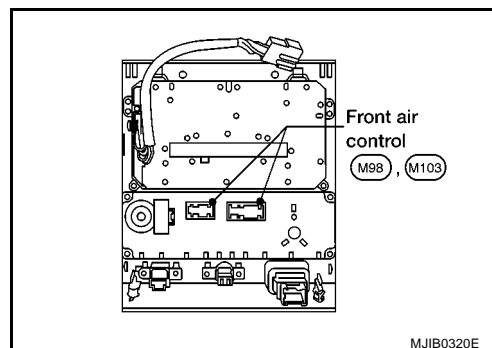
## COMPONENT DESCRIPTION

### Front Air Control

The front air control has a built-in microcomputer which processes information sent from various sensors needed for air conditioner operation. The air mix door motors, mode door motor, intake door motors, defroster door motor, blower motor and compressor are then controlled.

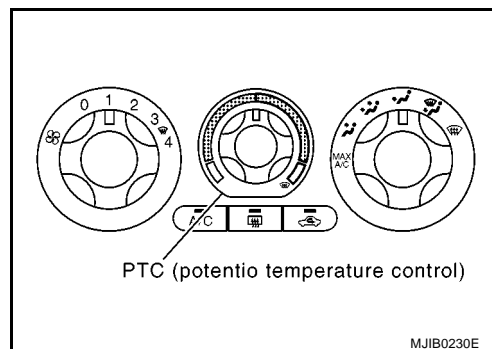
The front air control is unitized with control mechanisms. When the various switches and temperature dials are operated, data is input to the front air control.

Self-diagnostic functions are also built into the front air control to provide quick check of malfunctions (NAVI equipped vehicles only).



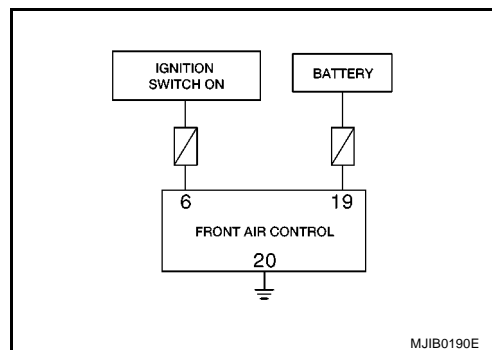
### Potential Temperature Control (PTC)

The PTC is built into the front air control. It can be set from cold to hot or any intermediate position by rotating the temperature dial.



## DIAGNOSTIC PROCEDURE FOR A/C SYSTEM

SYMPTOM: A/C system does not come on.

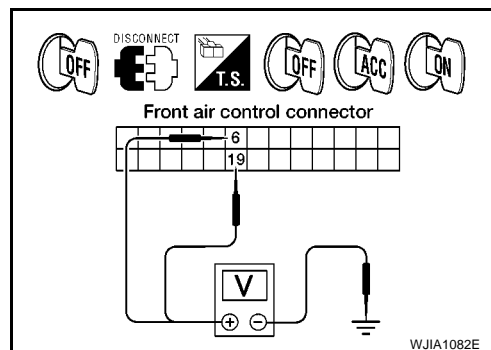


# TROUBLE DIAGNOSIS

## 1. CHECK POWER SUPPLY CIRCUITS FOR FRONT AIR CONTROL

- Turn ignition switch OFF.
- Disconnect front air control connector.
- Check voltage between front air control harness connector M98 terminals 6 and 19, and ground.

| Terminals                   |    | Ignition switch position |                 |                 |                 |
|-----------------------------|----|--------------------------|-----------------|-----------------|-----------------|
| (+) Terminal No.            |    | (-)                      | OFF             | ACC             | ON              |
| Front air control connector |    |                          |                 |                 |                 |
| M98                         | 6  | Ground                   | Approx. 0V      | Approx. 0V      | Battery voltage |
| M98                         | 19 |                          | Battery voltage | Battery voltage | Battery voltage |



OK or NG

OK >> GO TO 2.

NG >> Check 10A fuses [Nos. 8 and 19, located in the fuse block (J/B)]. Refer to [PG-83](#).

- If fuses are OK, check harness for open circuit. Repair or replace as necessary.
- If fuses are NG, replace fuse and check harness for short circuit. Repair or replace as necessary.

## 2. CHECK GROUND CIRCUIT FOR FRONT AIR CONTROL

- Turn ignition switch OFF.
- Check continuity between front air control harness connector M98 terminal 20 and ground.

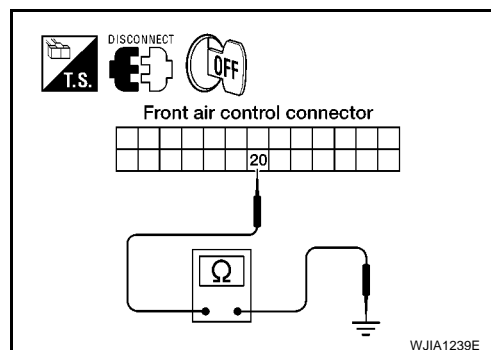
**20 - Ground**

**: Continuity should exist.**

OK or NG

OK >> Replace front air control. Refer to [MTC-98, "CONTROL UNIT"](#).

NG >> Repair harness or connector.



# TROUBLE DIAGNOSIS

EJS005GE

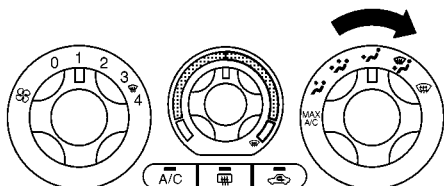
## Mode Door Motor Circuit

### SYMPTOM:

- Air outlet does not change.
- Mode door motor does not operate normally.

### INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



#### OPERATIONAL CHECK – Discharge air

- Turn mode switch clockwise and then counterclockwise.
- Each position indicator should change shape (on display).

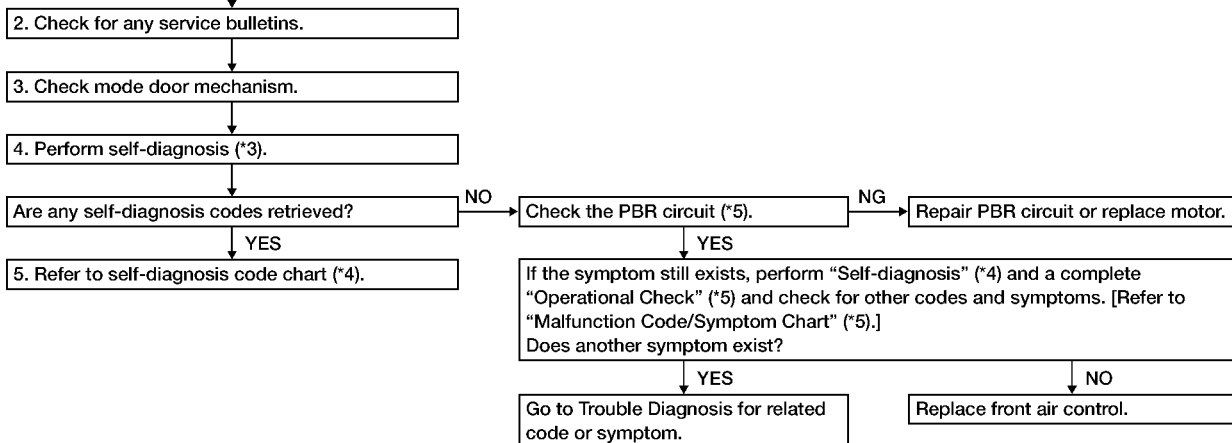
#### Discharge air flow

| Mode door position | Air outlet/distribution |      |           |
|--------------------|-------------------------|------|-----------|
|                    | Vent                    | Foot | Defroster |
|                    | 100%                    | —    | —         |
|                    | 60%                     | 40%  | —         |
|                    | 18%                     | 64%  | 18%       |
|                    | 14%                     | 53%  | 33%       |
|                    | —                       | 13%  | 83%       |

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

#### NOTE:

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



MJIB0289E

\*1 [MTC-30, "Discharge Air Flow".](#)

\*2 [MTC-53, "Operational Check".](#)

\*3 [MTC-51, "A/C System Self-diagnosis Function".](#)

\*4 [MTC-52, "SELF-DIAGNOSIS CODE CHART".](#)

\*5 [MTC-58, "Mode Door Motor Circuit".](#)

# TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

### Component Parts

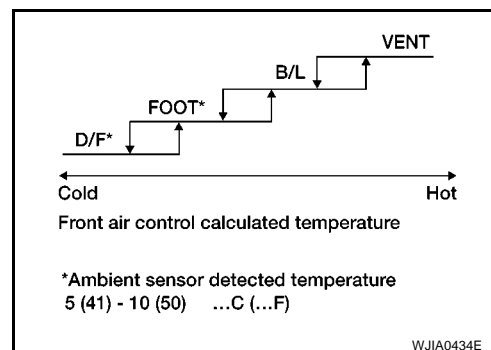
Mode door control system components are:

- Front air control
- Mode door motor
- PBR (built into mode door motor)

### System Operation

The mode door position (vent, B/L, foot, and defrost) is set by the front air control by means of the mode door motor. When a mode door position is selected on the front air control, voltage is applied to one circuit of the mode door motor while ground is applied to the other circuit, causing the mode door motor to rotate. The direction of rotation is determined by which circuit has voltage applied to it, and which one has ground applied to it. The front air control monitors the mode door position by measuring the voltage signal on the PBR circuit.

### Mode Door Control Specification



## COMPONENT DESCRIPTION

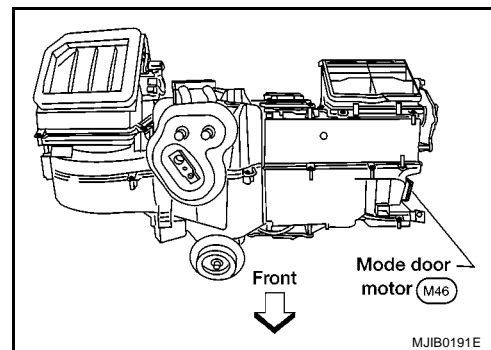
### Mode Door Motor

The mode door motor is attached to the heater & cooling unit. It rotates so that air is discharged from the outlet as indicated by the front air control. Motor rotation is conveyed to a link which activates the mode door.

#### NOTE:

This illustration is for LHD models.

The layout for RHD models is symmetrically opposite.



## DIAGNOSTIC PROCEDURE FOR MODE DOOR MOTOR

### 1. CHECK RESULT FROM FRONT AIR CONTROL SELF-DIAGNOSIS OR PROCEED FROM SYMPTOM TABLE

Is vehicle equipped with NAVI?

YES or NO

YES >> GO TO 2.

NO >> GO TO 4.

### 2. CHECK RESULT FROM FRONT AIR CONTROL SELF-DIAGNOSIS

Self-diagnosis code 92 is present. Refer to [MTC-51, "A/C System Self-diagnosis Function"](#).

YES or NO

YES >> GO TO 3.

NO >> GO TO 4.

## TROUBLE DIAGNOSIS

### 3. CHECK POWER SUPPLY AND GROUND CIRCUITS FOR MODE DOOR MOTOR

1. Turn ignition switch OFF.
2. Disconnect front air control connector and mode door motor connector.
3. Check continuity between front air control harness connector M98 terminal 1 and mode door motor connector M46 terminal 1 and between front air control harness connector M98 terminal 14 and mode door motor connector M46 terminal 6.

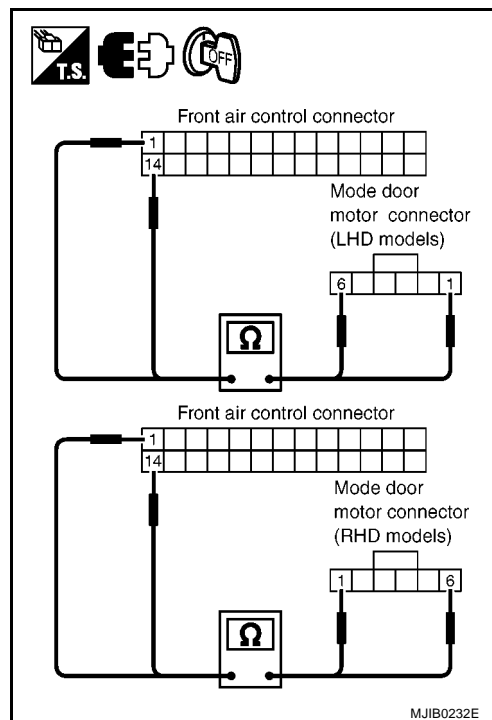
**1 - 1 : Continuity should exist.**

**14 - 6 : Continuity should exist.**

OK or NG

OK >> Replace mode door motor.

NG >> Repair or replace harness as necessary.



### 4. CHECK PBR REFERENCE SIGNAL VOLTAGE

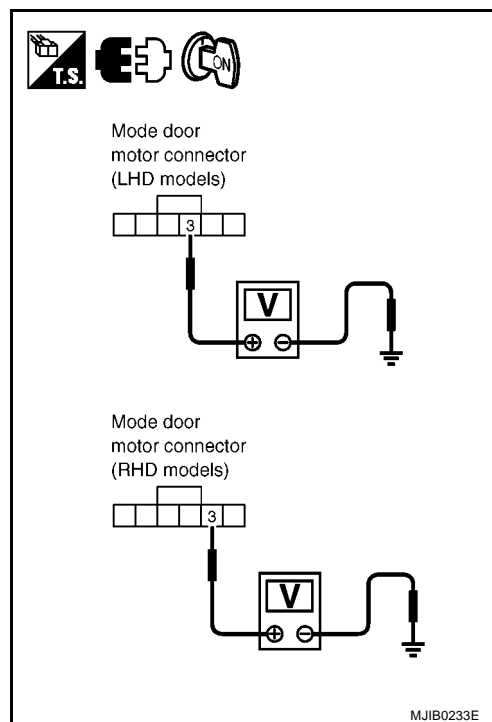
1. Turn ignition switch OFF.
2. Disconnect the mode door motor connector.
3. Turn ignition switch ON.
4. Check voltage between mode door motor harness connector M46 terminal 3 and ground.

**3 - Ground : Approx. 5V**

OK or NG

OK >> GO TO 6.

NG >> GO TO 5.



## TROUBLE DIAGNOSIS

### 5. CHECK PBR REFERENCE VOLTAGE CIRCUIT BETWEEN MODE DOOR AND FRONT AIR CONTROL

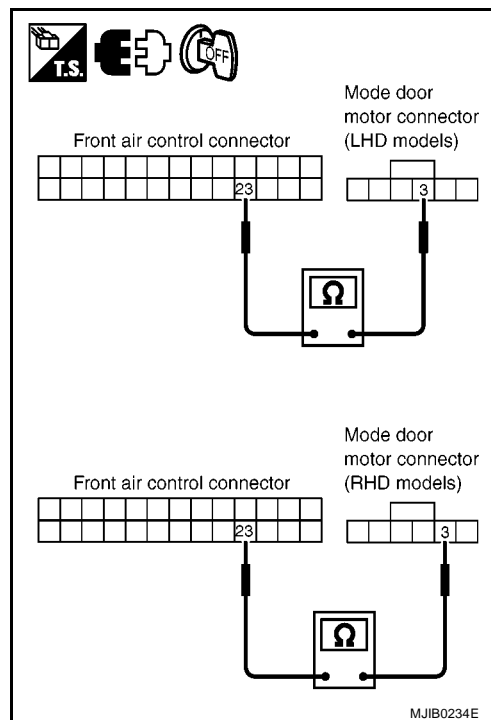
1. Turn ignition switch OFF.
2. Disconnect the front air control connector.
3. Check continuity between mode door motor harness connector M46 terminal 3 and front air control harness connector M98 terminal 23.

**3 - 23**

**: Continuity should exist.**

OK or NG

- OK >> Replace front air control. Refer to [MTC-98, "CONTROL UNIT"](#).
- NG >> Repair or replace harness as necessary.



### 6. CHECK PBR GROUND REFERENCE CIRCUIT

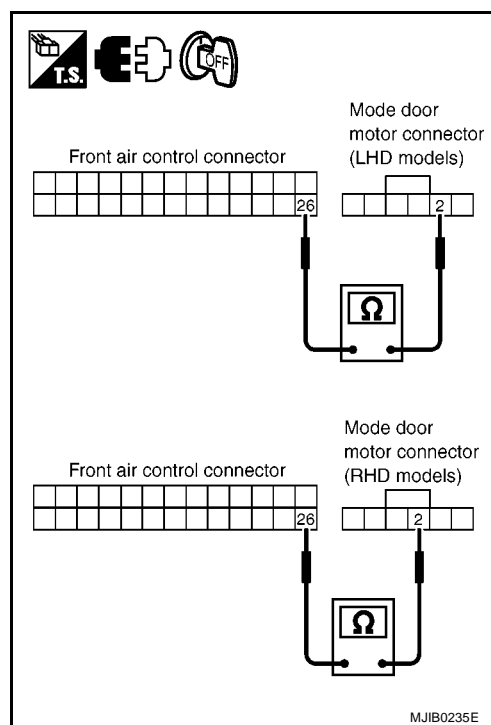
1. Turn ignition switch OFF.
2. Disconnect the front air control connector.
3. Check continuity between mode door motor harness connector M46 terminal 2 and front air control harness connector M98 terminal 26.

**2 - 26**

**: Continuity should exist.**

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace harness as necessary.



## TROUBLE DIAGNOSIS

### 7. CHECK PBR FEEDBACK SIGNAL

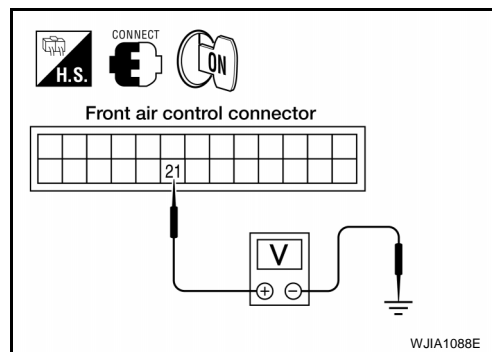
1. Reconnect the front air control connector and mode door motor connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M98 terminal 21 and ground.
4. Press mode switch through all modes.

**21 - Ground**

**: Approx. 0 - 5V**

OK or NG

- OK >> Replace front air control. Refer to [MTC-98, "CONTROL UNIT"](#).
- NG >> GO TO 8.



### 8. CHECK PBR FEEDBACK CIRCUIT

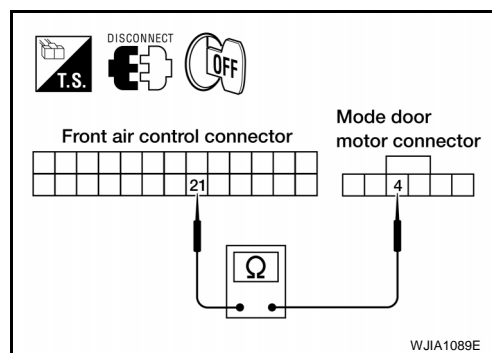
1. Turn ignition switch OFF.
2. Disconnect the mode door motor connector and front air control harness connector.
3. Check continuity between mode door motor harness connector M46 terminal 4 and front air control harness connector M98 terminal 21.

**4 - 21**

**: Continuity should exist.**

OK or NG

- OK >> Replace mode door motor. Refer to [MTC-110, "MODE DOOR MOTOR"](#).
- NG >> Repair or replace harness as necessary.



# TROUBLE DIAGNOSIS

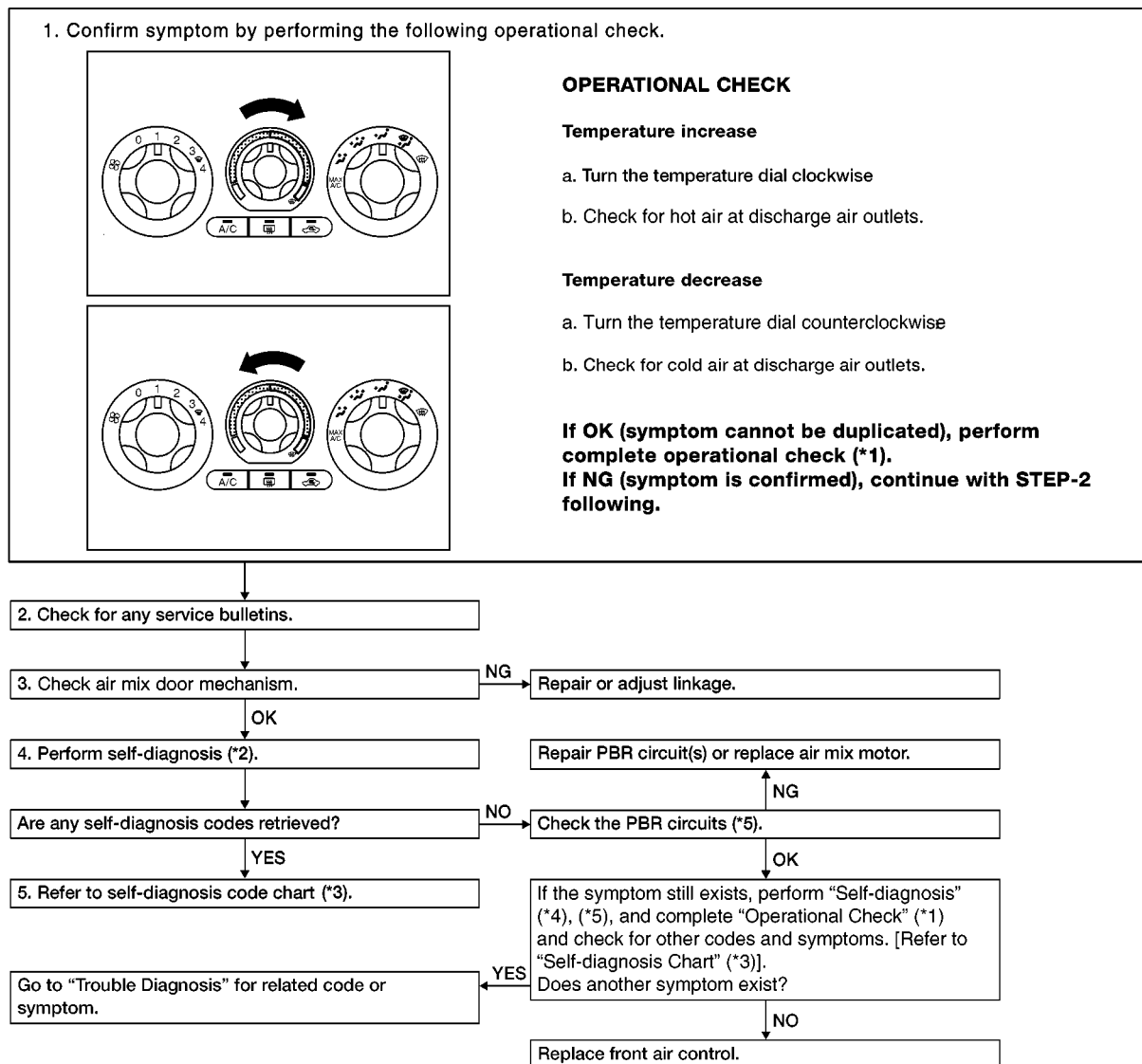
## Air Mix Door Motor Circuit

EJS005GF

### SYMPTOM:

- Discharge air temperature does not change.
- Air mix door motor does not operate.

### INSPECTION FLOW



\*1 [MTC-53, "Operational Check".](#)

\*2 [MTC-51, "A/C System Self-diagnosis Function".](#)

\*3 [MTC-52, "SELF-DIAGNOSIS CODE CHART".](#)

\*4 [MTC-64, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(FRONT\)".](#)

MJIB0236E

# TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

### Component Parts

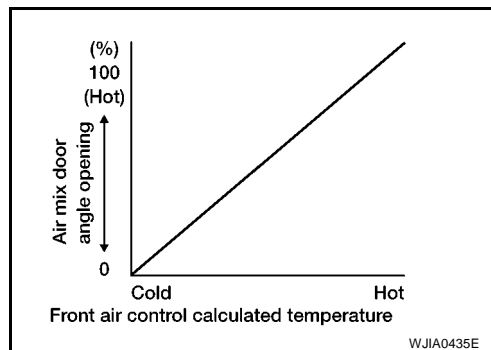
Air mix door control system components are:

- Front air control
- Air mix door motors (Front and rear)
- PBR (built-into air mix motors)

### System Operation

The front air control receives data from the temperature selected by the driver and rear passenger. The front air control then applies a voltage to one circuit of the appropriate air mix door motor, while ground is applied to the other circuit, causing the appropriate air mix door to rotate. The direction of rotation is determined by which circuit has voltage applied to it, and which one has ground applied to it. The front air control monitors the air mix door positions by measuring the voltage signal on the PBR circuits of each door.

### Air Mix Door Control Specification



## COMPONENT DESCRIPTION

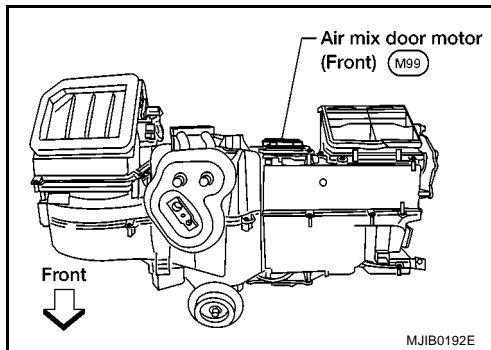
### Air Mix Door Motors

The air mix door motor is attached to the heater & cooling unit. This motor rotates so that the air mix door is opened or closed to a position set by the front air control. Motor rotation is then conveyed through a shaft and the air mix door position is then fed back to the front air control by the PBR built into the air mix door motor.

#### NOTE:

This illustration is for LHD models.

The layout for RHD models is symmetrically opposite.



## DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR (FRONT)

### 1. CHECK RESULT FROM FRONT AIR CONTROL SELF-DIAGNOSIS OR PROCEED FROM SYMPTOM TABLE

Is vehicle equipped with NAVI?.

YES or NO

- YES >> GO TO 2.  
NO >> GO TO 4.

### 2. CHECK RESULT FROM FRONT AIR CONTROL SELF-DIAGNOSIS

Self-diagnosis code 22 is present. Refer to [MTC-51, "A/C System Self-diagnosis Function"](#) .

YES or NO

- YES >> GO TO 3.  
NO >> GO TO 4.

## TROUBLE DIAGNOSIS

### 3. CHECK POWER SUPPLY CIRCUITS FOR AIR MIX DOOR MOTOR (FRONT)

1. Turn ignition switch OFF.
2. Disconnect front air control connector and air mix door motor (Front) connector.
3. Check continuity between front air control harness connector M98 terminal 2 and 3 and air mix door motor (Front) connector M99 terminal 6 and 5.

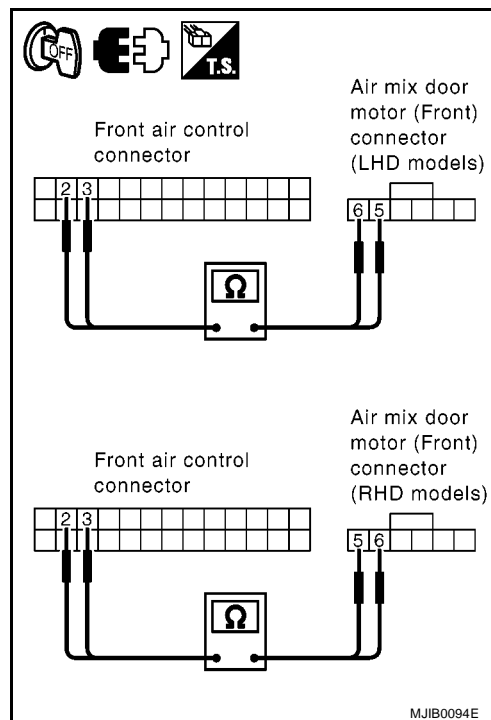
**2 - 6 : Continuity should exist.**

**3 - 5 : Continuity should exist.**

OK or NG

OK >> Replace air mix door motor (Front). Refer to [MTC-111, "AIR MIX DOOR MOTOR"](#).

NG >> Repair or replace harness as necessary.



### 4. CHECK PBR REFERENCE SIGNAL VOLTAGE

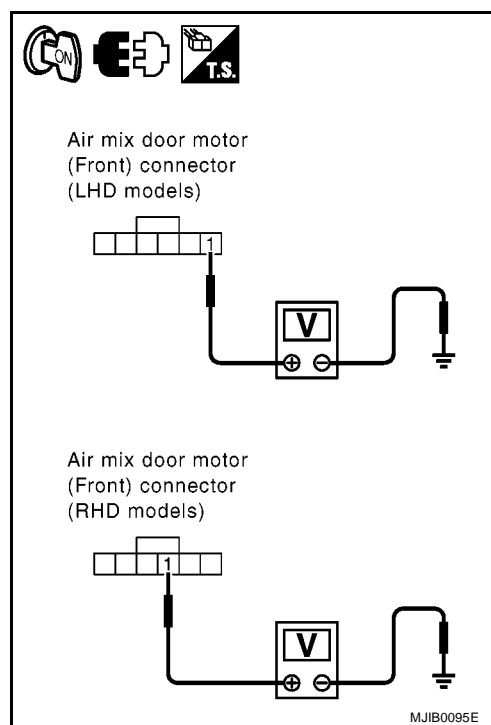
1. Turn ignition switch OFF.
2. Disconnect the air mix door motor (Front) connector.
3. Turn ignition switch ON.
4. Check voltage between air mix door motor (Front) harness connector M99 terminal 1 and ground.

**1 - Ground : Approx. 5V**

OK or NG

OK >> GO TO 6.

NG >> GO TO 5.



## TROUBLE DIAGNOSIS

### 5. CHECK PBR REFERENCE VOLTAGE CIRCUIT BETWEEN AIR MIX DOOR MOTOR (FRONT) AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect the front air control connector.
3. Check continuity between air mix door motor (Front) harness connector M99 terminal 1 and front air control harness connector M98 terminal 23.

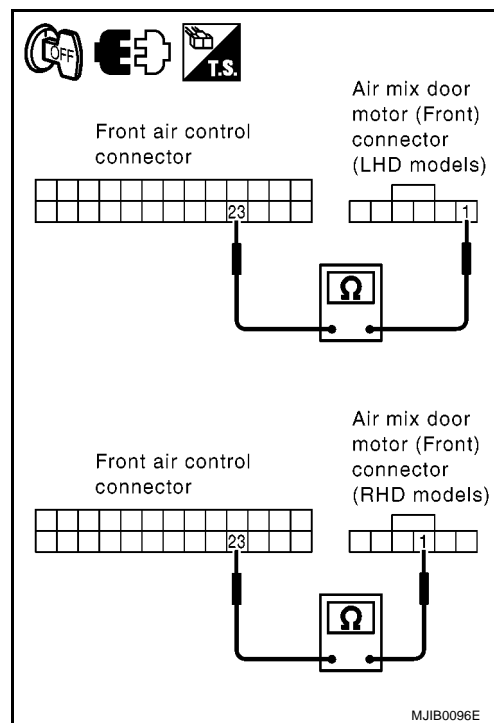
1 - 23

: Continuity should exist.

OK or NG

OK >> Replace front air control. Refer to [MTC-98, "CONTROL UNIT"](#).

NG >> Repair or replace harness as necessary.



### 6. CHECK PBR GROUND REFERENCE CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect the front air control connector.
3. Check continuity between air mix door motor (Front) harness connector M99 terminal 3 and front air control harness connector M98 terminal 26.

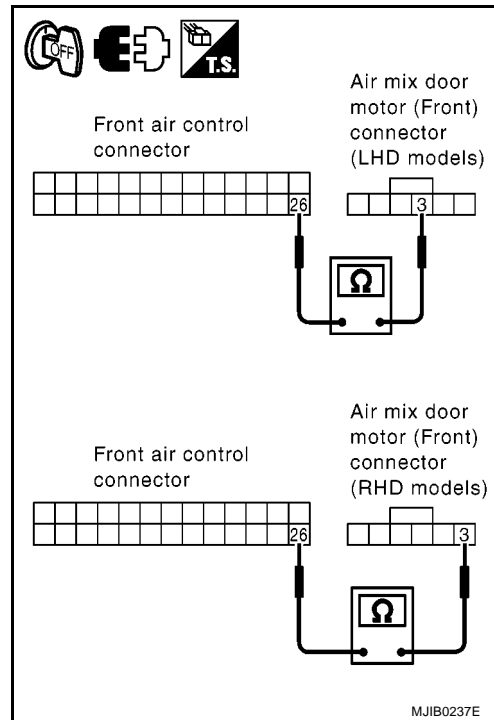
3 - 26

: Continuity should exist.

OK or NG

OK >> GO TO 7.

NG >> Repair or replace harness as necessary.



# TROUBLE DIAGNOSIS

## 7. CHECK PBR FEEDBACK SIGNAL

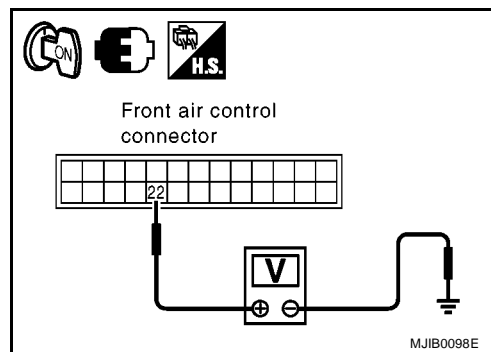
1. Turn ignition switch OFF.
2. Reconnect the front air control connector and air mix door motor (Front) connector.
3. Check voltage between front air control harness connector M98 terminal 22 and ground.
4. Rotate Front temperature dial through complete range.

**22 - Ground**

**: Approx. 0V - 5V**

OK or NG

- OK >> Replace front air control. Refer to [MTC-98, "CONTROL UNIT"](#).
- NG >> GO TO 8.



## 8. CHECK PBR FEEDBACK CIRCUIT

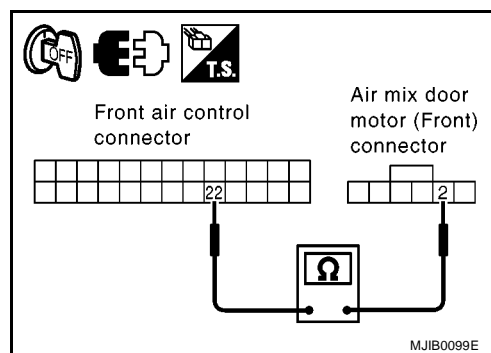
1. Turn ignition switch OFF.
2. Disconnect the air mix door motor (Front) connector and front air control connector.
3. Check continuity between air mix door motor (Front) harness connector M99 terminal 2 and front air control harness connector M98 terminal 22.

**2 - 22**

**Continuity should exist.**

OK or NG

- OK >> Replace air mix door motor (Front). Refer to [MTC-111, "AIR MIX DOOR MOTOR"](#).
- NG >> Repair or replace harness as necessary.



MTC

# TROUBLE DIAGNOSIS

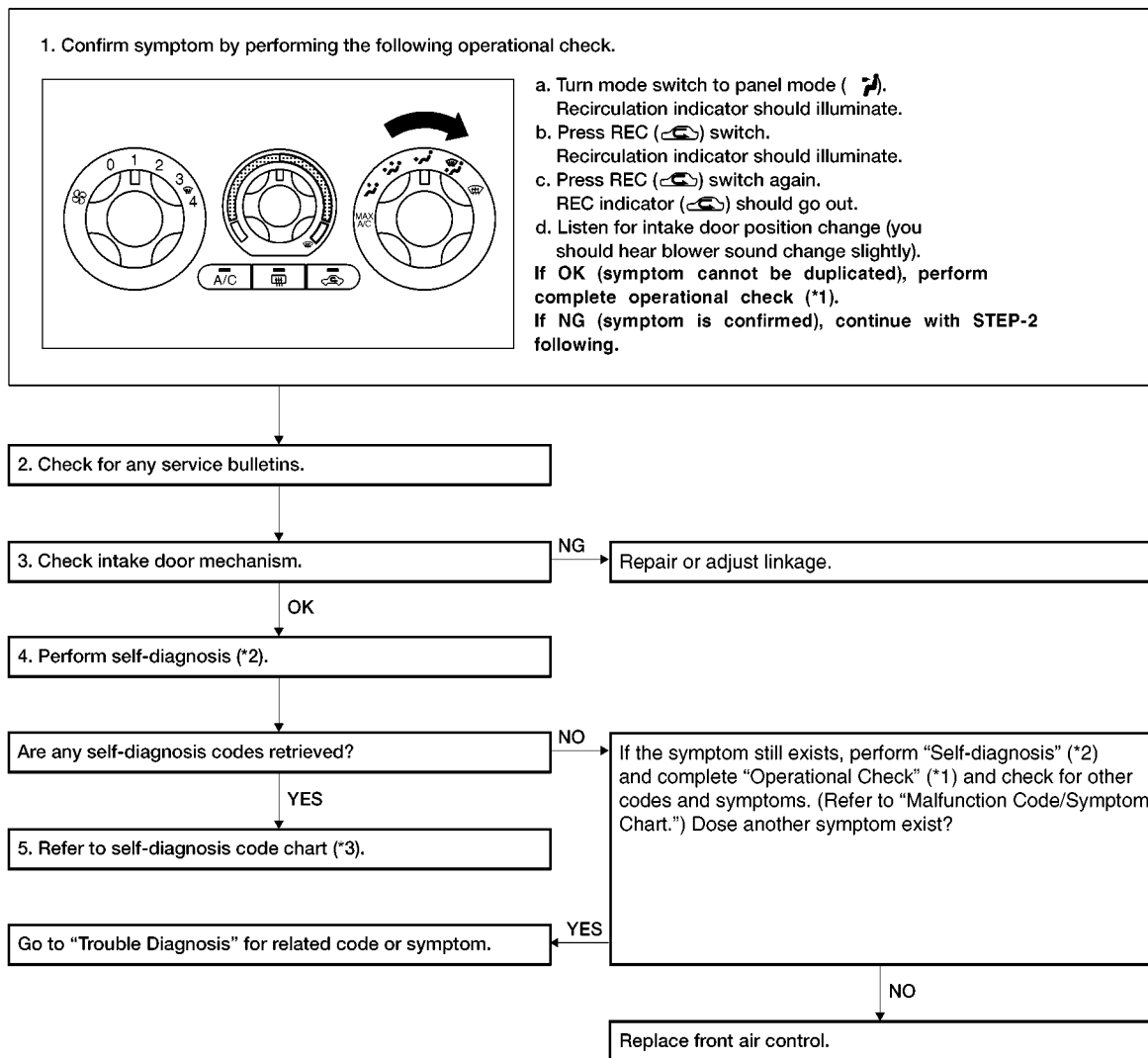
EJS005GG

## Intake Door Motor Circuit

### SYMPTOM:

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

### INSPECTION FLOW



\*1 [MTC-53, "Operational Check".](#)

\*2 [MTC-51, "A/C System Self-diagnosis Function".](#)

\*3 [MTC-52, "SELF-DIAGNOSIS CODE CHART".](#)

MJIB0238E

# TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

### Component Parts

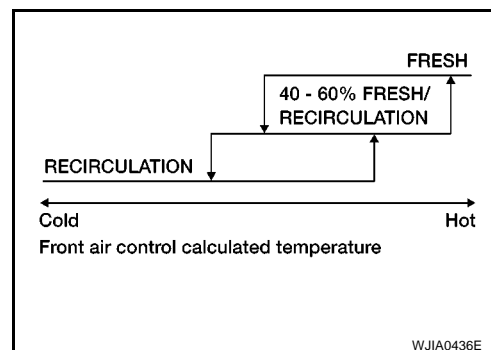
Intake door control system components are:

- Front air control
- Intake door motor

### System Operation

The intake door control determines the intake door position based on the position of the recirculation switch. When the recirculation switch is depressed the intake door motor rotate closing off the fresh air inlet and recirculating the cabin air. If the recirculation switch is depressed again, the intake door motor rotate in the opposite direction, again allowing fresh air into the cabin.

### Intake Door Control Specification



## COMPONENT DESCRIPTION

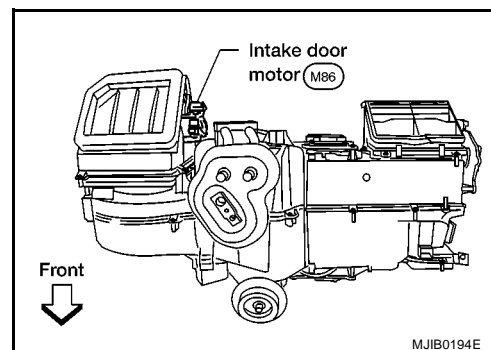
### Intake door motor

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

#### NOTE:

This illustration is for LHD models.

The layout for RHD models is symmetrically opposite.



## DIAGNOSTIC PROCEDURE FOR INTAKE DOOR MOTOR

### 1. CHECK RESULT FROM FRONT AIR CONTROL SELF-DIAGNOSIS OR PROCEED FROM SYMPTOM TABLE

Is vehicle equipped with NAVI?.

YES or NO

YES >> GO TO 2.

NO >> GO TO 4.

### 2. CHECK RESULT FROM FRONT AIR CONTROL SELF-DIAGNOSIS

Self-diagnosis code 82 is present. Refer to [MTC-51, "A/C System Self-diagnosis Function"](#) .

YES or NO

YES >> GO TO 3.

NO >> Replace front air control. Refer to [MTC-98, "CONTROL UNIT"](#) .

## TROUBLE DIAGNOSIS

### 3. CHECK POWER SUPPLY CIRCUIT FOR INTAKE DOOR MOTOR

1. Turn ignition switch OFF.
2. Disconnect front air control connector and intake door motor connector.
3. Check continuity between front air control harness connector M98 terminal 5 and intake door motor connector M86 terminal 6 and between front air control harness connector M98 terminal 4 and intake door motor connector M86 terminal 1.

**5 - 6**

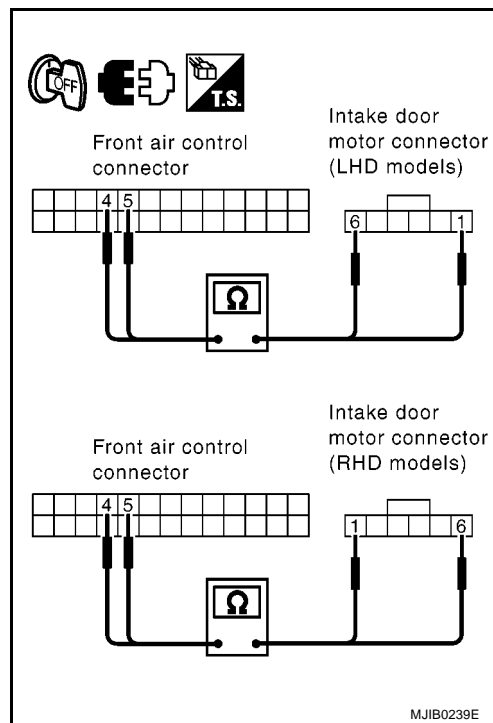
**Continuity should exist.**

**4 - 1**

**Continuity should exist.**

OK or NG

- OK >> Replace intake door motor. Refer to [MTC-109, "INTAKE DOOR MOTOR"](#).
- NG >> Repair or replace harness as necessary.



# TROUBLE DIAGNOSIS

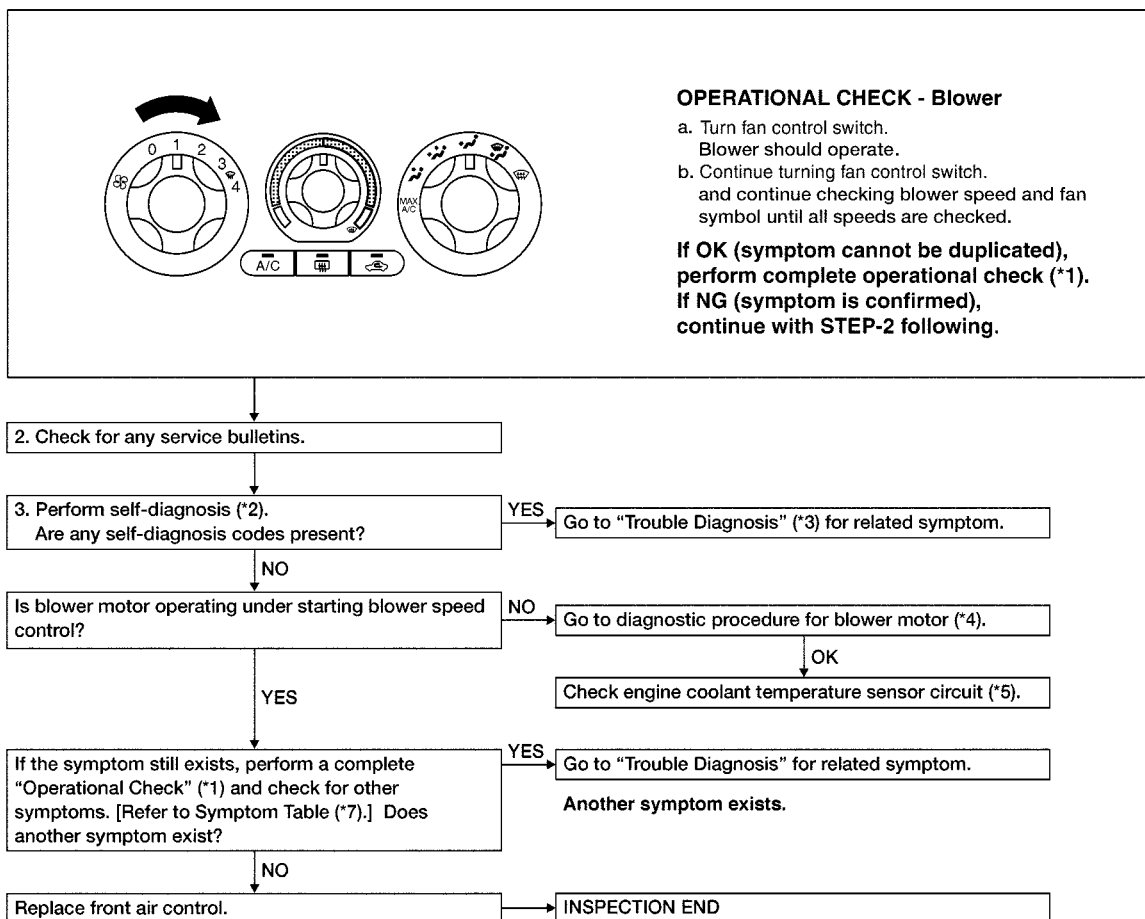
## Blower Motor Circuit

EJS005GI

### SYMPTOM:

- Blower motor operation is malfunctioning.
- Blower motor operation is malfunctioning under cold starting conditions.

### INSPECTION FLOW



\*1 [MTC-53, "Operational Check".](#)

\*2 [MTC-51, "A/C System Self-diagnosis Function".](#)

\*3 [MTC-52, "SELF-DIAGNOSIS CODE CHART".](#)

\*4 [MTC-73, "DIAGNOSTIC PROCEDURE FOR BLOWER MOTOR".](#)

MJIB0240E

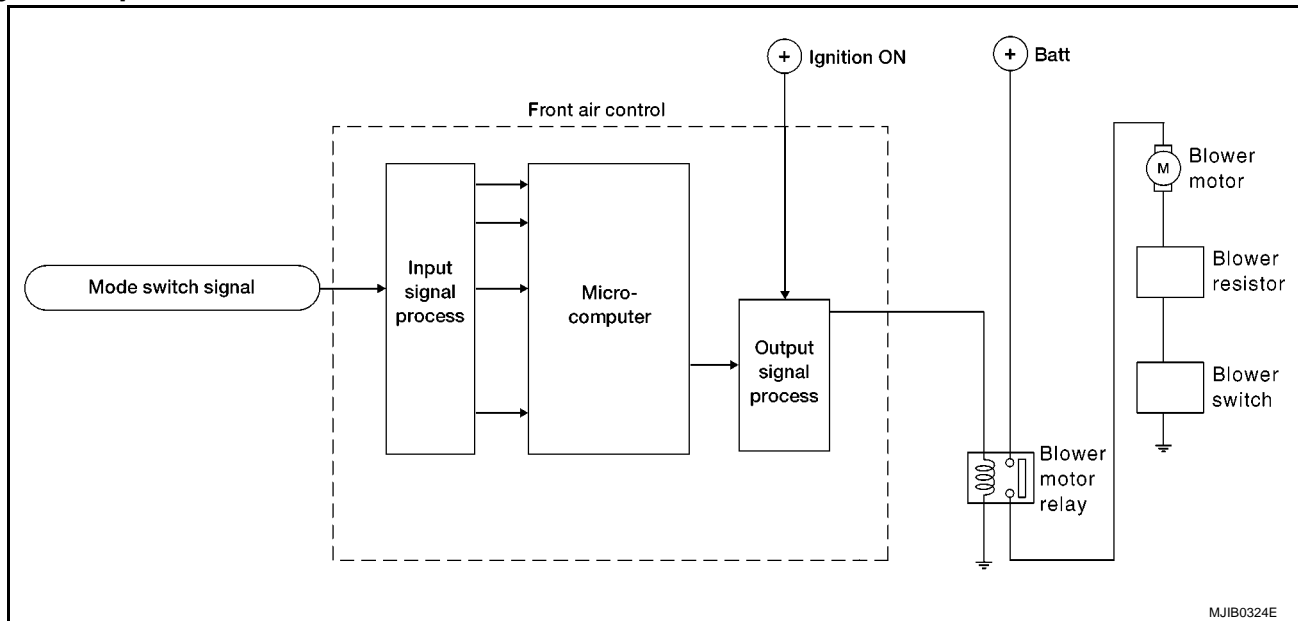
# TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

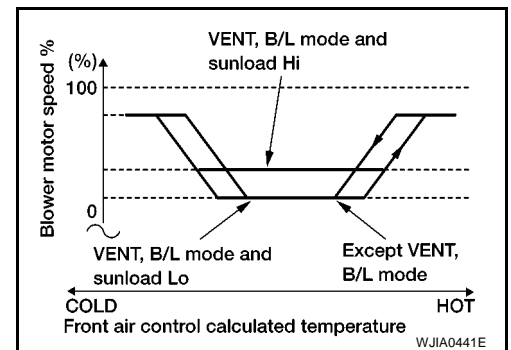
### Component Parts

- Front air control
- Blower switch
- Blower motor resistor
- Blower motor
- Blower motor relay

### System Operation



### Blower Speed Control Specification



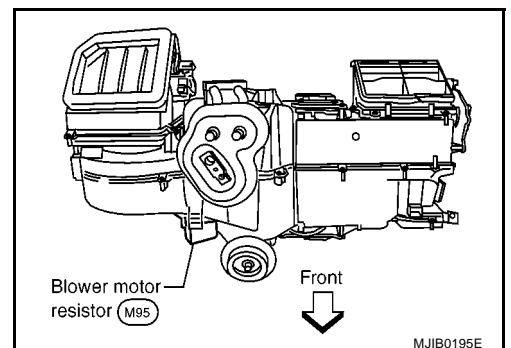
## COMPONENT DESCRIPTION

### Blower Motor Resistor

The blower motor resistor is located on the cooling unit. The blower motor resistor grounds the blower motor through a series of 1, 2, or three resistors, depending upon speed selected. For high speed operation the blower motor resistor is circumvented and the blower motor grounds directly.

#### NOTE:

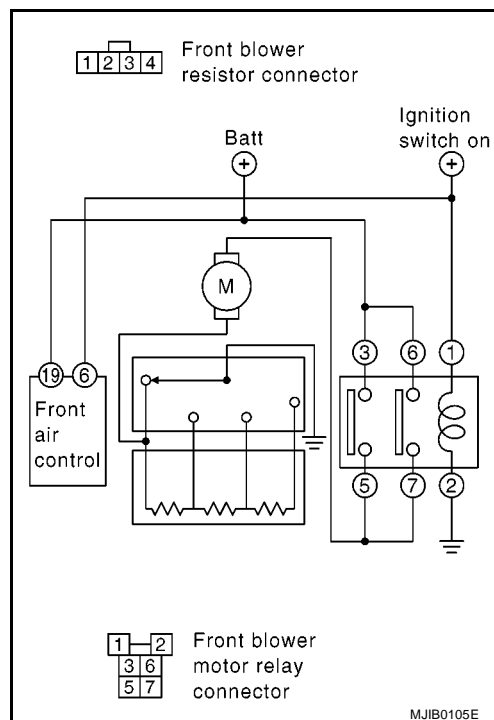
This illustration is for LHD models.  
The layout for RHD models is symmetrically opposite.



# TROUBLE DIAGNOSIS

## DIAGNOSTIC PROCEDURE FOR BLOWER MOTOR

SYMPTOM: Blower motor operation is malfunctioning.



### 1. DIAGNOSTIC PROCEDURE

Turn the blower switch to each of its four speeds.  
Does blower motor rotate normally at each speed?

OK or NG

- OK >> INSPECTION END.
- NG >> 1. Does not rotate at any speed, GO TO 2.
- 2. Does not rotate at 1 - 3 speed, GO TO 13.
- 3. Does not rotate at 4 speed, GO TO 16.

### 2. CHECK FUSES

Check 15A fuses [Nos. 24 and 27, located in the fuse and fusible link box]. Refer to [PG-84, "FUSE AND FUSIBLE LINK BOX"](#).

OK or NG

- OK >> GO TO 3.
- NG >> GO TO 8.

### 3. CHECK BLOWER MOTOR POWER SUPPLY

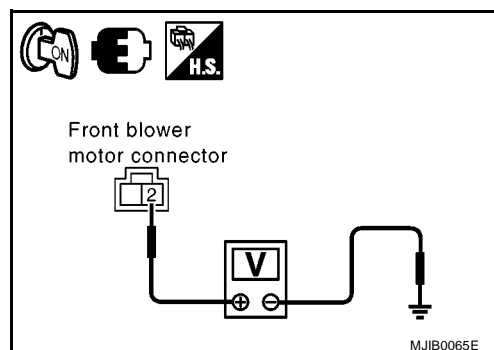
1. Disconnect blower motor harness connector.
2. Select any blower speed except OFF.
3. Check voltage between blower motor harness connector M94 terminal 2 and ground.

**2 - Ground**

**: Battery voltage**

OK or NG

- OK >> GO TO 11.
- NG >> GO TO 4.



## TROUBLE DIAGNOSIS

### 4. CHECK BLOWER MOTOR RELAY

Refer to [MTC-77, "Blower Motor Relay"](#).

OK or NG

OK >> GO TO 5.

NG >> Replace blower motor relay.

### 5. CHECK BLOWER MOTOR POWER FROM RELAY TO BLOWER MOTOR

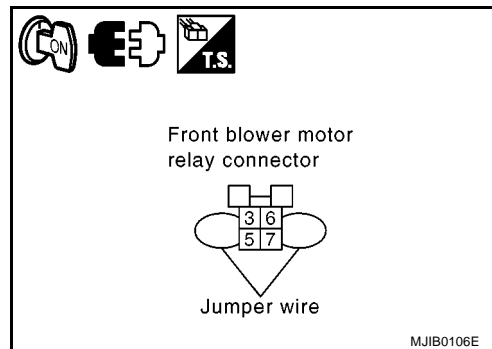
1. Reconnect blower motor harness connector.
2. Disconnect blower motor relay.
3. Connect a jumper wire between blower motor relay connector E28 terminals 3 and 5 and between blower motor relay connector E28 terminals 6 and 7.
4. Momentarily (no more than 4 seconds), set blower switch to any position except OFF.

**Blower motor should rotate.**

OK or NG

OK >> GO TO 6.

NG >> GO TO 10.



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

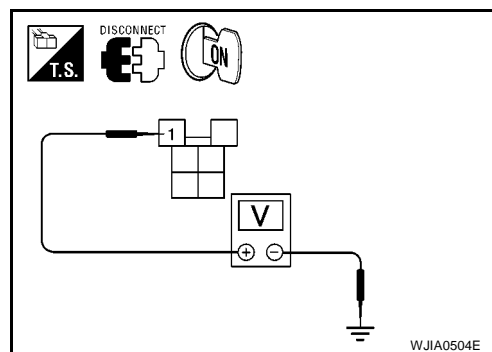
1. Turn ignition key ON.
2. Set blower switch to any position except OFF.
3. Check voltage between blower motor relay harness connector E28 terminal 1 and ground.

**1 - Ground : Battery voltage.**

OK or NG

OK >> GO TO 7.

NG >> Repair harness or connector.



### 7. CHECK BLOWER MOTOR RELAY (COIL SIDE) GROUND CIRCUIT

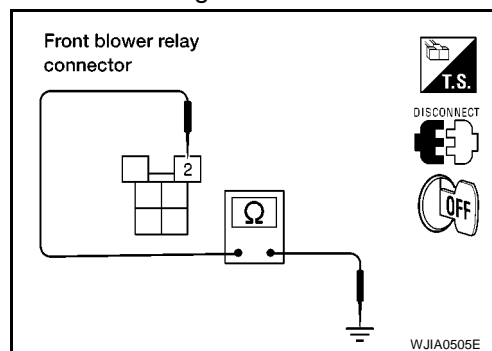
Check continuity between blower motor relay harness connector E28 terminal 2 and ground.

**2 - Ground Continuity should exist.**

OK or NG

OK >> Replace blower motor relay.

NG >> Repair harness or connector.



### 8. REPLACE FUSE

Refer to [PG-84, "FUSE AND FUSIBLE LINK BOX"](#).

Does fuse open when blower motor is turned on?

YES or NO

YES >> GO TO 9.

NO >> INSPECTION END.

## TROUBLE DIAGNOSIS

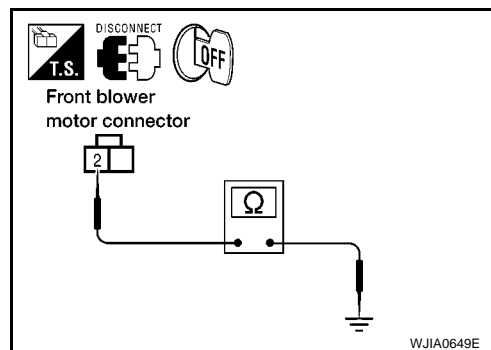
### 9. CHECK BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

1. Disconnect blower motor harness connector.
2. Check continuity between blower motor harness connector M94 terminal 2 and ground.

**2 - Ground : Continuity should not exist.**

OK or NG

- OK >> Check blower motor. Refer to [MTC-77, "Blower Motor"](#) .
- NG >> Repair harness or connector.



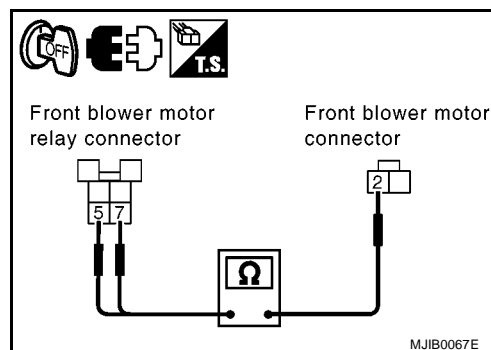
### 10. CHECK BLOWER MOTOR RELAY (SWITCH SIDE) POWER SUPPLY CIRCUIT

1. Disconnect blower motor harness connector.
2. Check continuity between blower motor relay harness connector E28 terminal 5 and 7 and blower motor harness connector M94 terminal 2.

**5, 7 - 2 : Continuity should exist.**

OK or NG

- OK >> Repair harness or connector between blower motor fuses and blower motor relay.
- NG >> Repair harness or connector between blower motor relay and blower motor.



### 11. CHECK BLOWER MOTOR

Refer to [MTC-77, "Blower Motor"](#) .

OK or NG

- OK >> GO TO 12.
- NG >> Replace blower motor.

### 12. CHECK BLOWER SWITCH

Refer to [MTC-77, "Blower Switch"](#) .

OK or NG

- OK >> Repair harness or connector between blower switch and blower motor.
- NG >> Replace front air control. Refer to [MTC-98, "CONTROL UNIT"](#) .

### 13. CHECK BLOWER MOTOR RESISTOR

Refer to [MTC-78, "Blower Motor Resistor"](#) .

OK or NG

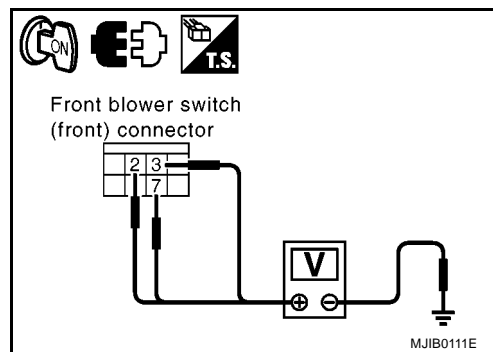
- OK >> GO TO 14.
- NG >> Replace blower motor resistor. Refer to [MTC-112, "BLOWER MOTOR RESISTOR"](#) .

# TROUBLE DIAGNOSIS

## 14. CHECK BLOWER SWITCH CIRCUIT

1. Reconnect blower motor resistor harness connector.
2. Check voltage between blower switch connector M59 terminals 2, 3, and 7 and ground.

| Terminal No. |        | Voltage<br>(Approx.) |
|--------------|--------|----------------------|
| +            | -      |                      |
| 2            | Ground | 12V                  |
| 3            |        |                      |
| 7            |        |                      |



OK or NG

- OK >> Replace front air control. Refer to [MTC-98, "CONTROL UNIT"](#) .
- NG >> GO TO 15.

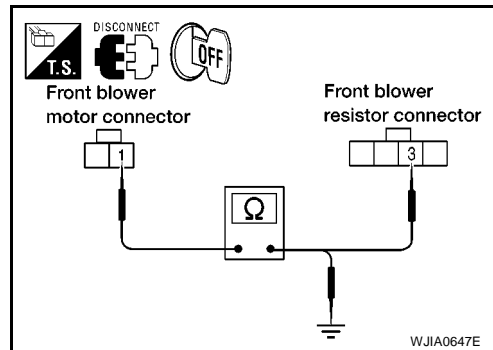
## 15. CHECK BLOWER MOTOR GROUND CIRCUIT TO BLOWER MOTOR RESISTOR

1. Disconnect blower motor and blower motor resistor harness connector.
2. Check continuity between blower motor connector M94 terminal 1 and blower motor resistor harness connector M95 terminal 3.

**1 - 3 : Continuity should exist.**

3. Check continuity between blower motor connector M94 terminal 1 and ground.

**1 - Ground : Continuity should not exist.**



OK or NG

- OK >> INSPECTION END.
- NG >> Repair harness or connector.

## 16. CHECK BLOWER SWITCH

Refer to [MTC-77, "Blower Switch"](#) .

OK or NG

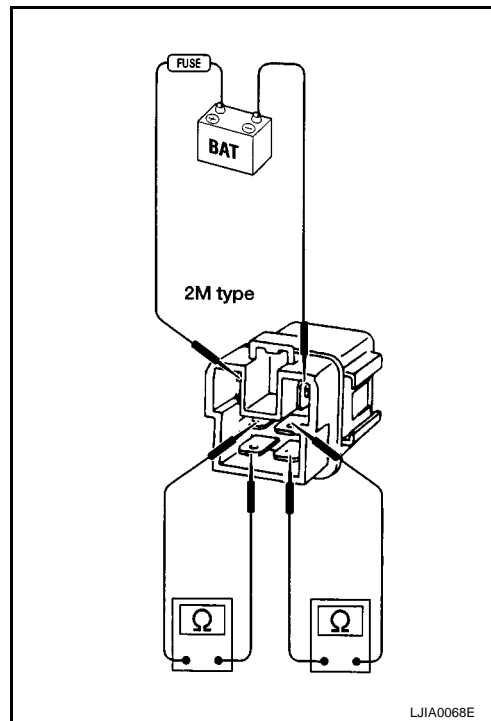
- OK >> Repair harness or connector.
- NG >> Replace front air control. Refer to [MTC-98, "CONTROL UNIT"](#) .

# TROUBLE DIAGNOSIS

## COMPONENT INSPECTION

### Blower Motor Relay

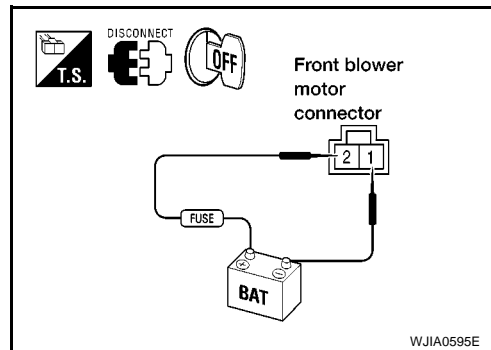
Check continuity between terminals by supplying 12 volts and ground to coil side terminals of relay.



### Blower Motor

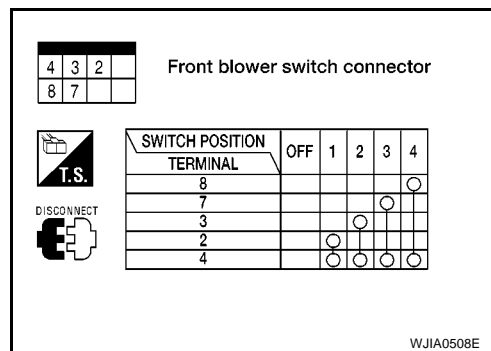
Confirm smooth rotation of the blower motor.

- Ensure that there are no foreign particles inside the blower unit.
- Apply 12 volts to terminal + and ground to terminal - and verify that the motor operates freely and quietly.



### Blower Switch

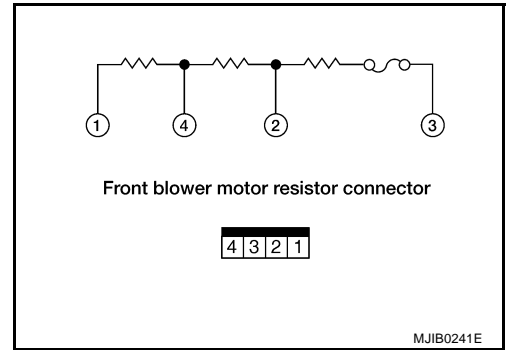
Check continuity between terminals at each switch position.



## TROUBLE DIAGNOSIS

### Blower Motor Resistor

Check continuity between terminals. There will be resistance, but there should not be an open or short between any two terminals.



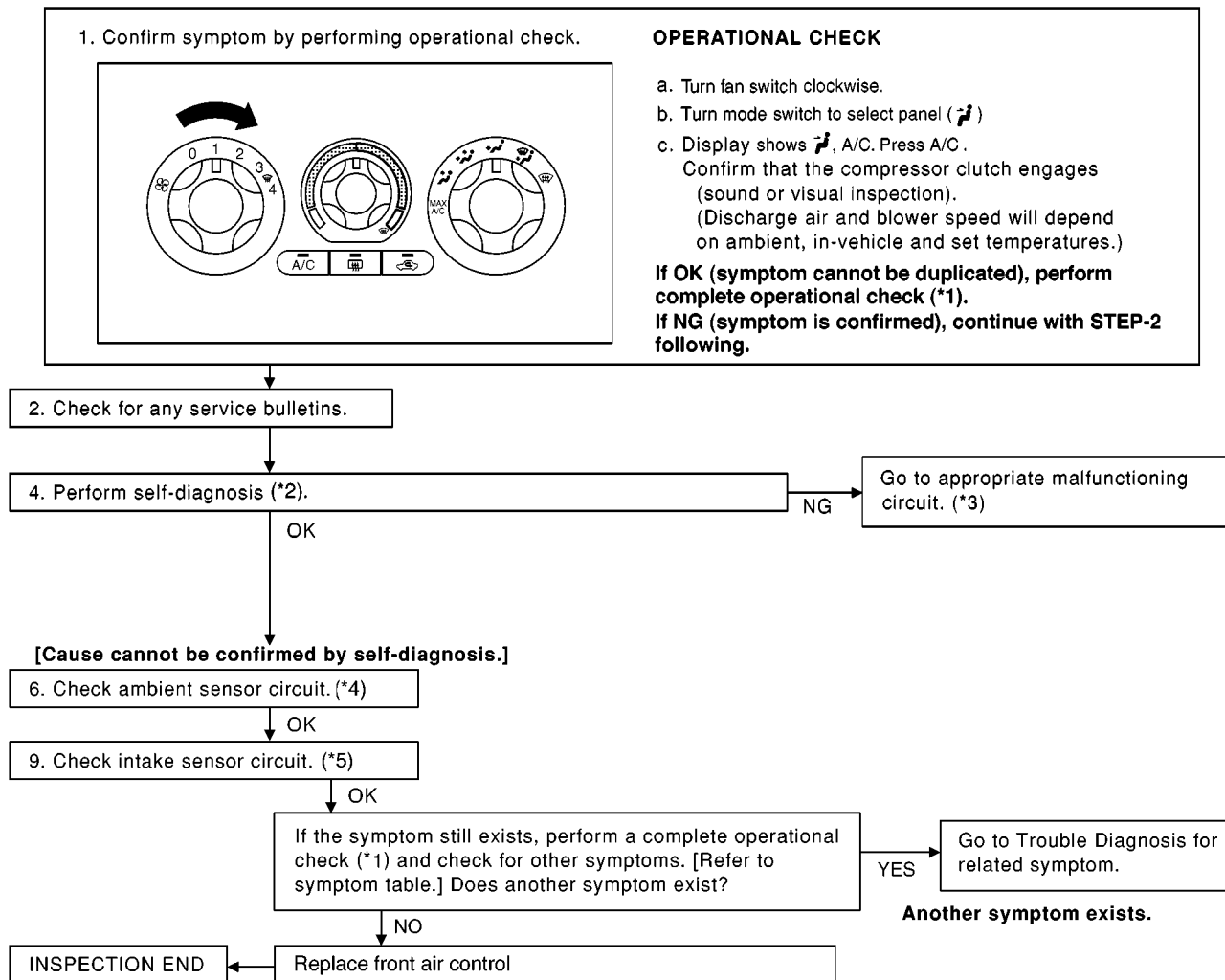
# TROUBLE DIAGNOSIS

## Magnet Clutch Circuit

EJS005GL

SYMPTOM: Magnet clutch does not engage.

### INSPECTION FLOW



\*1 [MTC-53. "Operational Check"](#)

\*2 [MTC-51. "A/C System Self-diagnosis Function"](#).

\*3 [MTC-52. "SELF-DIAGNOSIS CODE CHART"](#).

\*5 [MTC-95. "Intake Sensor Circuit"](#).

MJIB0242E

## TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

The front air control controls compressor operation based on intake temperature and a signal from ECM.

## Low Temperature Protection Control

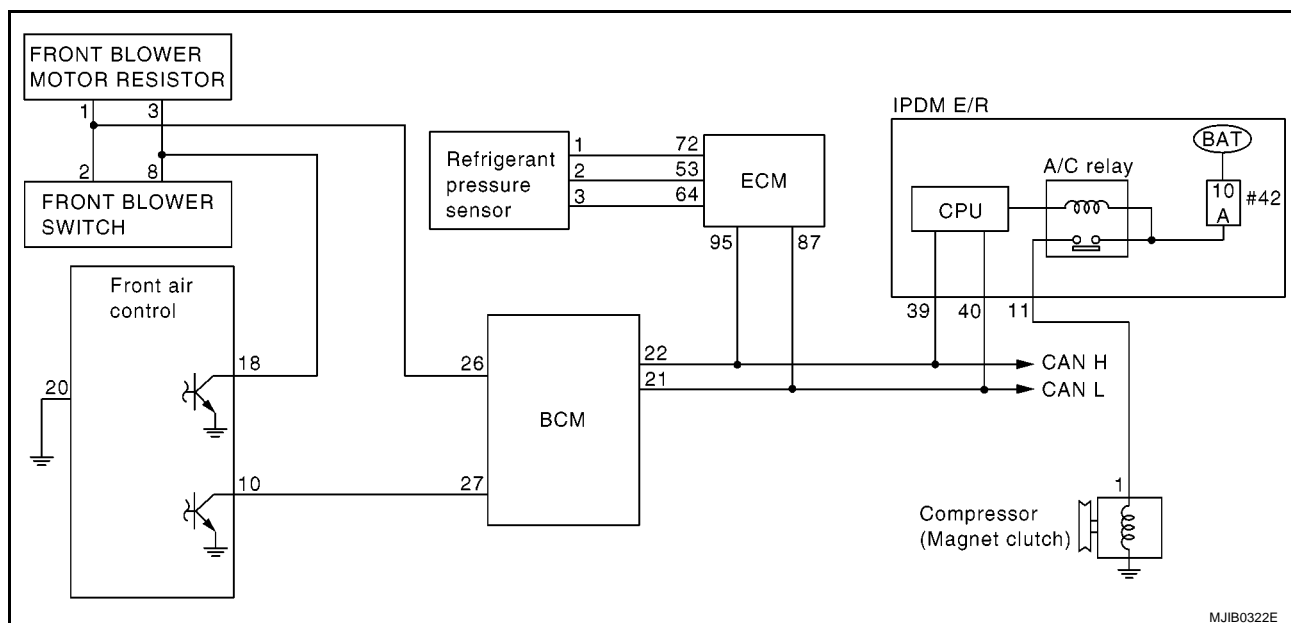
The front air control will turn the compressor ON or OFF as determined by a signal detected by the intake sensor.

When intake air temperature is higher than the preset value, the compressor turns ON. The compressor turns OFF when intake air temperature is lower than the preset value. That preset value is dependent on the ambient temperature, refer to the following table.

| Ambient temperature °C (°F) | Compressor ON<br>intake temperature C (°F) | Compressor OFF<br>intake temperature C (°F) |
|-----------------------------|--|---|
| 0 (32)                      | 5.5 (42)                                   | 5.0 (41)                                    |
| 10 (50)                     | 4.5 (40)                                   | 4.5 (40)                                    |
| 20 (68)                     | 2.5 (37)                                   | 2.0 (36)                                    |
| 30 (86)                     | 2.0 (36)                                   | 1.5 (35)                                    |
| 40 (104)                    | 2.0 (36)                                   | 1.5 (35)                                    |
| 50 (122)                    | 2.0 (36)                                   | 1.5 (35)                                    |

## DIAGNOSTIC PROCEDURE FOR MAGNET CLUTCH

SYMPTOM: Magnet clutch does not engage when A/C switch is ON.



## 1. CHECK INTAKE SENSOR CIRCUIT

Check intake sensor. Refer to [MTC-95, "Intake Sensor Circuit"](#).

OK or NG

OK >> GO TO 2.

NG >> Malfunctioning intake sensor. Refer to MTC-99, "INTAKE SENSOR".

# TROUBLE DIAGNOSIS


## 2. PERFORM AUTO ACTIVE TEST

Refer to [PG-19, "Auto Active Test"](#).

Does magnet clutch operate?

YES or NO

YES >> ●  WITH CONSULT-II  
GO TO 5.

●  WITHOUT CONSULT-II  
GO TO 6.

NO >> Check 10A fuse (No. 42, located in IPDM E/R), and GO TO 3.

## 3. CHECK CIRCUIT CONTINUITY BETWEEN IPDM E/R AND COMPRESSOR

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and compressor (magnet clutch) connector.
3. Check continuity between IPDM E/R harness connector E12 terminal 11 and compressor harness connector F20 terminal 1.

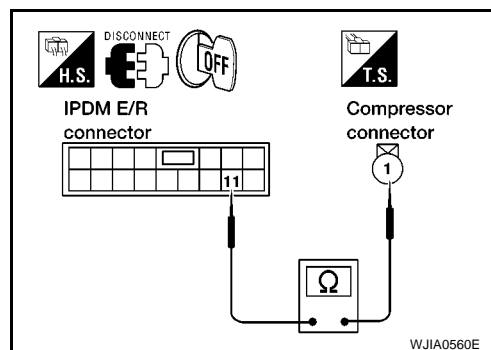
11 – 1

: Continuity should exist.

OK or NG

OK >> GO TO 4.

NG >> Repair harness or connector.



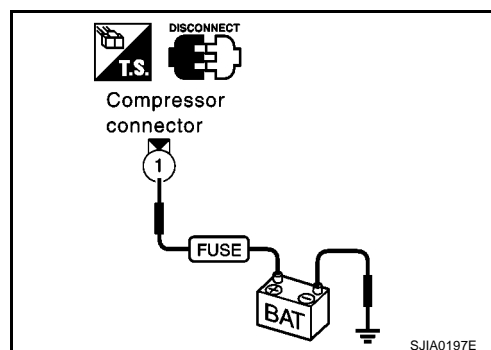
## 4. CHECK MAGNET CLUTCH CIRCUIT

Check for operation sound when applying battery voltage direct current to terminal.

OK or NG

OK >> Replace IPDM E/R.

NG >> Replace magnet clutch. Refer to [MTC-123, "Removal and Installation for Compressor Clutch"](#).



## 5. CHECK BCM INPUT (COMPRESSOR ON) SIGNAL

Check compressor ON/OFF signal. Refer to [BCS-14, "CONSULT-II Function \(BCM\)"](#).

A/C SW ON

: COMP ON SIG ON

A/C SW OFF

: COMP ON SIG OFF

OK or NG

OK >> GO TO 8.

NG >> GO TO 6.

| DATA MONITOR |      |        |      |
|--------------|------|--------|------|
| MONITOR      |      |        |      |
| FAN ON SIG   |      | ON     |      |
| COMP ON SIG  |      | ON     |      |
| IGN ON SW    |      | ON     |      |
|              |      |        |      |
|              |      | RECORD |      |
| MODE         | BACK | LIGHT  | COPY |

WJIA0469E

# TROUBLE DIAGNOSIS

## 6. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect BCM connector and front air control connector.
3. Check continuity between BCM harness connector M42 terminal 27 and front air control harness connector M98 terminal 10.

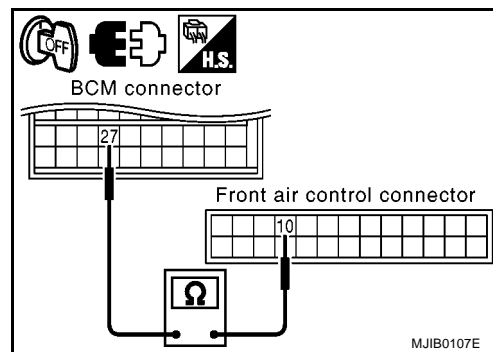
**27 - 10**

**Continuity should exist.**

OK or NG

OK >> GO TO 7.

NG >> Repair harness or connector.



## 7. CHECK VOLTAGE FOR FRONT AIR CONTROL (COMPRESSOR ON SIGNAL)

1. Reconnect BCM connector and front air control connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M98 terminal 10 and ground.

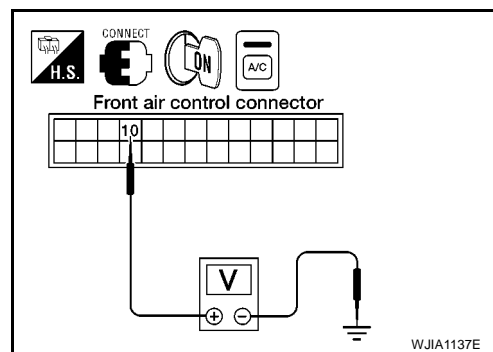
| Terminals                   |    |        | Condition       | Voltage    |
|-----------------------------|----|--------|-----------------|------------|
| (+) Terminal No.            |    | (-)    |                 |            |
| Front air control connector |    |        |                 |            |
| M98                         | 10 | Ground | A/C switch: ON  | Approx. 0V |
|                             |    |        | A/C switch: OFF | Approx. 5V |

OK or NG

OK >> GO TO 8.

NG-1 >> If the voltage is approx. 5V when A/C switch is ON, replace front air control. Refer to [MTC-98, "CONTROL UNIT"](#).

NG-2 >> If the voltage is approx. 0V when A/C switch is OFF, replace BCM. Refer to [BCS-17, "Removal and Installation of BCM"](#).



# TROUBLE DIAGNOSIS

## 8. CHECK REFRIGERANT PRESSURE SENSOR

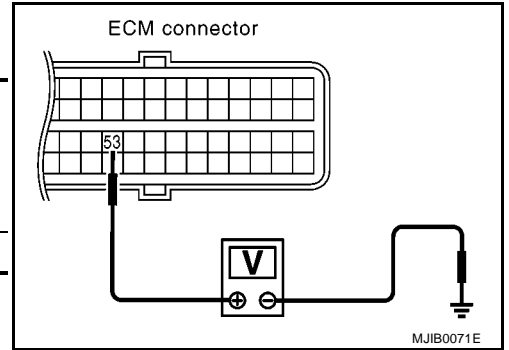
WITH CONSULT-II

1. Start engine.
2. Check voltage of refrigerant pressure sensor. Refer to [BCS-14, "CONSULT-II Function \(BCM\)"](#).

WITHOUT CONSULT-II

1. Start engine.
2. Check voltage between ECM harness connector F1 terminal 53 and ground.

| Terminals     |              |        | Condition      | Voltage              |
|---------------|--------------|--------|----------------|----------------------|
| (+)           |              | (-)    |                |                      |
| ECM connector | Terminal No. |        |                |                      |
| F1            | 53           | Ground | A/C switch: ON | Approx. 0.36 - 3.88V |



OK or NG

- OK >> • WITH CONSULT-II  
GO TO 9.
- WITHOUT CONSULT-II  
GO TO 10.
- NG >> Refer to [EC-325, "REFRIGERANT PRESSURE SENSOR"](#).

## 9. CHECK BCM INPUT (FAN ON) SIGNAL

Check FAN ON/OFF signal. Refer to [BCS-14, "CONSULT-II Function \(BCM\)"](#).

**BLOWER CONTROL SWITCH ON : FAN ON SIG ON**  
**BLOWER CONTROL SWITCH OFF : FAN ON SIG OFF**

OK or NG

- OK >> GO TO 12.
- NG >> GO TO 10.

| DATA MONITOR |      |        |      |
|--------------|------|--------|------|
| MONITOR      |      |        |      |
| FAN ON SIG   |      | ON     |      |
| COMP ON SIG  |      | ON     |      |
| IGN ON SW    |      | ON     |      |
|              |      |        |      |
|              |      |        |      |
|              |      | RECORD |      |
| MODE         | BACK | LIGHT  | COPY |

WJIA0469E

WJIA0469E

## TROUBLE DIAGNOSIS

### 10. CHECK CIRCUIT CONTINUITY BETWEEN BCM, FRONT AIR CONTROL AND BLOWER SWITCH

1. Turn ignition switch OFF.
2. Disconnect BCM connector and front air control connector and blower switch.
3. Check continuity between BCM harness connector M42 terminal 26 and blower switch M59 terminal 2 and between front air control harness connector M98 terminal 18 and blower switch M59 terminal 8.

**26 - 2**

**Continuity should exist.**

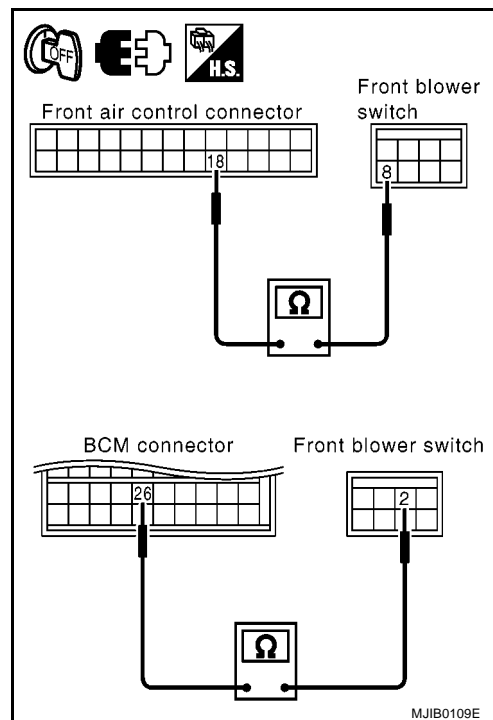
**18 - 8**

**Continuity should exist.**

OK or NG

OK >> GO TO 11.

NG >> Repair harness or connector.



### 11. CHECK VOLTAGE FOR BCM(FAN ON SIGNAL) AND FRONT AIR CONTROL(BLOWER MONITOR SIGNAL)

1. Reconnect BCM connector and front air control connector and blower switch.
2. Turn ignition switch ON.
3. Check voltage between the following terminals.

| Terminals                |              | Condition                               | Voltage       |
|--------------------------|--------------|---|---------------|
| (+)                      | (-)          |   |               |
| Connector                | Terminal No. |   |               |
| BCM<br>M42               | 26           | A/C switch: ON<br>Blower motor operates | Approx. 0V    |
|                          |              | A/C switch: OFF                         | Approx. 12V   |
| Front air control<br>M98 | 18           | A/C switch: ON<br>Blower motor operates | Less than 12V |

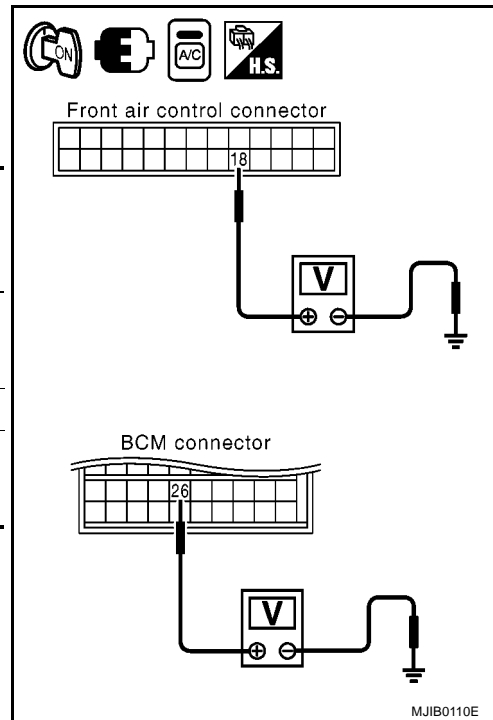
OK or NG

OK >> GO TO 12.

NG-1 >> If the voltage is approx.12V when blower motor is ON, replace blower switch. Refer to [MTC-98, "CONTROL UNIT"](#).

NG-2 >> If the voltage is approx. 0V when blower motor is OFF, replace BCM. Refer to [BCS-17, "Removal and Installation of BCM"](#).

NG-3 >> If the voltage is less than 12V when blower motor is ON, replace front air control. Refer to [MTC-98, "CONTROL UNIT"](#).



# TROUBLE DIAGNOSIS

## 12. CHECK SELF-DIAGNOSTIC RESULT

Perform self-diagnosis. Refer to [ATC-55. "A/C System Self-diagnosis Function"](#)

OK or NG

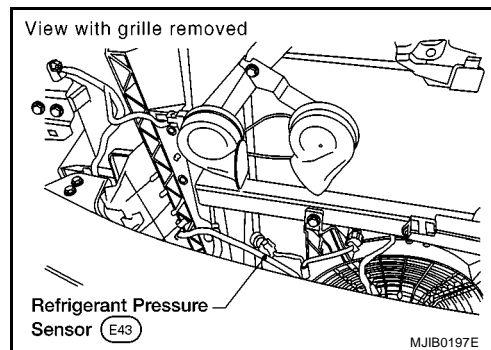
OK >> Inspection End.

NG >> Refer to [ATC-56. "SELF-DIAGNOSIS CODE CHART"](#).

### COMPONENT INSPECTION

#### Refrigerant Pressure Sensor

The refrigerant pressure sensor is attached to the condenser.



A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

MTC

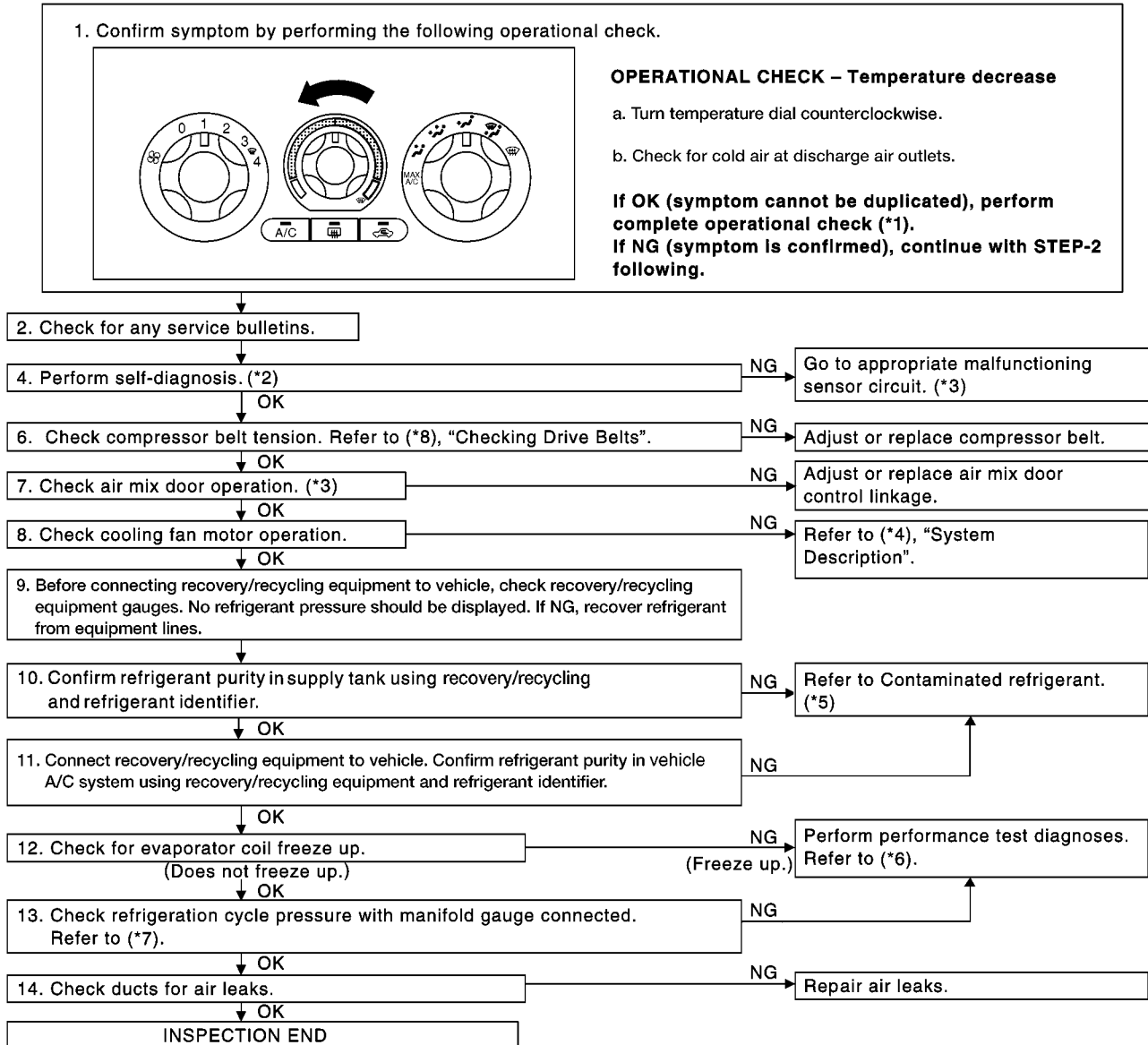
# TROUBLE DIAGNOSIS

EJS005GM

## Insufficient Cooling

SYMPTOM: Insufficient cooling

### INSPECTION FLOW



MJIB0244E

\*1 [.MTC-53, "Operational Check"](#) .

\*2 [MTC-51, "A/C System Self-diagnosis Function"](#).

\*3 [MTC-52, "SELF-DIAGNOSIS CODE CHART"](#).

\*4 [EC-132, "Description"](#) .

\*5 [MTC-4, "Contaminated Refrigerant"](#).

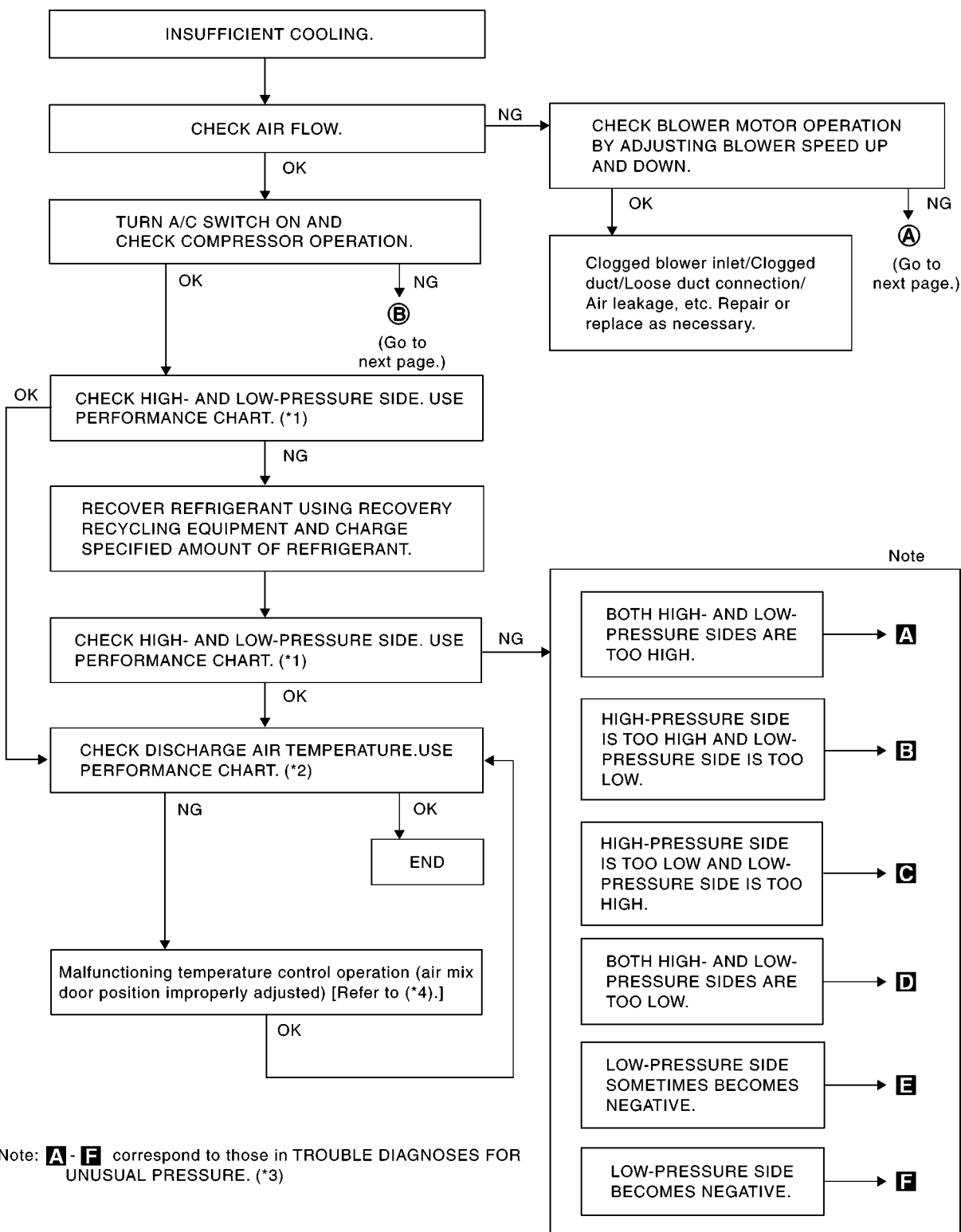
\*6 [.MTC-87, "PERFORMANCE TEST DIAGNOSES"](#)

\*7 [MTC-89, "Test Reading"](#)

\*8 [EM-12, "Checking Drive Belts"](#)

# TROUBLE DIAGNOSIS

## PERFORMANCE TEST DIAGNOSES



\*1 [MTC-89, "PERFORMANCE CHART"](#).

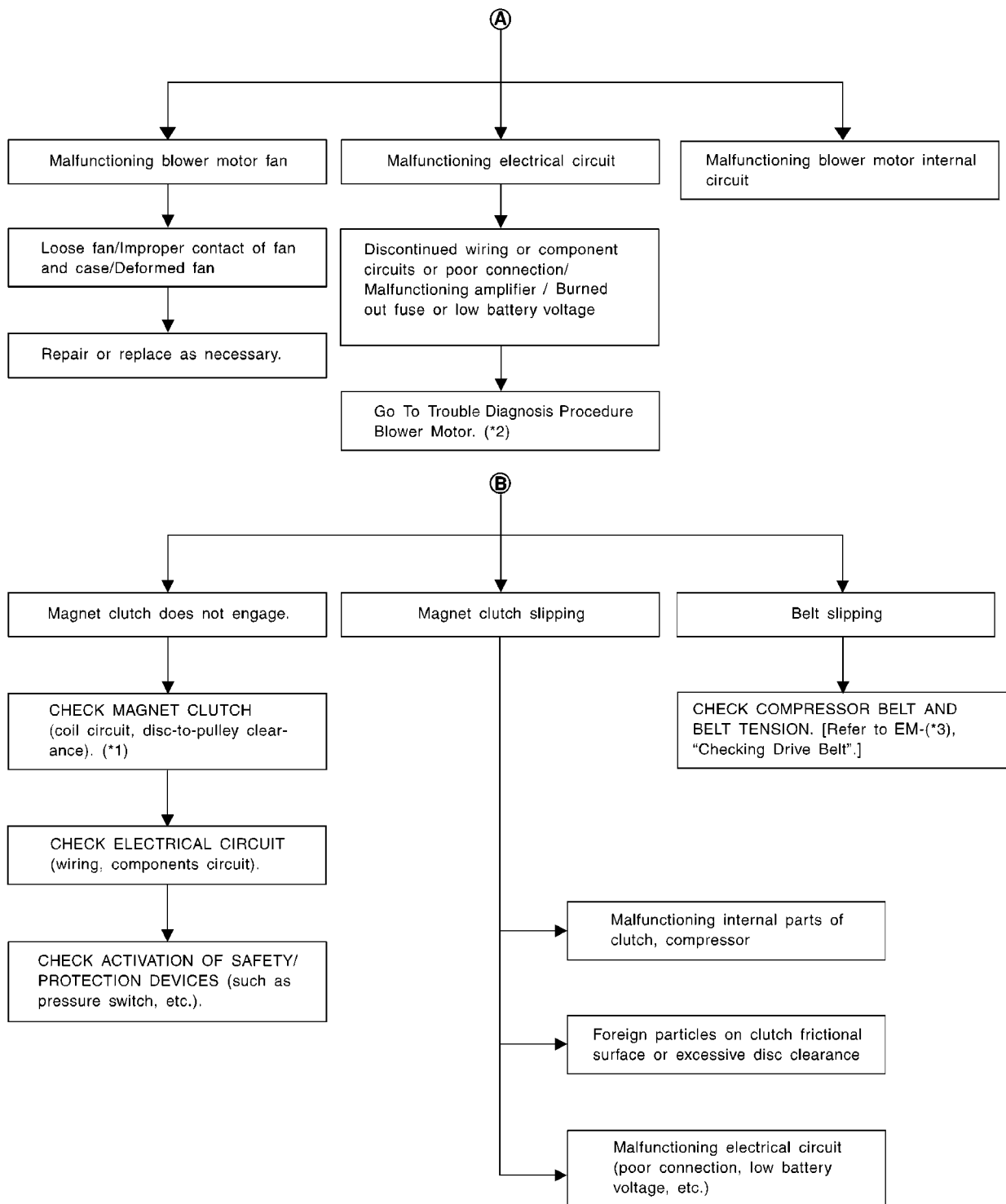
\*2 [MTC-89, "PERFORMANCE CHART"](#).

\*3 [MTC-90, "TROUBLE DIAGNOSES FOR UNUSUAL PRESSURE"](#).

\*4 [MTC-63, "Air Mix Door Motor Circuit"](#).

RJIA1601E

# TROUBLE DIAGNOSIS



WJIA0361E

\*1 [MTC-123, "Removal and Installation for Compressor Clutch".](#)

\*2 [MTC-71, "Blower Motor Circuit".](#)




\*3 [EM-12, "Checking Drive Belts".](#)

# TROUBLE DIAGNOSIS

## PERFORMANCE CHART

### Test Condition

Testing must be performed as follows:

|  |   |
|--|---|
| Vehicle location   | Indoors or in the shade (in a well-ventilated place)  |
| Doors  | Closed  |
| Door window  | Open  |
| Hood   | Open  |
| TEMP.  | Max. COLD   |
| Mode switch  |  (Ventilation) set   |
| Recirculation (REC) switch   |  (Recirculation) set |
|  Blower speed | Max. speed set  |
| Engine speed   | Idle speed  |

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

### Test Reading

#### Recirculating-to-discharge Air Temperature Table

| Inside air (Recirculating air) at blower assembly inlet |                            | Discharge air temperature at center ventilator<br>°C (°F) |
|---|----------------------------|---|
| Relative humidity<br>%                                  | Air temperature<br>°C (°F) |   |
| 40 - 60   | 20 (68)                    | 4.9 - 6.9 (41 - 44)                                       |
|   | 25 (77)                    | 8.1 - 10.8 (47 - 51)                                      |
|   | 30 (86)                    | 12.1 - 15.1 (54 - 59)                                     |
|   | 35 (95)                    | 16.9 - 20.5 (62 - 69)                                     |
| 60 - 80   | 20 (68)                    | 6.9 - 8.8 (44 - 48)                                       |
|   | 25 (77)                    | 10.6 - 13.1 (51 - 56)                                     |
|   | 30 (86)                    | 15.1 - 18.2 (59 - 65)                                     |
|   | 35 (95)                    | 20.5 - 24.0 (69 - 75)                                     |

#### Ambient Air Temperature-to-operating Pressure Table

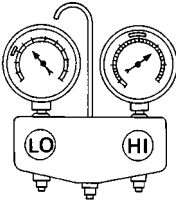
| Ambient air            |                            | High-pressure (Discharge side)<br>kPa (kg/cm <sup>2</sup> , psi) | Low-pressure (Suction side)<br>kPa (kg/cm <sup>2</sup> , psi) |
|------------------------|----------------------------|--|---|
| Relative humidity<br>% | Air temperature<br>°C (°F) |  |   |
| 40 - 60                | 20 (68)                    | 920 - 1,020<br>(9.38 - 10.40, 133.4 - 147.9)                     | 190 - 210<br>(1.94 - 2.14, 27.5 - 30.4)                       |
|                        | 25 (77)                    | 1,250 - 1,390<br>(12.74 - 14.17, 181.2 - 201.5)                  | 240 - 270<br>(2.45 - 2.75, 34.8 - 39.1)                       |
|                        | 30 (86)                    | 1,590 - 1,770<br>(16.21 - 18.04, 230.5 - 256.6)                  | 300 - 330<br>(3.06 - 3.36, 43.5 - 47.8)                       |
|                        | 35 (95)                    | 1,900 - 2,110<br>(19.37 - 21.51, 275.4 - 305.9)                  | 360 - 400<br>(3.67 - 4.08, 52.2 - 58.0)                       |
| 60 - 80                | 20 (68)                    | 1,020 - 1,120<br>(10.40 - 11.42, 147.9 - 162.3)                  | 210 - 230<br>(2.14 - 2.34, 30.4 - 33.3)                       |
|                        | 25 (77)                    | 1,390 - 1,530<br>(14.17 - 15.60, 201.5 - 221.8)                  | 270 - 300<br>(2.75 - 3.06, 39.1 - 43.5)                       |
|                        | 30 (86)                    | 1,770 - 1,950<br>(18.04 - 19.88, 256.6 - 282.7)                  | 330 - 360<br>(3.36 - 3.67, 47.8 - 52.2)                       |
|                        | 35 (95)                    | 2,110 - 2,320<br>(21.51 - 23.65, 305.9 - 336.3)                  | 400 - 440<br>(4.08 - 4.49, 58.0 - 63.8)                       |

# TROUBLE DIAGNOSIS

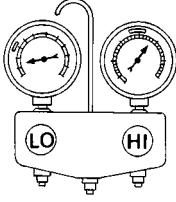
## TROUBLE DIAGNOSES FOR UNUSUAL PRESSURE

Whenever system's high and/or low side pressure is unusual, diagnose using a manifold gauge. The marker above the gauge scale in the following tables indicates the standard (usual) pressure range. Since the standard (usual) pressure, however, differs from vehicle to vehicle, refer to above table (Ambient air temperature-to-operating pressure table).

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

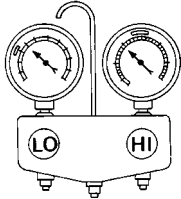
| Gauge indication  | Refrigerant cycle  | Probable cause  | Corrective action  |
|---|--|---|--|
| <p>Both high- and low-pressure sides are too high.</p>  <p>AC359A</p> | Pressure is reduced soon after water is splashed on condenser.   | Excessive refrigerant charge in refrigeration cycle   | Reduce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

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

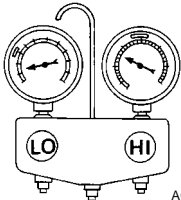
| Gauge indication  | Refrigerant cycle   | Probable cause   | Corrective action   |
|---|---|--|---|
| <p>High-pressure side is too high and low-pressure side is too low.</p>  <p>AC360A</p> | Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot. | High-pressure tube or parts located between compressor and condenser are clogged or crushed. | <ul style="list-style-type: none"> <li>● Check and repair or replace malfunctioning parts.</li> <li>● Check lubricant for contamination.</li> </ul> |

# TROUBLE DIAGNOSIS

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

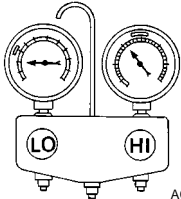
| Gauge indication  | Refrigerant cycle  | Probable cause   | Corrective action   |
|---|--|--|---------------------|
| <p>High-pressure side is too low and low-pressure side is too high.</p>  <p>AC356A</p> | High- and low-pressure sides become equal soon after compressor operation stops. | Compressor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

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

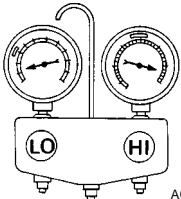
| Gauge indication  | Refrigerant cycle   | Probable cause  | Corrective action   |
|---|---|---|---|
| <p>Both high- and low-pressure sides are too low.</p>  <p>AC353A</p> | <ul style="list-style-type: none"> <li>There is a big temperature difference between receiver drier outlet and inlet. Outlet temperature is extremely low.</li> <li>Liquid tank inlet and expansion valve are frosted.</li> </ul>                                       | Liquid tank inside is slightly clogged.   | <ul style="list-style-type: none"> <li>Replace liquid tank.</li> <li>Check lubricant for contamination.</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>Temperature of expansion valve inlet is extremely low as compared with areas near liquid tank.</li> <li>Expansion valve inlet may be frosted.</li> <li>Temperature difference occurs somewhere in high-pressure side.</li> </ul> | High-pressure pipe located between receiver drier and expansion valve is clogged.   | <ul style="list-style-type: none"> <li>Check and repair malfunctioning parts.</li> <li>Check lubricant for contamination.</li> </ul>                                  |
|   | Expansion valve and liquid tank are warm or only cool when touched.   | Low refrigerant charge.<br>↓<br>Leaking fittings or components.   | Check refrigerant system for leaks. Refer to <a href="#">MTC-131, "Checking for Refrigerant Leaks"</a> .  |
|   | There is a big temperature difference between expansion valve inlet and outlet while the valve itself is frosted.   | Expansion valve closes a little compared with the specification.<br>↓<br>1. Improper expansion valve adjustment.<br>2. Malfunctioning expansion valve.<br>3. Outlet and inlet may be clogged. | <ul style="list-style-type: none"> <li>Remove foreign particles by using compressed air.</li> <li>Check lubricant for contamination.</li> </ul>                       |
|   | An area of the low-pressure pipe is colder than areas near the evaporator outlet.   | Low-pressure pipe is clogged or crushed.  | <ul style="list-style-type: none"> <li>Check and repair malfunctioning parts.</li> <li>Check lubricant for contamination.</li> </ul>                                  |
|   | Air flow volume is too low.   | Evaporator is frozen.   | <ul style="list-style-type: none"> <li>Check intake sensor circuit. Refer to <a href="#">MTC-95, "Intake Sensor Circuit"</a>.</li> <li>Replace compressor.</li> </ul> |

# TROUBLE DIAGNOSIS

## Low-pressure Side Sometimes Becomes Negative

| Gauge indication   | Refrigerant cycle  | Probable cause   | Corrective action  |
|--|--|--|--|
| <p>Low-pressure side sometimes becomes negative.</p>  <p>AC354A</p> | <ul style="list-style-type: none"> <li>● Air conditioning system does not function and does not cyclically cool the compartment air.</li> <li>● The system constantly functions for a certain period of time after compressor is stopped and restarted.</li> </ul> | <p>Refrigerant does not discharge cyclically.</p> <p>↓</p> <p>Moisture is frozen at expansion valve outlet and inlet.</p> <p>↓</p> <p>Water is mixed with refrigerant.</p> | <ul style="list-style-type: none"> <li>● Drain water from refrigerant or replace refrigerant.</li> <li>● Replace liquid tank.</li> </ul> |

## Low-pressure Side Becomes Negative

| Gauge indication  | Refrigerant cycle  | Probable cause  | Corrective action   |
|---|--|---|---|
| <p>Low-pressure side becomes negative.</p>  <p>AC362A</p> | <p>Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.</p> | <p>High-pressure side is closed and refrigerant does not flow.</p> <p>↓</p> <p>Expansion valve or liquid tank is frosted.</p> | <p>Leave the system at rest until no frost is present. Start it again to check whether or not the malfunction is caused by water or foreign particles.</p> <ul style="list-style-type: none"> <li>● If water is the cause, initially cooling is okay. Then the water freezes causing a blockage. Drain water from refrigerant or replace refrigerant.</li> <li>● If due to foreign particles, remove expansion valve and remove the particles with dry and compressed air (not shop air).</li> <li>● If either of the above methods cannot correct the malfunction, replace expansion valve.</li> <li>● Replace liquid tank.</li> <li>● Check lubricant for contamination.</li> </ul> |

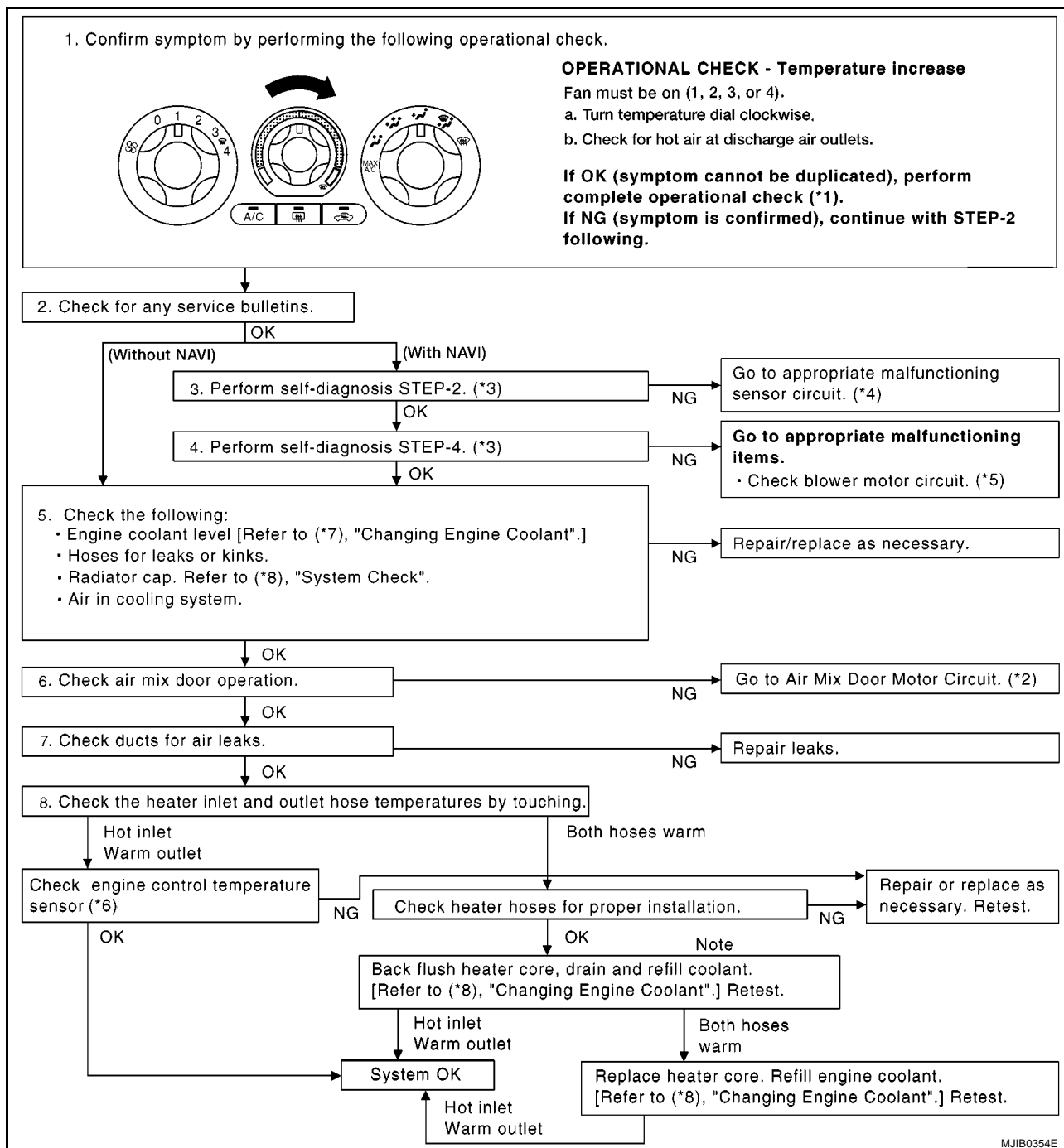
# TROUBLE DIAGNOSIS

EJS005GN

## Insufficient Heating

SYMPTOM: Insufficient heating

### INSPECTION FLOW



\*1 [MTC-53, "Operational Check"](#) .

\*2 [MTC-63, "Air Mix Door Motor Circuit"](#).

\*3 [MTC-51, "A/C System Self-diagnosis Function"](#).

\*4 [MTC-51, "A/C System Self-diagnosis Function"](#).

\*5 [MTC-71, "Blower Motor Circuit"](#).

\*6 [EC-103, "DTC P0117, P0118 ECT SENSOR"](#).

\*7 [CO-7, "Changing Engine Coolant"](#).

\*8 [CO-13, "Checking Reservoir Tank Cap"](#).

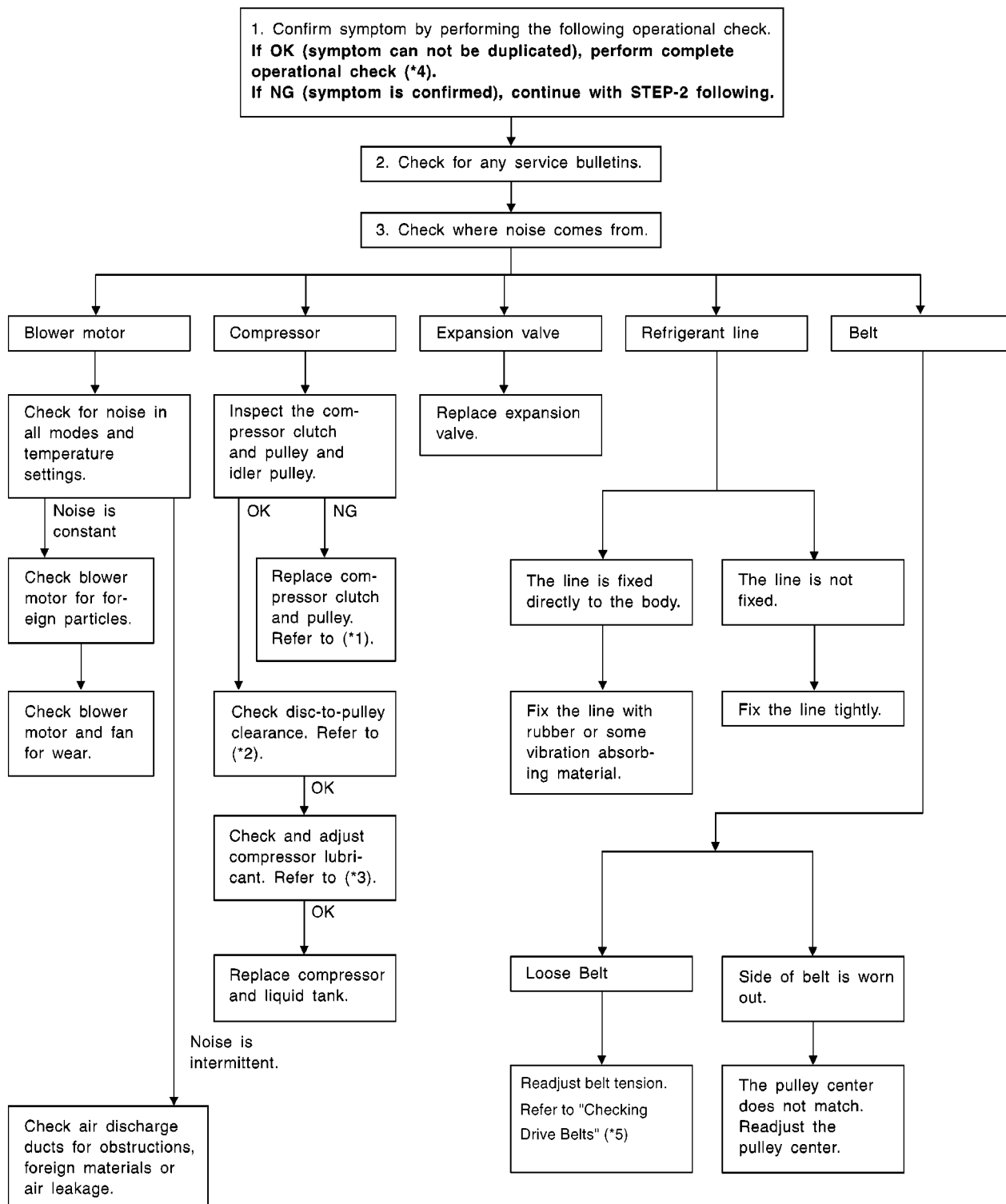
# TROUBLE DIAGNOSIS

## Noise

EJS005GO

SYMPTOM: Noise

### INSPECTION FLOW



# TROUBLE DIAGNOSIS

\*1 [MTC-122, "REMOVAL".](#)

\*2 [MTC-122, "INSTALLATION".](#)

\*3 [MTC-24, "Maintenance of Lubricant Quantity in Compressor".](#)

\*4 [MTC-53, "Operational Check".](#)

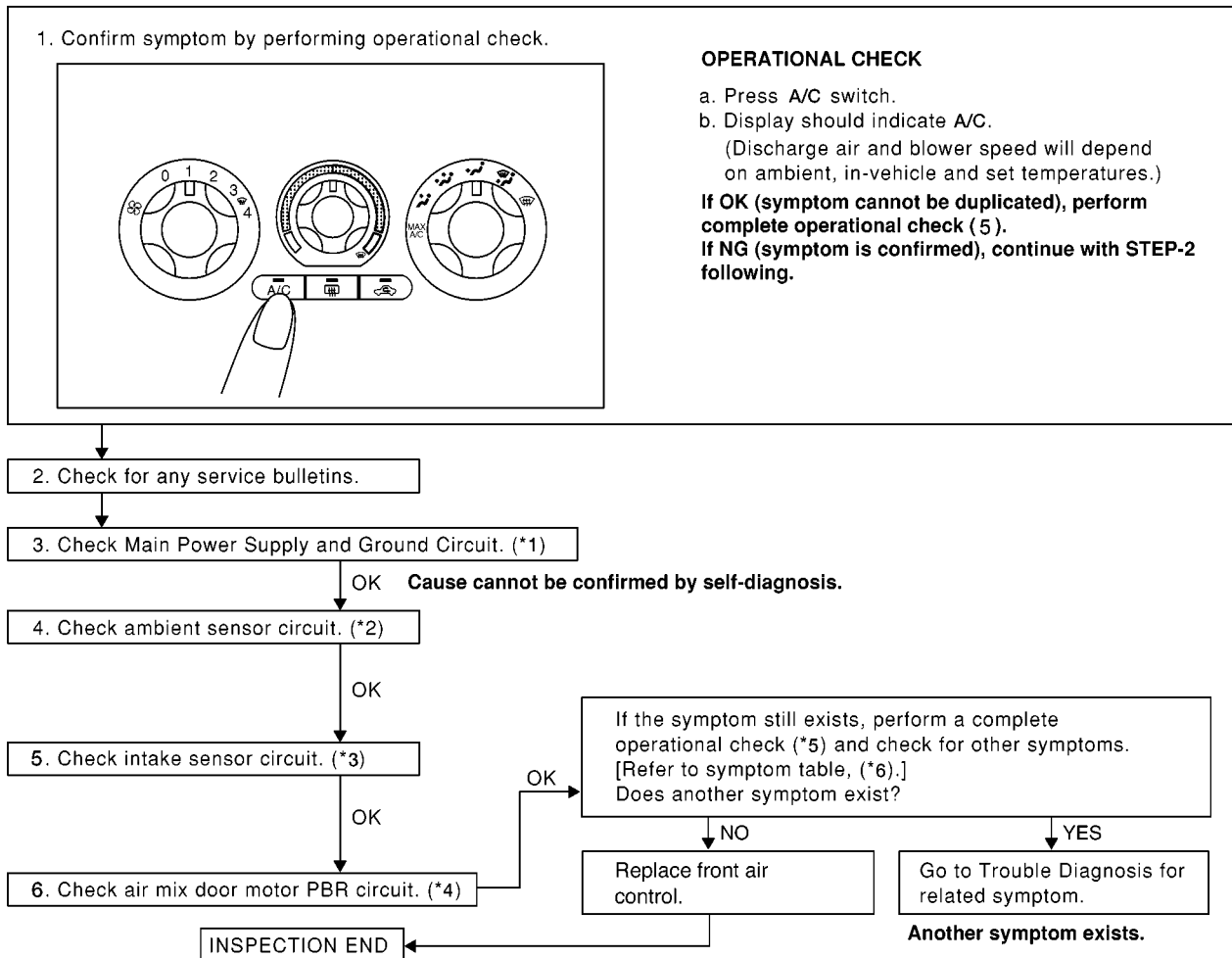
\*5 [EM-12, "DRIVE BELTS".](#)

## Self-diagnosis

EJS005GP

SYMPTOM: Self-diagnosis cannot be performed (Vehicles equipped with NAVI only).

## INSPECTION FLOW



MTC

\*1 [MTC-55, "Power Supply and Ground Circuit for Front Air Control".](#)

2. [MTC-63, "Air Mix Door Motor Circuit".](#)

3. [MTC-53, "Operational Check".](#)

MJIB0246E

## Intake Sensor Circuit COMPONENT DESCRIPTION

EJS005GR

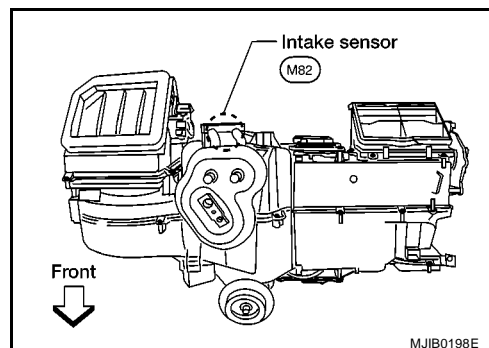
### Intake Sensor

The intake sensor is located on the heater & cooling unit. It converts temperature of air after it passes through the evaporator into a resistance value which is then input to the front air control.

### NOTE:

This illustration is for LHD models.

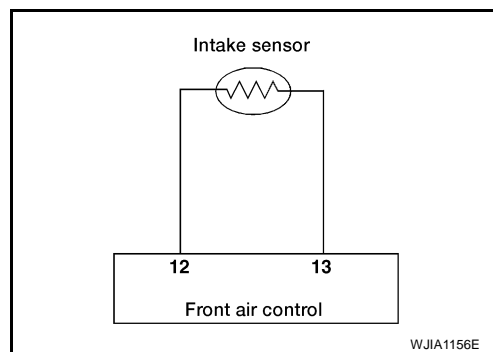
The layout for RHD models is symmetrically opposite.



# TROUBLE DIAGNOSIS

## DIAGNOSTIC PROCEDURE FOR INTAKE SENSOR

SYMPTOM: Intake sensor circuit is open or shorted. (56 or 57 is indicated on front air control as a result of conducting Self-diagnosis).



### 1. CHECK VOLTAGE BETWEEN INTAKE SENSOR AND GROUND

1. Disconnect intake sensor connector.
2. Turn ignition switch ON.
3. Check voltage between intake sensor harness connector M82 terminal 2 and ground.

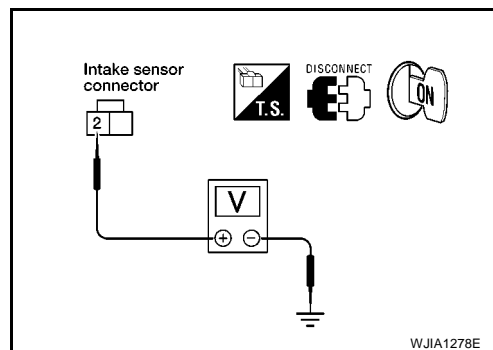
**2 - Ground**

**: Approx. 5V**

OK or NG

OK >> GO TO 2.

NG >> GO TO 4.



### 2. CHECK CIRCUIT CONTINUITY BETWEEN INTAKE SENSOR AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between intake sensor harness connector M82 terminal 1 and front air control harness connector M98 terminal 13.

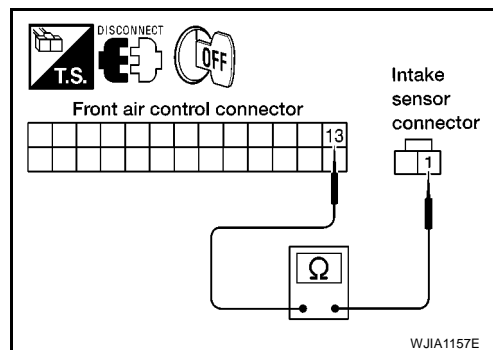
**1 - 13**

**: Continuity should exist.**

OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.



### 3. CHECK INTAKE SENSOR

Refer to [MTC-97, "COMPONENT INSPECTION"](#).

OK or NG

OK >> 1. Replace front air control.

2. Go to self-diagnosis [MTC-51, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

NG >> 1. Replace intake sensor.

2. Go to self-diagnosis [MTC-51, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

# TROUBLE DIAGNOSIS

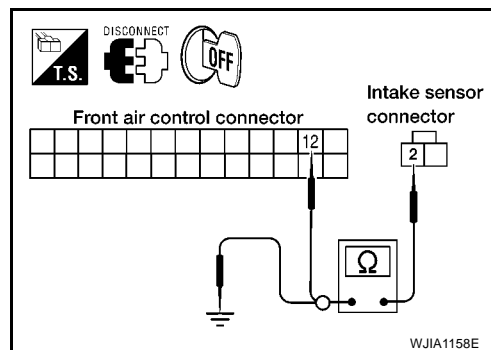
## 4. CHECK CIRCUIT CONTINUITY BETWEEN INTAKE SENSOR AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between intake sensor harness connector M82 terminal 2 and front air control harness connector M98 terminal 12.

**2 - 12 : Continuity should exist.**

4. Check continuity between intake sensor harness connector M82 terminal 2 and ground.

**2 - Ground : Continuity should not exist.**



OK or NG

OK >> 1. Replace front air control.

2. Go to self-diagnosis [MTC-51, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

NG >> Repair harness or connector.

## COMPONENT INSPECTION

### Intake Sensor

After disconnecting intake sensor connector, measure resistance between terminals 1 and 2 at sensor harness side, using the table below.

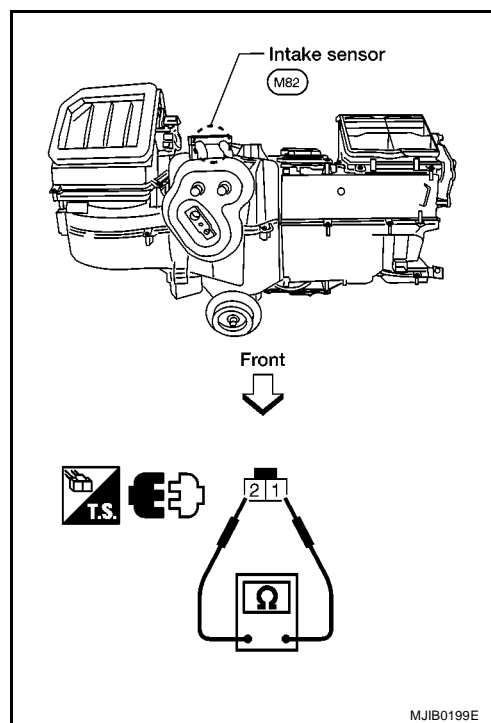
| Temperature °C (°F) | Resistance kΩ |
|---------------------|---------------|
| -15 (5)             | 209.0         |
| -10 (14)            | 160.0         |
| -5 (23)             | 123.0         |
| 0 (32)              | 95.8          |
| 5 (41)              | 74.9          |
| 10 (50)             | 58.9          |
| 15 (59)             | 46.7          |
| 20 (68)             | 37.3          |
| 25 (77)             | 30.0          |
| 30 (86)             | 24.2          |
| 35 (95)             | 19.7          |
| 40 (104)            | 16.1          |
| 45 (113)            | 13.2          |

If NG, replace intake sensor.

### NOTE:

This illustration is for LHD models.

The layout for RHD models is symmetrically opposite.



# CONTROL UNIT

## CONTROL UNIT

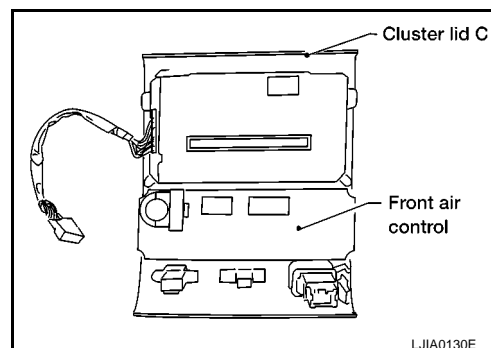
PFP:27500

### Removal and Installation

EJS005GS

#### REMOVAL

1. Remove the five control knobs from the front air control unit.
2. Remove the cluster lid C. Refer to [IP-11, "CLUSTER LID C"](#).
3. Remove the four screws securing the front air control unit to the cluster lid C.
4. Remove the front air control unit.



#### INSTALLATION

Installation is in the reverse order of removal.

# INTAKE SENSOR

## INTAKE SENSOR

PFP:27723

### Removal and Installation

EJS005GT

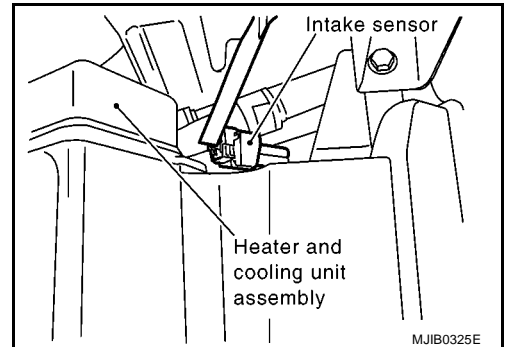
#### REMOVAL

1. Remove the instrument panel. Refer to [IP-10, "Removal and Installation"](#) .
2. Disconnect the intake sensor electrical connector.

#### NOTE:

The intake sensor is located on the top of the heater and cooling unit assembly next to the A/C evaporator cover.

3. Twist the intake sensor to remove the intake sensor from the heater and cooling unit assembly.



#### INSTALLATION

Installation is in the reverse order of removal.

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

MTC

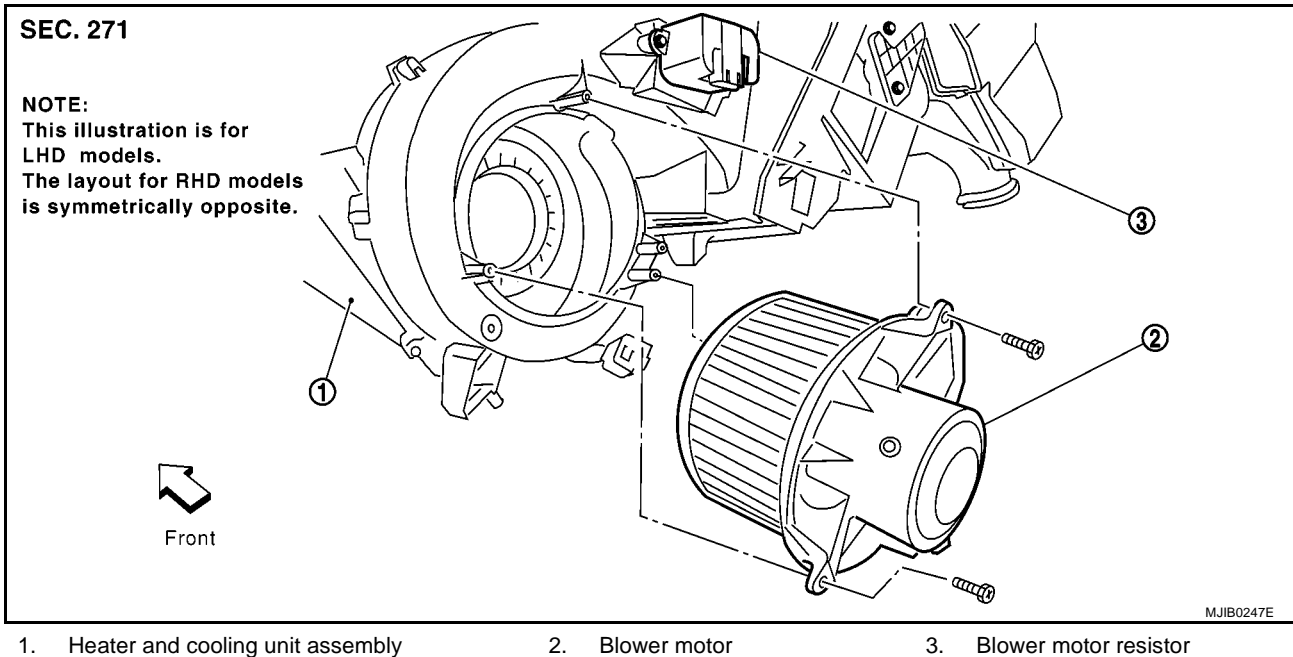
# BLOWER MOTOR

## BLOWER MOTOR

PFP:27226

### Components

EJS005GU



## Removal and Installation

EJS005GV

### REMOVAL

1. Remove the glove box assembly. Refer to [IP-15, "LOWER INSTRUMENT PANEL RH AND GLOVE BOX"](#).
2. Disconnect the blower motor electrical connector.
3. Remove the three screws and remove the blower motor.

### INSTALLATION

Installation is in the reverse order of removal.

# AIR CONDITIONER FILTER

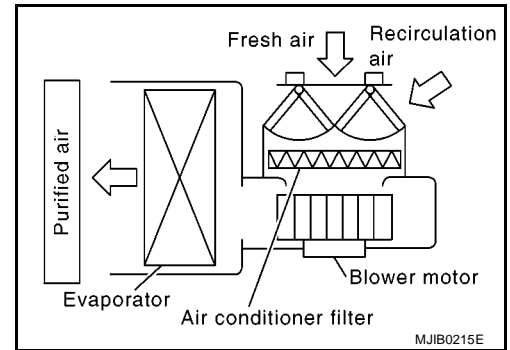
## AIR CONDITIONER FILTER

PFP:27277

### Removal and Installation FUNCTION

EJS005GW

The air inside the passenger compartment is filtered by the air conditioner filters when the heater or A/C controls are set on either the recirculation or fresh mode. The two air conditioner filters are located in the heater and cooling unit assembly.

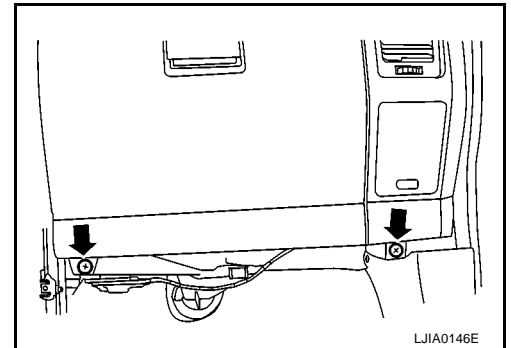


### REPLACEMENT TIMING

Replacement of the two air conditioner filters is recommended on a regular interval depending on the driving conditions. Refer to [MA-8, "PERIODIC MAINTENANCE"](#). It may also be necessary to replace the two air conditioner filters as part of a component replacement if the air conditioner filters are damaged.

### REPLACEMENT PROCEDURE

1. Remove the glove box assembly.
  - a. Remove the two lower glove box screws.

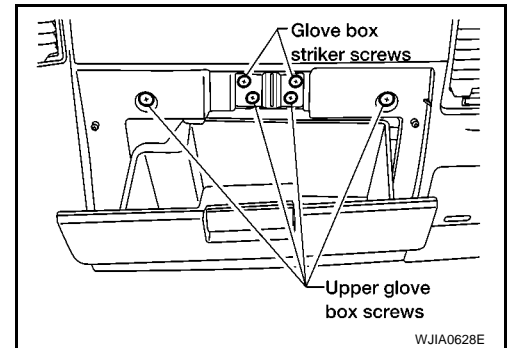


- b. Open the glove box, then remove the four upper glove box screws.

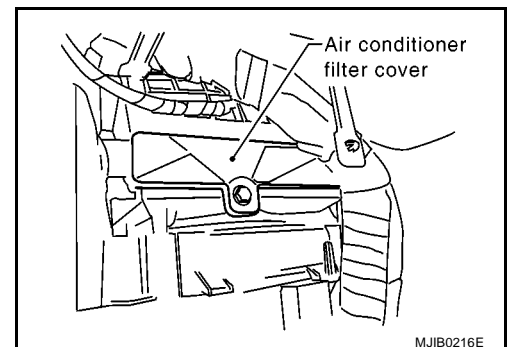
#### NOTE:

It is not necessary to remove the two glove box striker screws.

- c. Remove the glove box assembly from the instrument panel to access the air conditioner filter cover.



2. Remove the screw and remove the air conditioner filter cover.
3. Remove the air conditioner filters from the heater and cooling unit assembly housing.

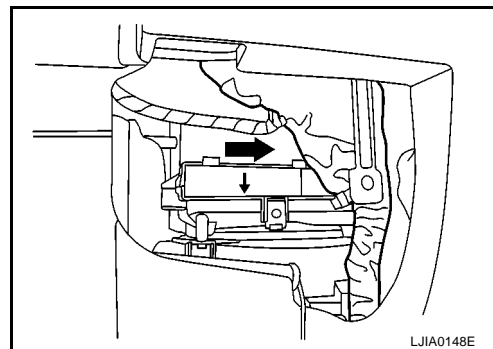


## AIR CONDITIONER FILTER

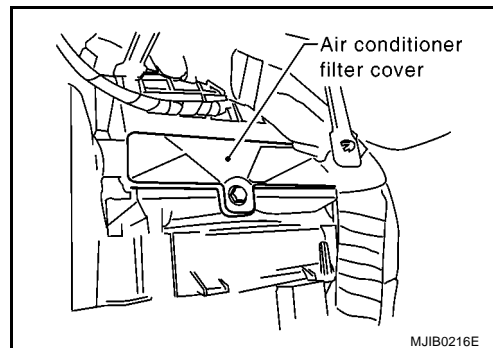
4. Insert the first new air conditioner filter into the heater and cooling unit assembly housing and slide it over to the right. Insert the second new air conditioner filter into the heater and cooling unit assembly housing.

**NOTE:**

The air conditioner filters are marked with air flow arrows. The end of the microfilter with the arrow should face the rear of the vehicle. The arrows should point downward.



5. Install the air conditioner filter cover.



6. Install the glove box assembly in reverse order of removal.

**Lower glove box screws : 3.5 N·m (0.36 kg-m, 31 in-lb)**

**Upper glove box screws : 3.5 N·m (0.36 kg-m, 31 in-lb)**

# HEATER & COOLING UNIT ASSEMBLY

## HEATER & COOLING UNIT ASSEMBLY

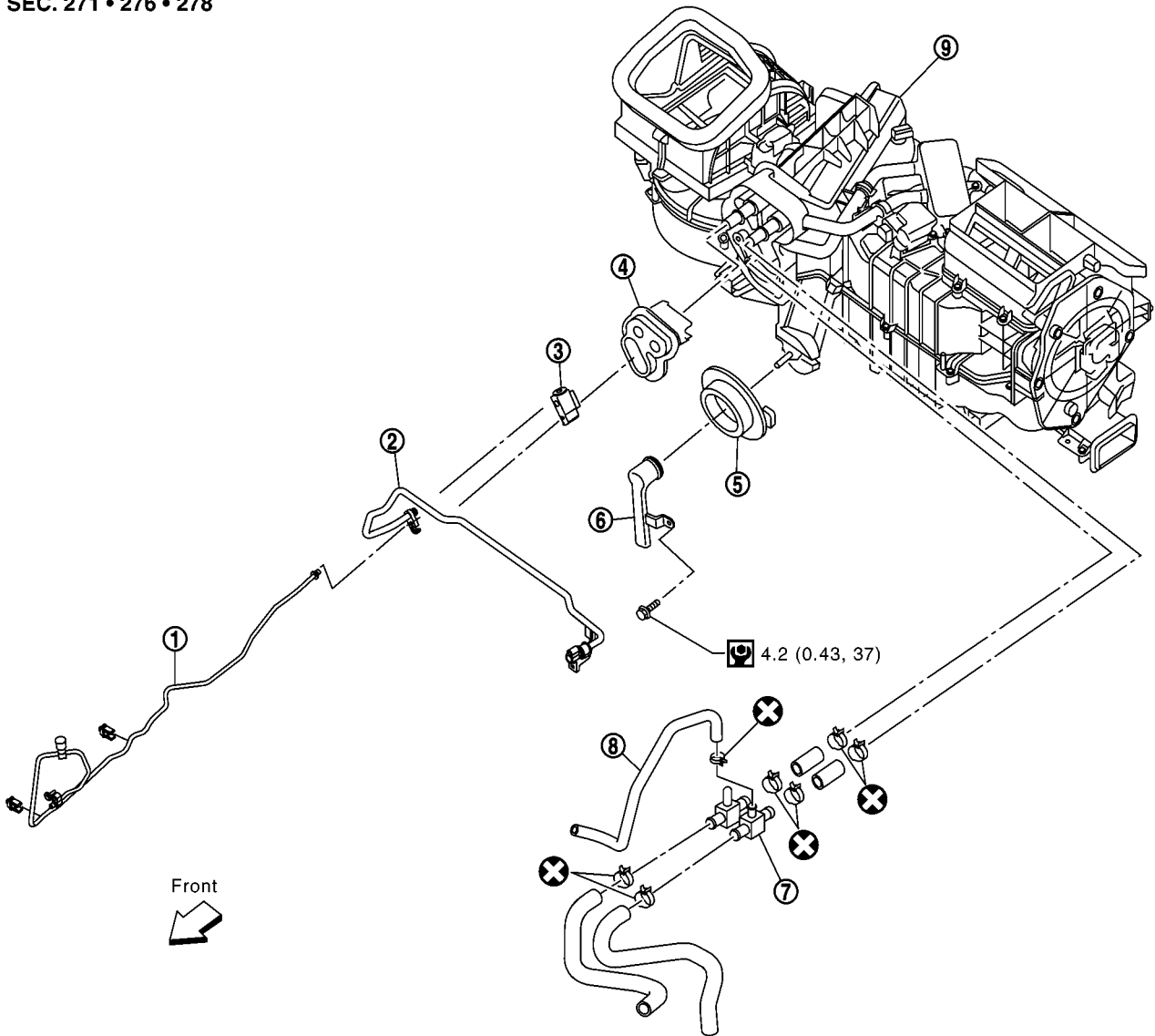
PFP:27110

### Components

EJS005GX

### Heater and Cooling Unit Assembly —LHD Models—

SEC. 271 • 276 • 278



: N•m (kg-m, in-lb)

: Always replace after every disassembly.

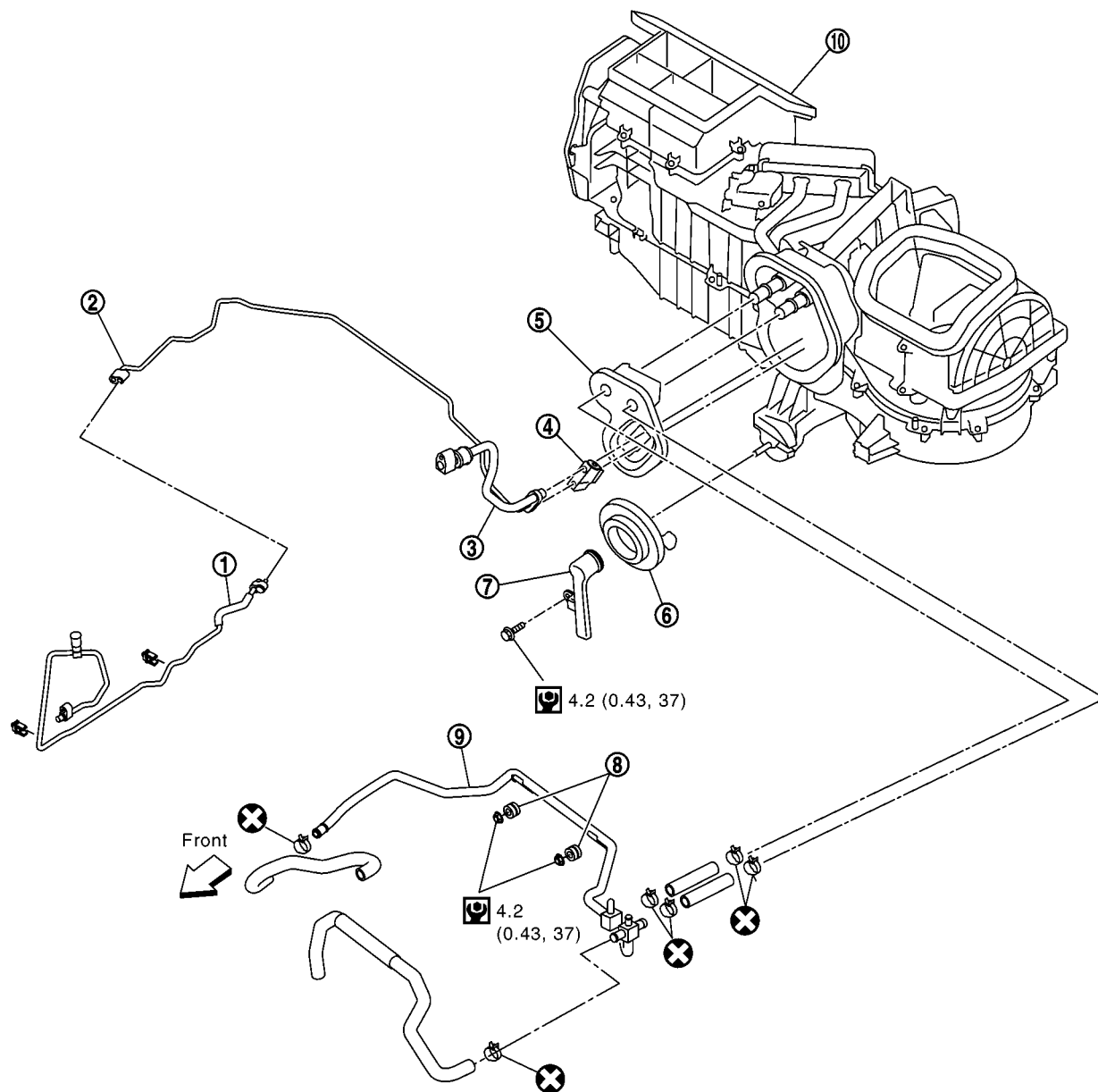
- |   |                           |                                     |
|---|---------------------------|-------------------------------------|
| 1. High-pressure A/C pipe                   | 2. Low-pressure A/C pipe  | 3. Expansion valve                  |
| 4. Heater core and evaporator pipes grommet | 5. A/C drain hose grommet | 6. A/C drain hose                   |
| 7. Heater core pipes                        | 8. Coolant reservoir hose | 9. Heater and cooling unit assembly |


MJIB0278E


# HEATER & COOLING UNIT ASSEMBLY

## Heater and Cooling Unit Assembly —RHD Models—

SEC. 271 • 276 • 278



 : N·m (kg-m, in-lb)

 : Always replace after every disassembly.

MJIB0279E

- |                                      |                                     |                           |
|--------------------------------------|-------------------------------------|---------------------------|
| 1. High-pressure A/C pipe A          | 2. High-pressure A/C pipe B         | 3. Low-pressure A/C pipe  |
| 4. Expansion valve                   | 5. Heater core and evaporator pipes | 6. A/C drain hose grommet |
| 7. A/C drain hose                    | 8. Heater core pipe mounts          | 9. Heater core pipes      |
| 10. Heater and cooling unit assembly |                                     |                           |

# HEATER & COOLING UNIT ASSEMBLY

EJS005GY

## Removal and Installation

### REMOVAL

1. Discharge the refrigerant from the A/C system. Refer to [MTC-118, "Discharging Refrigerant"](#) .
2. Drain the coolant from the engine cooling system. Refer to [CO-8, "DRAINING ENGINE COOLANT"](#) .
3. Remove the cowl top extension. Refer to [EI-20, "Removal and Installation"](#) .
4. Remove the exhaust system. Refer to [EX-3, "Removal and Installation"](#) .
5. Disconnect the heater hoses from the heater core.
6. Disconnect the high/low pressure pipes from the expansion valve.
7. Move the two front seats to the rearmost position on the seat track.
8. Remove the instrument panel and console panel. Refer to [IP-10, "Removal and Installation"](#) .
9. Remove the steering column. Refer to [PS-11, "Removal and Installation"](#) .
10. Disconnect the instrument panel wire harness at the RH and LH in-line connector brackets, and the fuse block (J/B) electrical connectors. Refer to [PG-38, "Harness Layout"](#) .
11. Disconnect the steering member from each side of the vehicle body.
12. Remove the heater and cooling unit assembly with it attached to the steering member, from the vehicle.

#### CAUTION:

**Use care not to damage the seats and interior trim panels when removing the heater and cooling unit assembly with it attached to the steering member.**

13. Remove the heater and cooling unit assembly from the steering member.

### INSTALLATION

Installation is in the reverse order of removal.

#### CAUTION:

- Replace the O-ring of the low-pressure pipe and high-pressure pipe with a new one, and apply compressor oil to it when installing it.
- After charging the refrigerant, check for leaks.

#### NOTE:

- Fill the engine cooling system with the specified coolant mixture. Refer to [CO-8, "REFILLING ENGINE COOLANT"](#) .
- Recharge the A/C system. Refer to [MTC-118, "Evacuating System and Charging Refrigerant"](#) .

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

MTC

# HEATER CORE

## HEATER CORE

PFP:27140

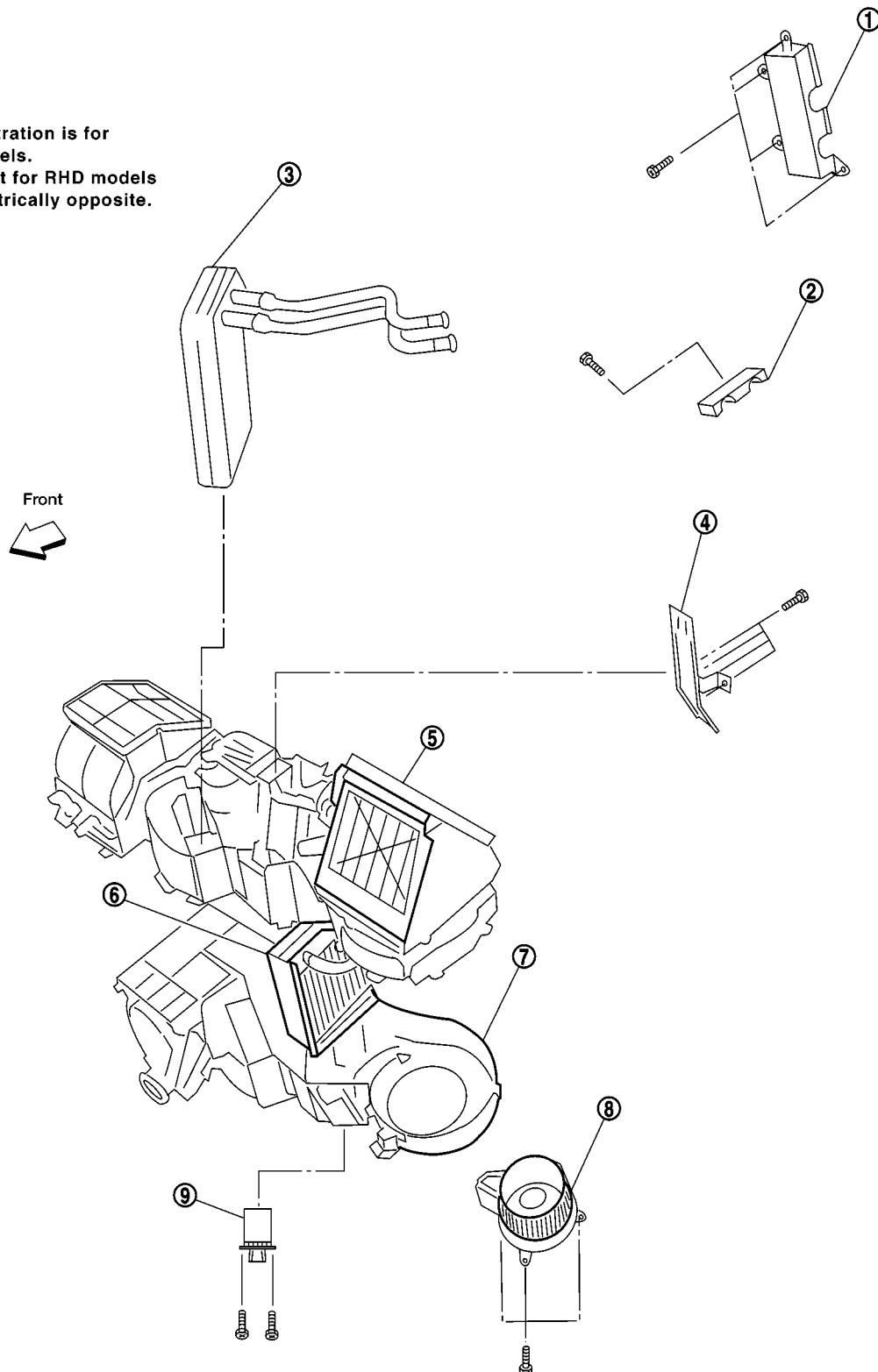
### Components

EJS005GZ

#### SEC. 271

##### NOTE:

This illustration is for  
LHD models.  
The layout for RHD models  
is symmetrically opposite.



MJIB0248E

- |                                       |                                       |                          |
|---------------------------------------|---------------------------------------|--------------------------|
| 1. Heater core cover                  | 2. Heater core pipe bracket           | 3. Heater core           |
| 4. Upper bracket                      | 5. Upper heater and cooling unit case | 6. A/C evaporator        |
| 7. Lower heater and cooling unit case | 8. Blower motor                       | 9. Blower motor resistor |

# HEATER CORE

## Removal and Installation

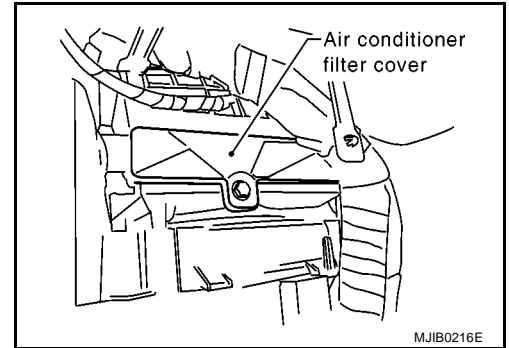
EJS005H0

### REMOVAL

1. Remove the heater and cooling unit assembly. Refer to [MTC-103, "HEATER & COOLING UNIT ASSEMBLY"](#).
2. Remove the four screws and remove the upper bracket.
3. Remove the four screws and remove the heater core cover.
4. Remove the heater core pipe bracket.
5. Remove the heater core.

#### NOTE:

If the air conditioner filters are contaminated from coolant leaking from the heater core, replace the air conditioner filters with new ones before installing the new heater core.



### INSTALLATION

Installation is in the reverse order of removal.

A

B

C

D

E

F

G

H

I

MTC

K

L

M

# DEFROSTER DOOR MOTOR

## DEFROSTER DOOR MOTOR

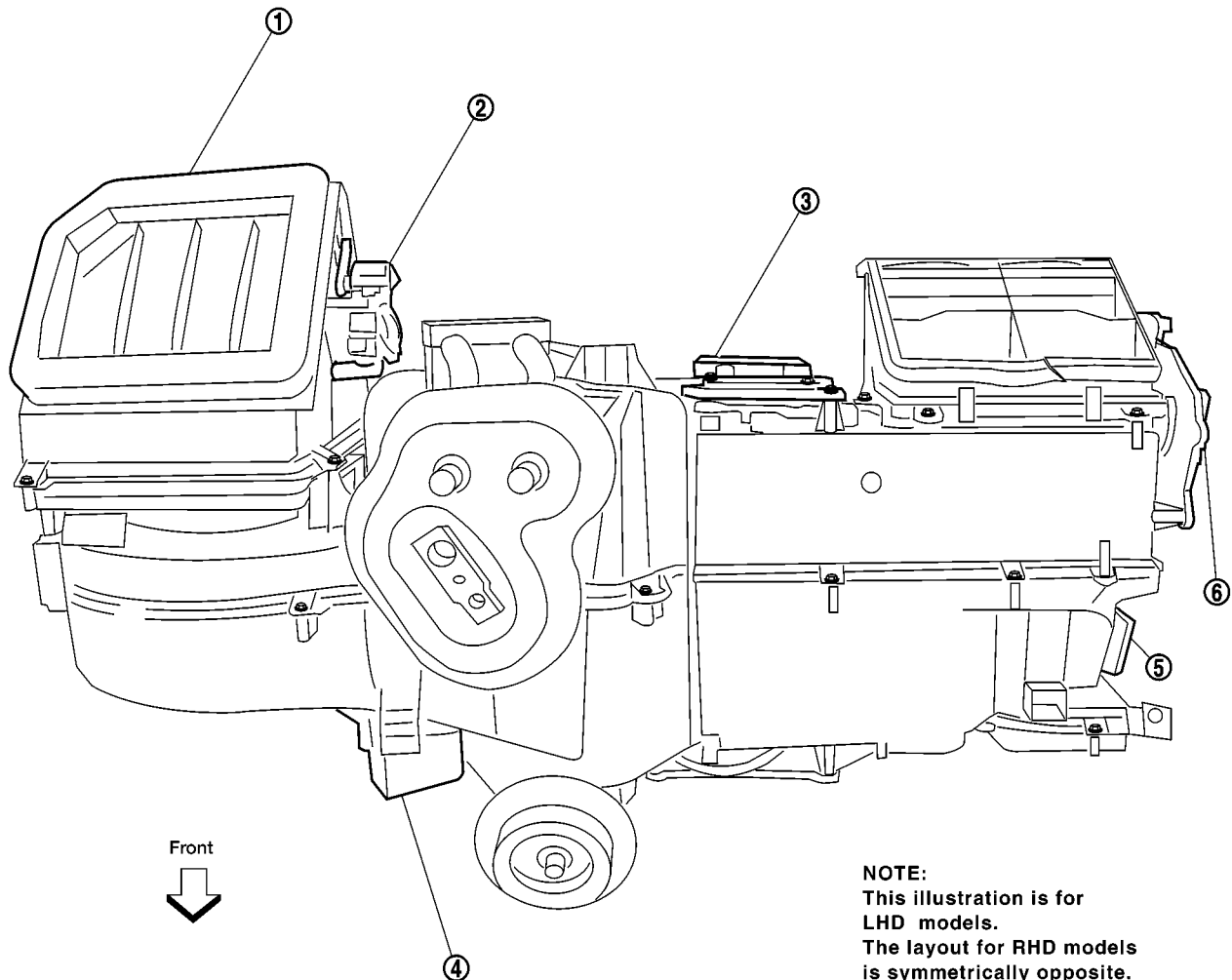
PFP:27733

### Components

EJS005H1

#### Defroster Door Motor - Heater and Cooling Unit Assembly

SEC. 271•276•278



MJIB0249E

- |                                     |                      |                         |
|-------------------------------------|----------------------|-------------------------|
| 1. Heater and cooling unit assembly | 2. Intake door motor | 3. Air mix door motor   |
| 4. Blower motor resistor            | 5. Mode door motor   | 6. Defroster door motor |

### Removal and Installation

#### REMOVAL

EJS006D8

1. Remove the steering member.
2. Remove the heater and cooling unit assembly. Refer to [MTC-103, "HEATER & COOLING UNIT ASSEMBLY"](#).
3. Disconnect the defroster door motor electrical connector.
4. Remove the three screws and remove the defroster door motor.

#### INSTALLATION

Installation is in the reverse order of removal.

# INTAKE DOOR MOTOR

## INTAKE DOOR MOTOR

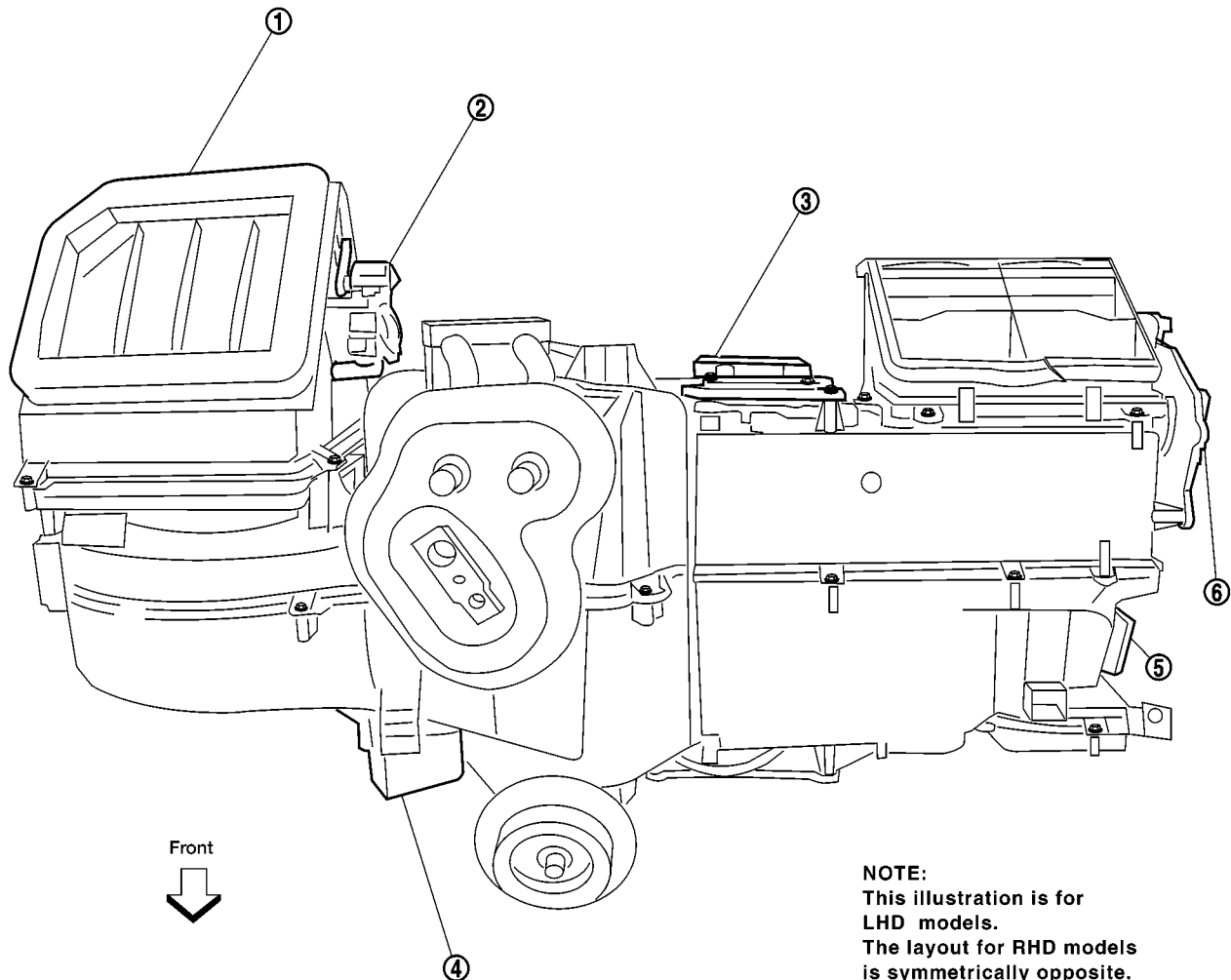
PFP:27730

### Components

EJS005H2

#### Intake Door Motor - Heater and Cooling Unit Assembly

SEC. 271•276•278



MTC

- |                                     |                      |                         |
|-------------------------------------|----------------------|-------------------------|
| 1. Heater and cooling unit assembly | 2. Intake door motor | 3. Air mix door motor   |
| 4. Blower motor resistor            | 5. Mode door motor   | 6. Defroster door motor |

### Removal and Installation REMOVAL

EJS006D9

1. Remove the steering member.
2. Remove the heater and cooling unit assembly. Refer to [MTC-103, "HEATER & COOLING UNIT ASSEMBLY"](#).
3. Disconnect the intake door motor electrical connector.
4. Remove the three screws and remove the intake door motor.

### INSTALLATION

Installation is in the reverse order of removal.

# MODE DOOR MOTOR

## MODE DOOR MOTOR

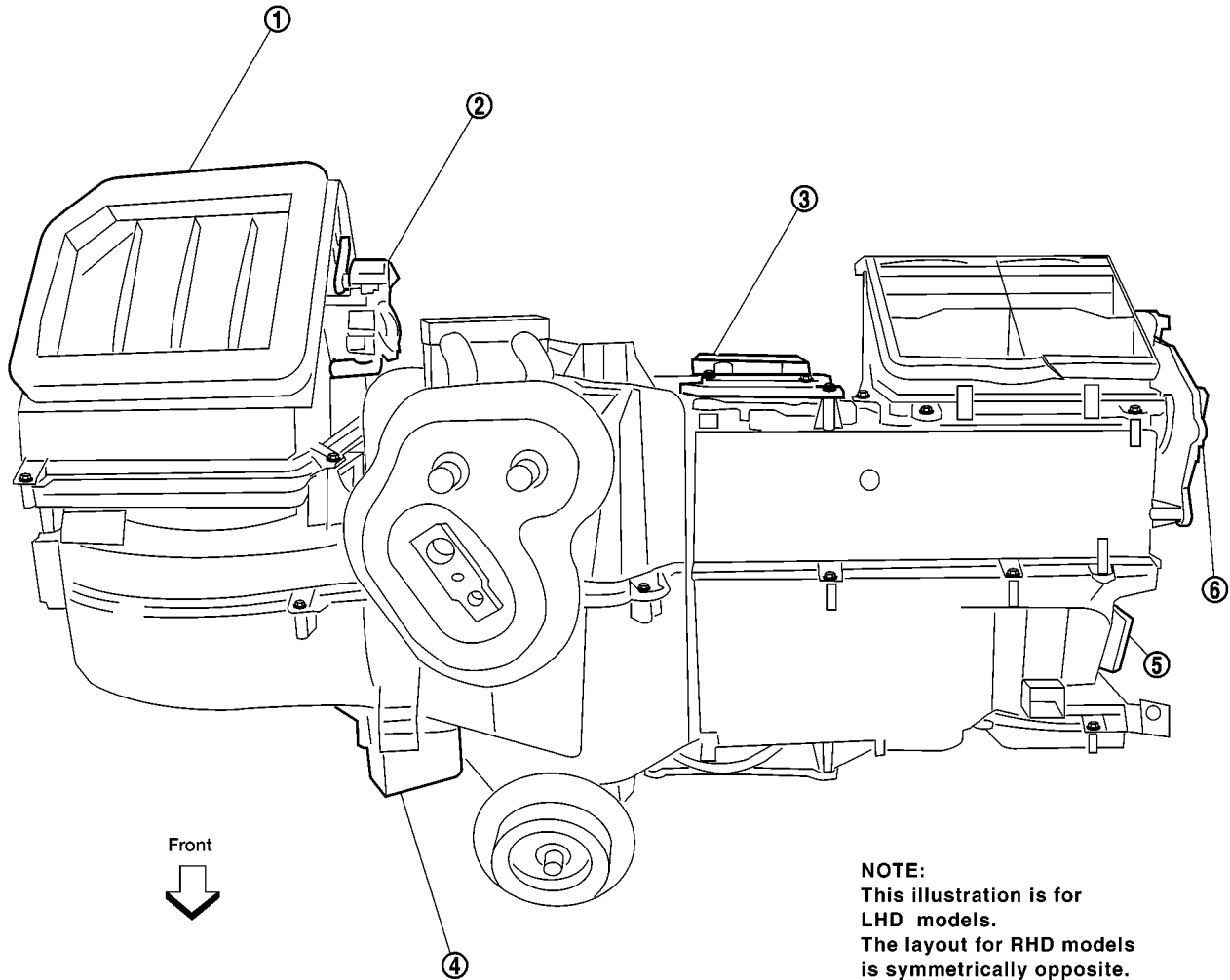
PFP:27731

### Components

EJS005H3

#### Mode Door Motor - Heater and Cooling Unit Assembly

SEC. 271•276•278



MJIB0249E

- |                                     |                      |                         |
|-------------------------------------|----------------------|-------------------------|
| 1. Heater and cooling unit assembly | 2. Intake door motor | 3. Air mix door motor   |
| 4. Blower motor resistor            | 5. Mode door motor   | 6. Defroster door motor |

### Removal and Installation

#### REMOVAL

EJS006DA

1. Remove the steering member.
2. Remove the heater and cooling unit assembly. Refer to [MTC-103, "HEATER & COOLING UNIT ASSEMBLY"](#).
3. Disconnect the mode door motor electrical connector.
4. Remove the two screws and remove the mode door motor.

#### INSTALLATION

Installation is in the reverse order of removal.

# AIR MIX DOOR MOTOR

## AIR MIX DOOR MOTOR

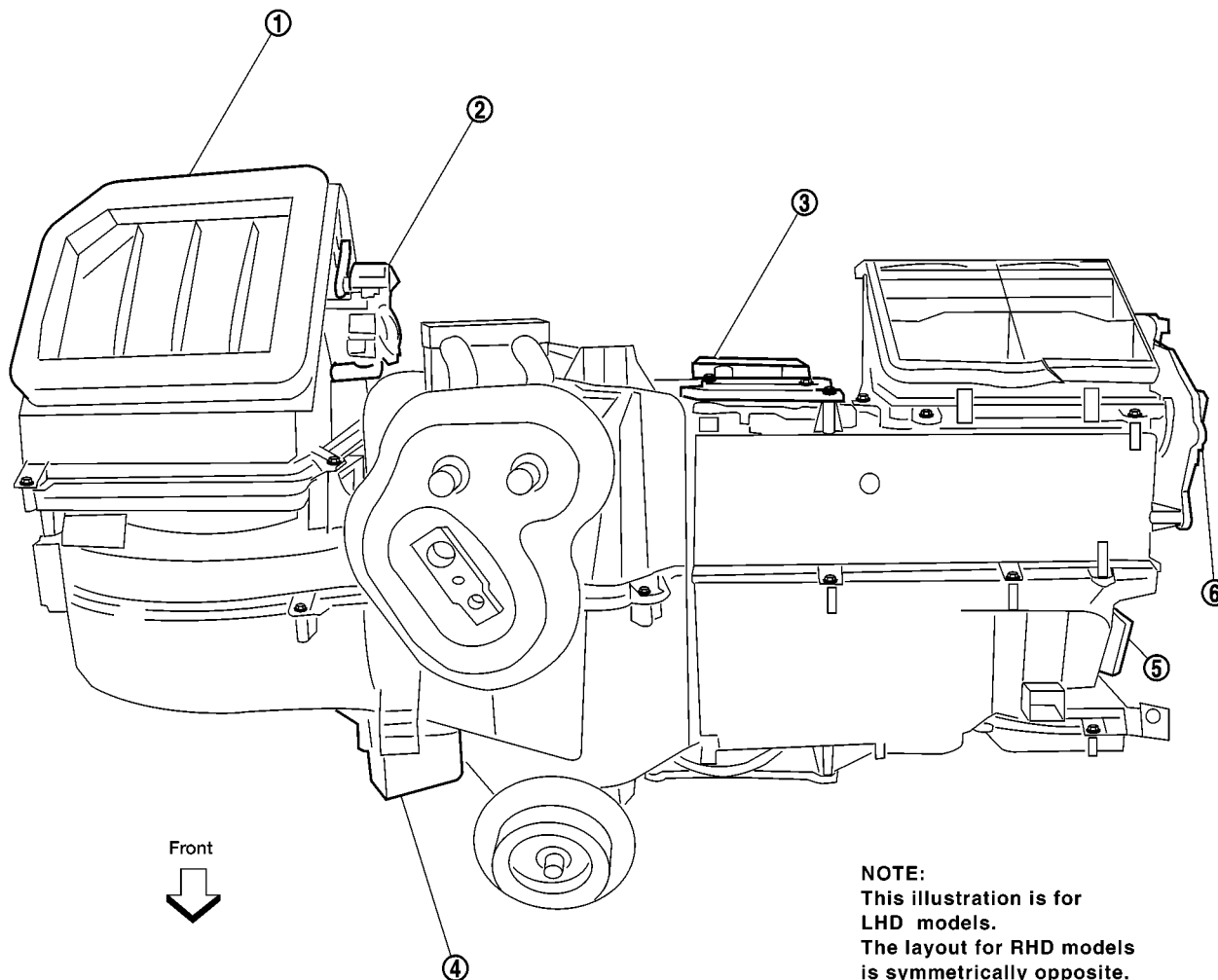
PFP:27732

### Components

EJS005H4

#### Air Mix Door Motor - Heater and Cooling Unit Assembly

SEC. 271•276•278



- 1. Heater and cooling unit assembly
- 4. Blower motor resistor

- 2. Intake door motor
- 5. Mode door motor

- 3. Air mix door motor
- 6. Defroster door motor

MJIB0249E

### Removal and Installation REMOVAL

EJS005H5

1. Remove the steering member.
2. Remove the heater and cooling unit assembly. Refer to [MTC-103, "HEATER & COOLING UNIT ASSEMBLY"](#).
3. Disconnect the air mix door motor electrical connector.
4. Remove the three screws and remove the air mix door motor.

### INSTALLATION

Installation is in the reverse order of removal.

# BLOWER MOTOR RESISTOR

## BLOWER MOTOR RESISTOR

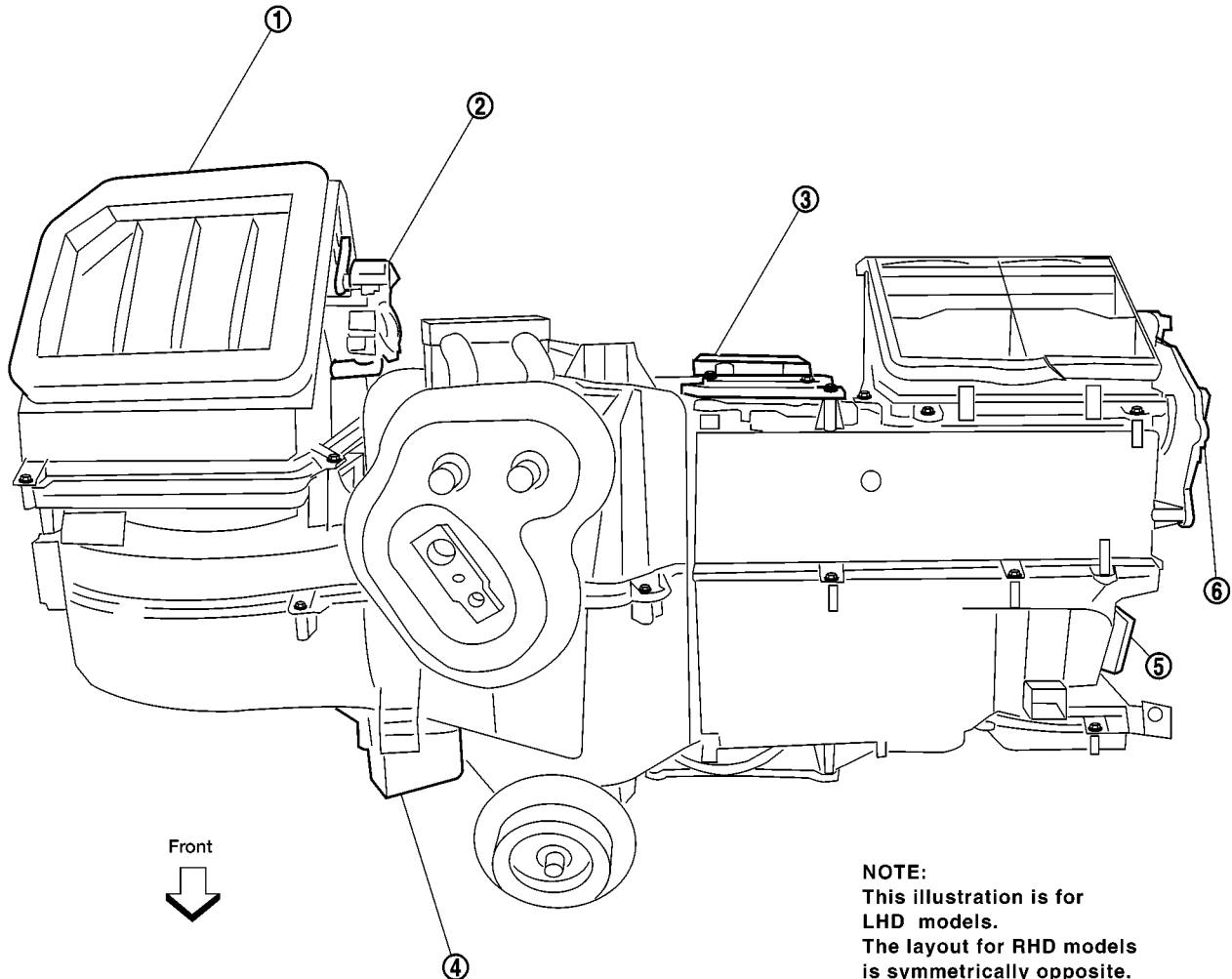
PFP:27077

### Components

EJS005H6

#### Blower Motor Resistor - Heater and Cooling Unit Assembly

SEC. 271•276•278



MJIB0249E

- |                                     |                      |                         |
|-------------------------------------|----------------------|-------------------------|
| 1. Heater and cooling unit assembly | 2. Intake door motor | 3. Air mix door motor   |
| 4. Blower motor resistor            | 5. Mode door motor   | 6. Defroster door motor |

### Removal and Installation

#### REMOVAL

EJS006DB

1. Remove the steering member.
2. Remove the heater and cooling unit assembly. Refer to [MTC-103, "HEATER & COOLING UNIT ASSEMBLY"](#).
3. Disconnect the blower motor resistor electrical connector.
4. Remove the two screws and remove the blower motor resistor.

#### INSTALLATION

Installation is in the reverse order of removal.

# DUCTS AND GRILLES

## DUCTS AND GRILLES

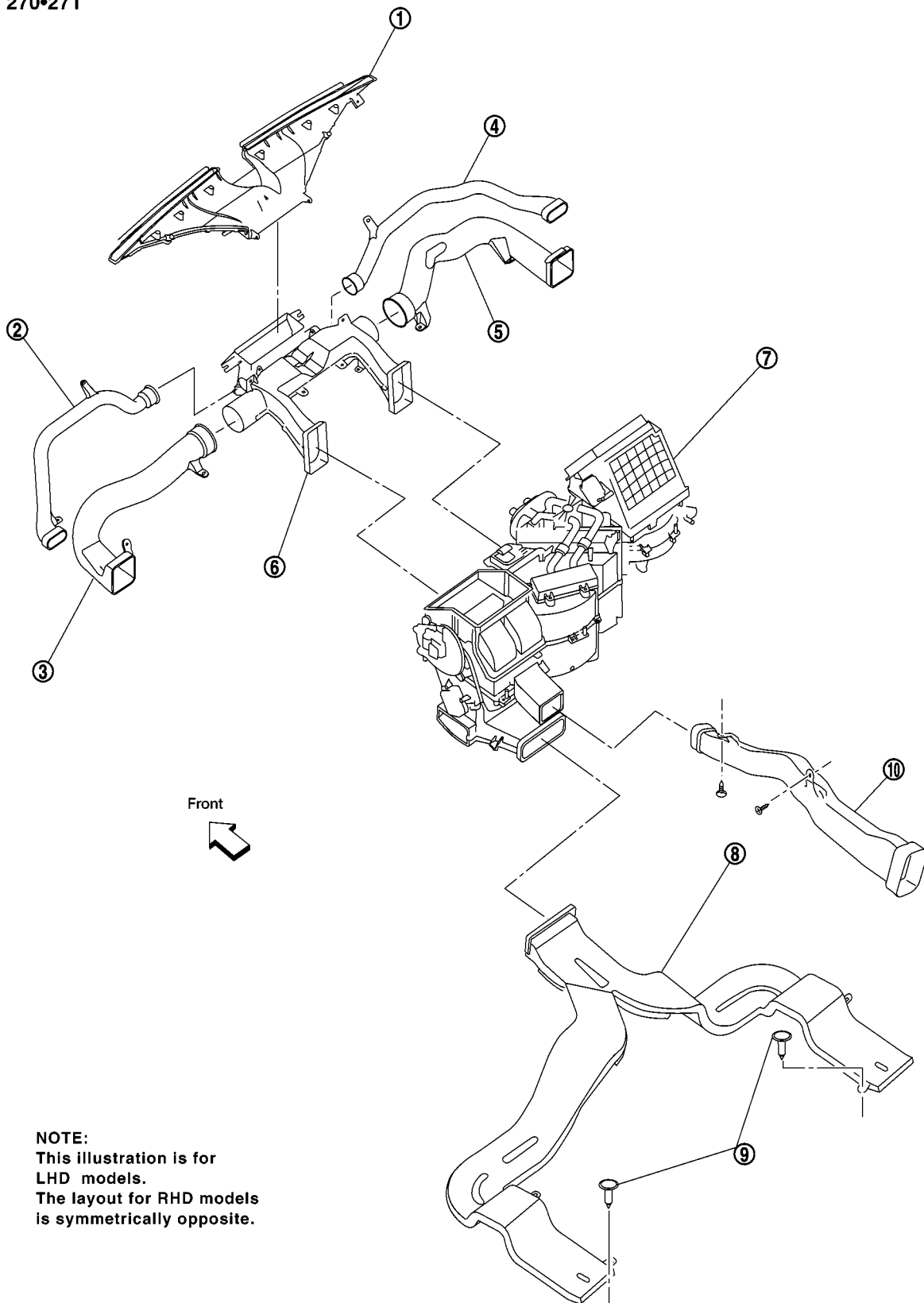
PFP:27860

### Components

EJS005H8

#### Ducts - Heater and Cooling Unit Assembly

SEC. 270•271



**NOTE:**  
This illustration is for  
LHD models.  
The layout for RHD models  
is symmetrically opposite.

A  
B  
C  
D  
E  
F  
G  
H  
I  
MTC  
K  
L  
M

## DUCTS AND GRILLES

---

- |                                     |                          |                           |
|-------------------------------------|--------------------------|---------------------------|
| 1. Defroster nozzle                 | 2. LH side demister duct | 3. LH ventilator duct     |
| 4. RH side demister duct            | 5. RH ventilator duct    | 6. Center ventilator duct |
| 7. Heater and cooling unit assembly | 8. Floor duct            | 9. Clips                  |
| 10. Heat duct                       |                          |                           |

# DUCTS AND GRILLES

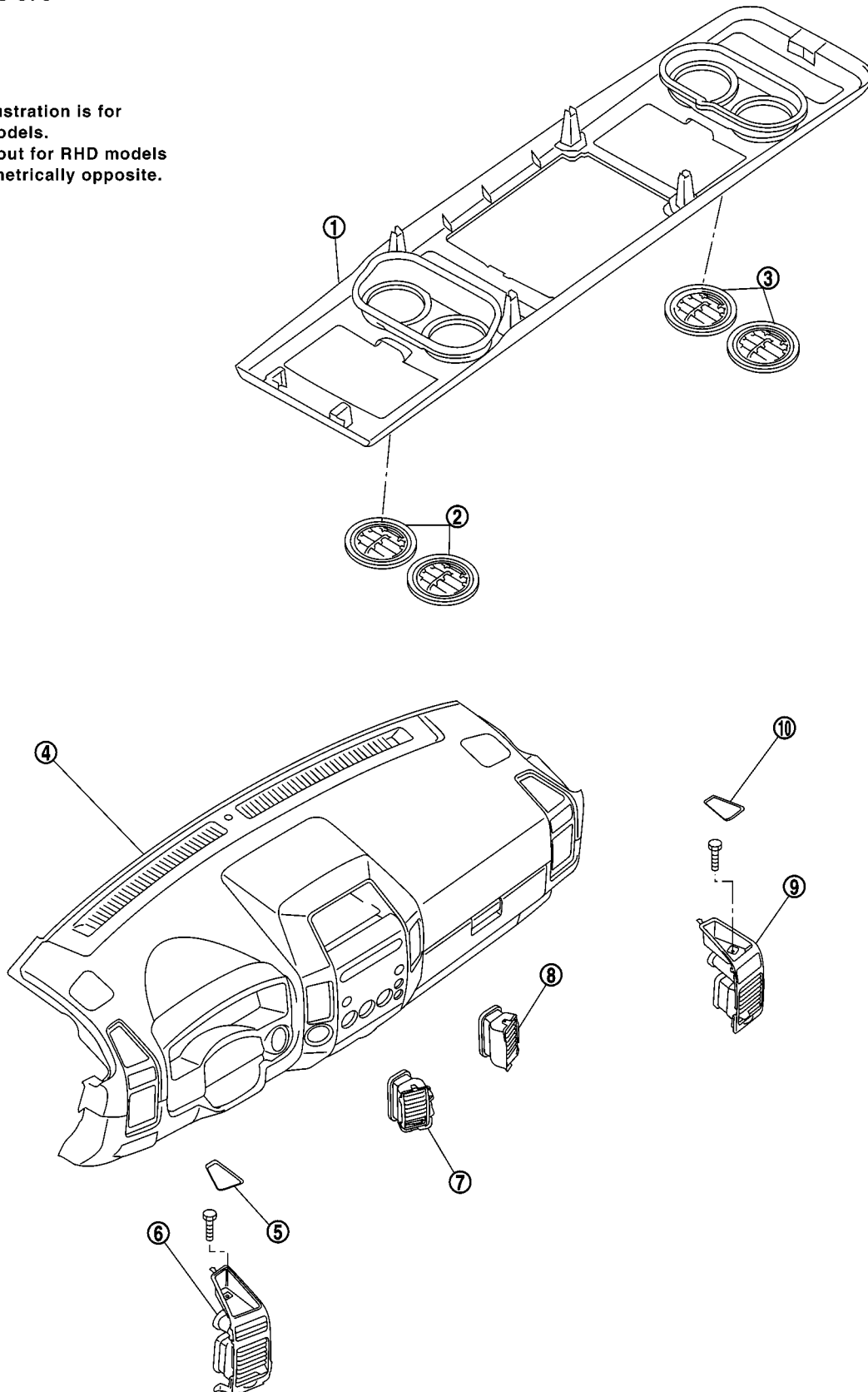
## Grilles

SEC. 685•970

**NOTE:**

This illustration is for  
LHD models.

The layout for RHD models  
is symmetrically opposite.



A  
B  
C  
D  
E  
F  
G  
H  
I  
MTC  
K  
L  
M

- |                                |   |   |
|--------------------------------|---|---|
| 1. Overhead console trim panel | 2. Overhead console front grilles (front) | 3. Overhead console rear grilles (rear)   |
| 4. Instrument panel            | 5. Storage tray bottom cover (LH)         | 6. LH side ventilator and demister grille |

MJIB0251E

# DUCTS AND GRILLES

7. LH ventilator grille

8. RH ventilator grille

9. RH side ventilator and demister grille

10. Storage tray bottom cover (RH)

## Removal and Installation

### CENTER CONSOLE HEAT DUCT AND REAR FINISHER ASSEMBLY GRILLE

EJS005H9

#### Removal

The center console must be removed and disassembled to remove the heat duct and rear finisher assembly grille. Refer to [IP-10, "Removal and Installation"](#).

#### Installation

Installation is in the reverse order of removal.

### DEFROSTER NOZZLE

#### Removal

1. Remove the instrument panel trim. Refer to [IP-10, "Removal and Installation"](#).
2. Remove the defroster nozzle.

#### Installation

Installation is in the reverse order of removal.

### RH AND LH SIDE DEMISTER DUCT

#### Removal

1. Remove the instrument panel trim. Refer to [IP-10, "Removal and Installation"](#).
2. Remove the RH or LH side demister duct.

#### Installation

Installation is in the reverse order of removal.

### RH AND LH VENTILATOR DUCT

#### Removal

1. Remove the instrument panel trim. Refer to [IP-10, "Removal and Installation"](#).
2. Remove the RH or LH ventilator duct.

#### Installation

Installation is in the reverse order of removal.

### CENTER VENTILATOR DUCT

#### Removal

1. Remove the instrument panel trim. Refer to [IP-10, "Removal and Installation"](#).
2. Remove the defroster nozzle.
3. Remove the RH and LH side demister ducts.
4. Remove the RH and LH ventilator ducts.
5. Remove the center ventilator duct.

#### Installation

Installation is in the reverse order of removal.

### FLOOR DUCT

#### Removal

1. Remove the floor carpet. Refer to [EI-38, "Removal and Installation"](#).
2. Remove the two clips and remove the floor duct.

#### Installation

Installation is in the reverse order of removal.

### GRILLES

#### Removal

1. Remove the interior trim panel as necessary. Refer to [IP-10, "Removal and Installation"](#).
2. Remove the grille from the interior trim panel.

# DUCTS AND GRILLES

**NOTE:**  
To remove the overhead console front and rear grilles, turn the grille counter-clockwise to release the grille from the overhead console trim panel.

**Installation**

Installation is in the reverse order of removal.

A  
B  
C  
D  
E  
F  
G  
H  
I  
MTC  
K  
L  
M

# REFRIGERANT LINES

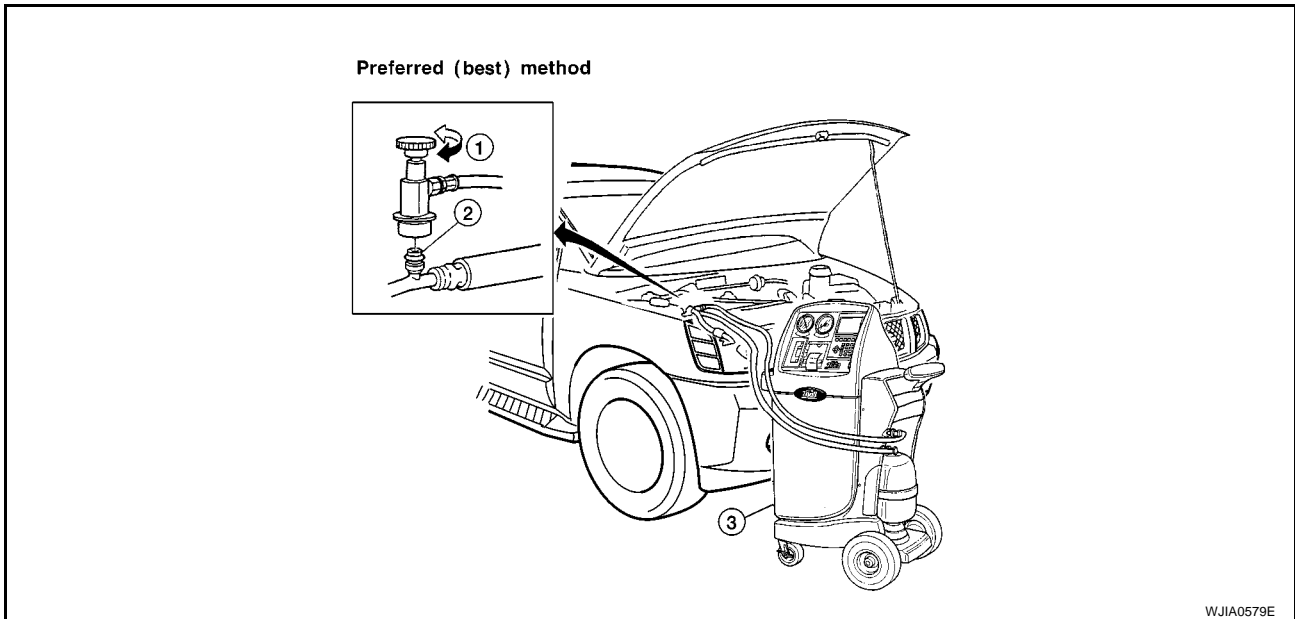
## REFRIGERANT LINES

PFP:92600

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

EJS005HA

#### Discharging Refrigerant

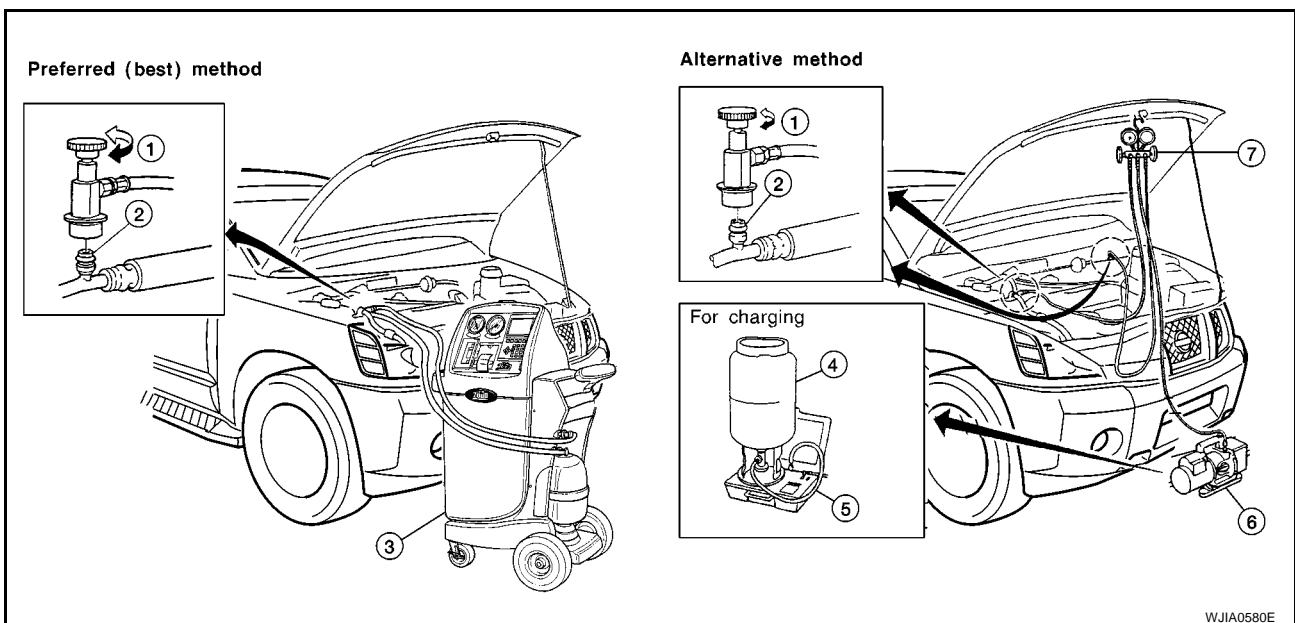


1. Shut-off valve
2. A/C service valve
3. Recovery/Recycling equipment ACR 2000 (J-43600) with refrigerant identifier

#### **WARNING:**

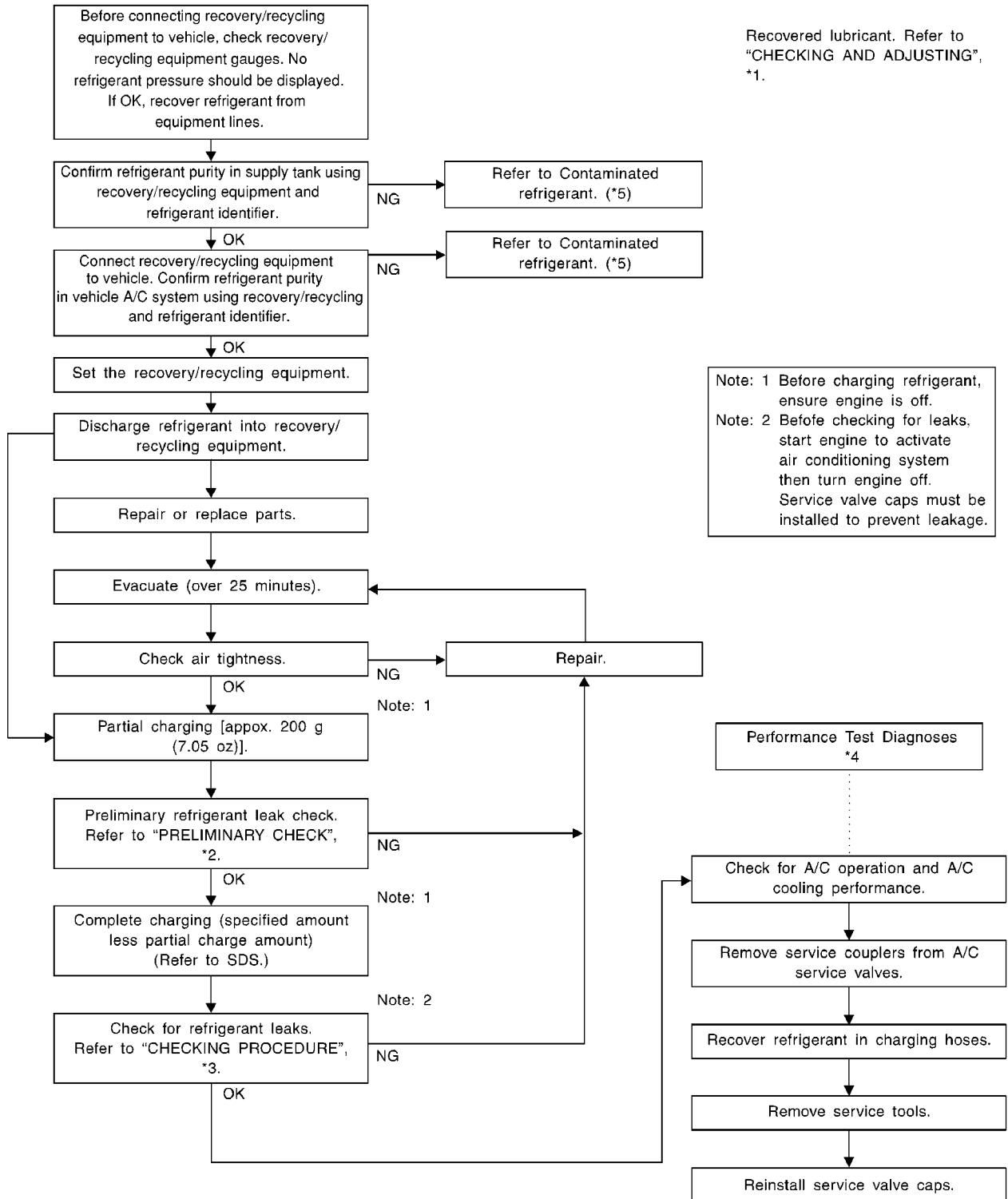
Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.

#### Evacuating System and Charging Refrigerant



1. Shut-off valve
2. A/C service valve
3. Recovery/Recycling equipment ACR 2000 (J-43600) with refrigerant identifier
4. Refrigerant container (HFC-134a)
5. Weight scale (J-39650)
6. Evacuating vacuum pump (J-39699)
7. Manifold gauge set (J-39183)

# REFRIGERANT LINES



\*1 [MTC-24, "CHECKING AND ADJUSTING"](#).

\*4 [MTC-87, "PERFORMANCE TEST DIAGNOSES"](#).

\*2 [MTC-131, "Checking for Refrigerant Leaks"](#).

\*5 [MTC-4, "Contaminated Refrigerant"](#).

\*3 [MTC-131, "Checking for Refrigerant Leaks"](#).

WJIA0530E

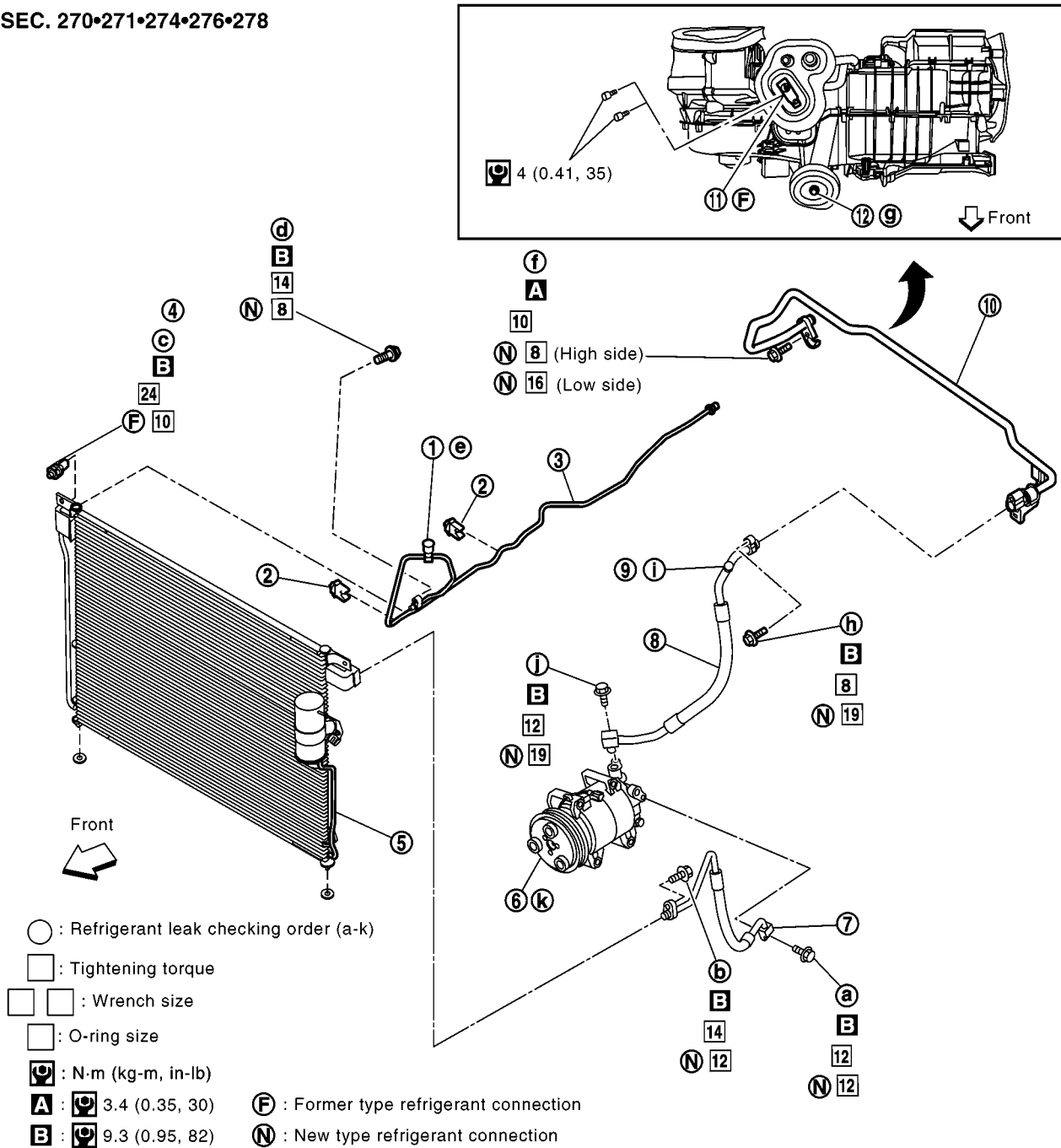
# REFRIGERANT LINES

## Components

EJS005HB

### A/C Compressor and Condenser —LHD Models—

SEC. 270•271•274•276•278

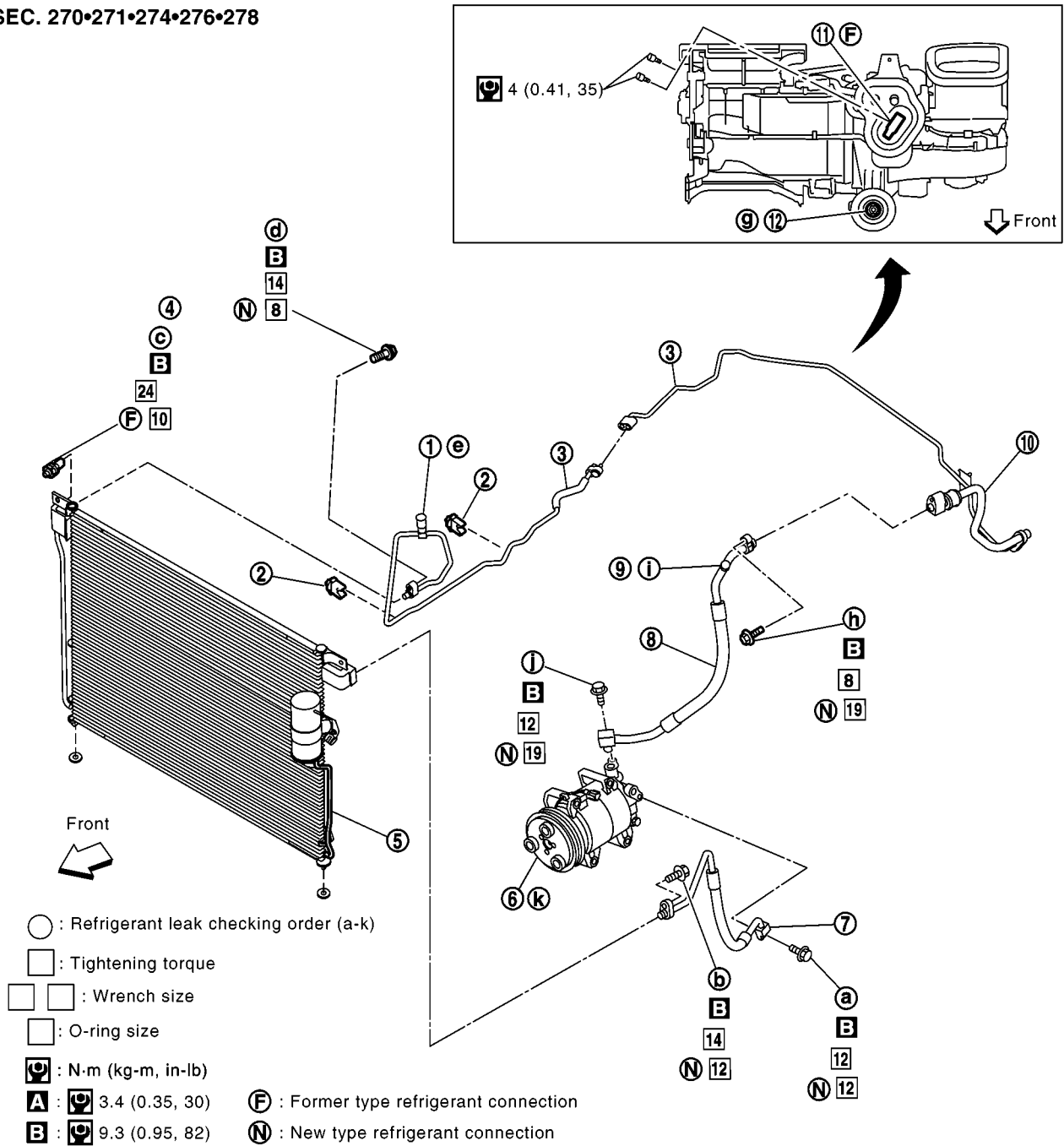


MJIB0276E

# REFRIGERANT LINES

## A/C Compressor and Condenser —RHD Models—

SEC. 270•271•274•276•278



- |                                    |                                   |                               |
|------------------------------------|-----------------------------------|-------------------------------|
| 1. High-pressure service valve     | 2. Clip                           | 3. High-pressure A/C pipe     |
| 4. Refrigerant pressure sensor     | 5. Condenser                      | 6. Compressor shaft seal      |
| 7. High-pressure flexible A/C hose | 8. Low-pressure flexible A/C hose | 9. Low-pressure service valve |
| 10. Low-pressure A/C pipe          | 11. Expansion valve               | 12. A/C drain hose            |

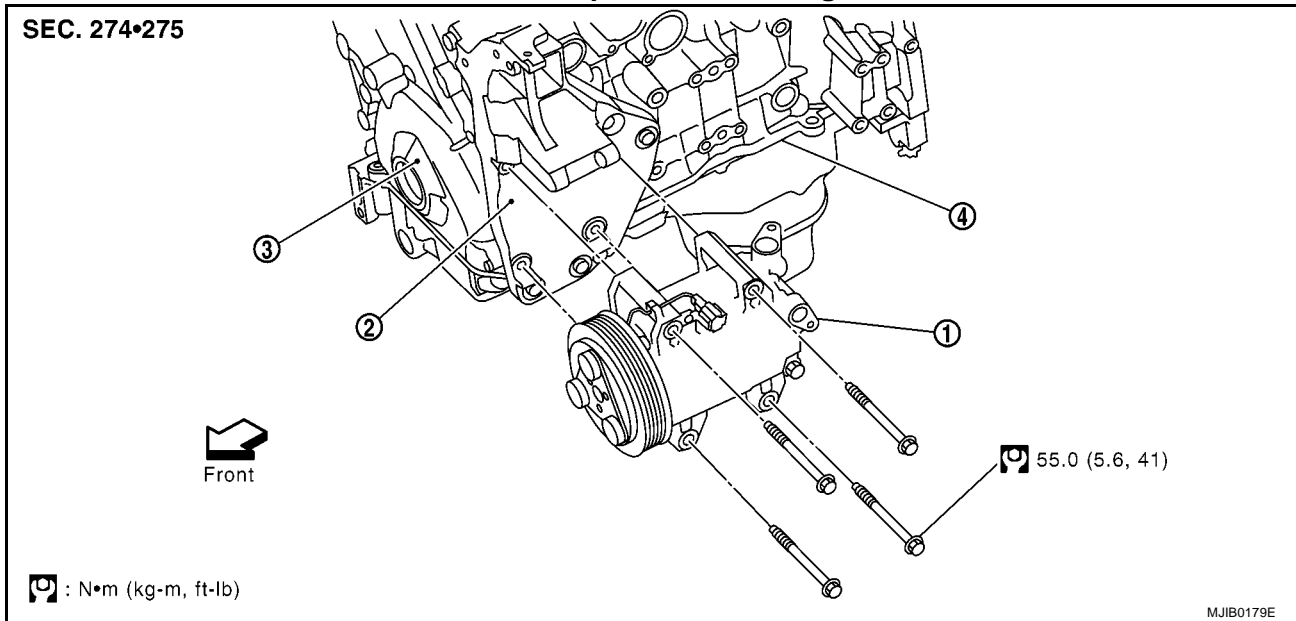
MJIB0277E

# REFRIGERANT LINES

## Removal and Installation for Compressor

EJS005HC

### A/C Compressor Mounting



1. Compressor
2. Alternator and A/C compressor bracket
3. Timing chain case
4. Cylinder block

### REMOVAL

1. Discharge the refrigerant. Refer to [MTC-118, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the front right wheel and tire assembly. Refer to [WT-5, "Rotation"](#).
3. Remove the engine under cover and the splash shield using power tool.
4. Remove the engine air cleaner and air ducts. Refer to [EM-15, "AIR CLEANER AND AIR DUCT"](#).
5. Remove the drive belt. Refer to [EM-12, "DRIVE BELTS"](#).
6. Disconnect the compressor electrical connector.
7. Disconnect the high-pressure flexible hose and low-pressure flexible hose from the compressor.

#### CAUTION:

**Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.**

8. Remove the compressor bolts and nut using power tools.

### INSTALLATION

Installation is in the reverse order of removal.

#### CAUTION:

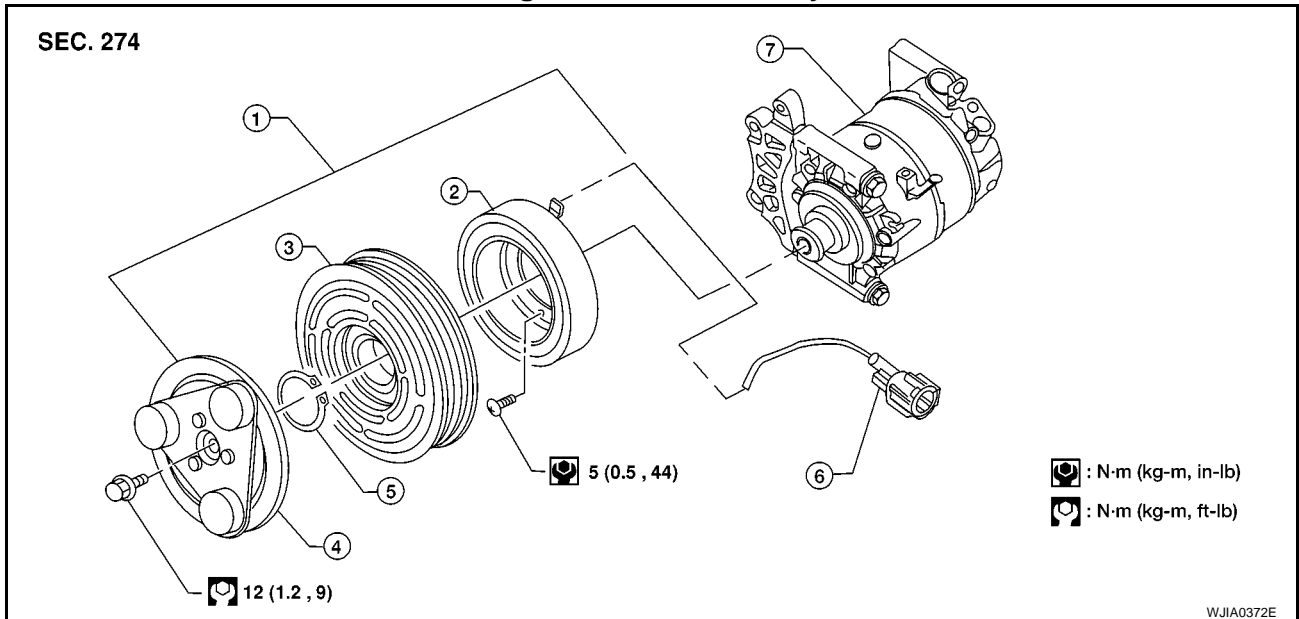
- Replace the O-ring of the low-pressure flexible hose and high-pressure flexible hose with a new one, apply compressor oil to the O-rings before installation.
- After recharging the A/C system with refrigerant, check for leaks.

# REFRIGERANT LINES

## Removal and Installation for Compressor Clutch

EJS005HD

### Magnet Clutch Assembly

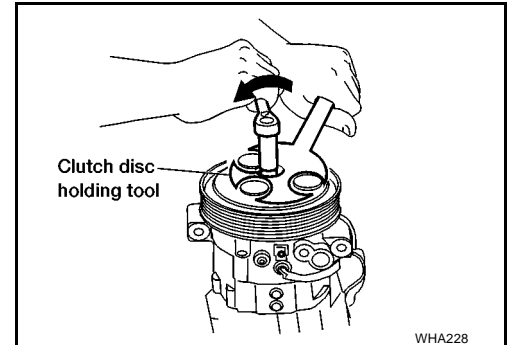


### REMOVAL

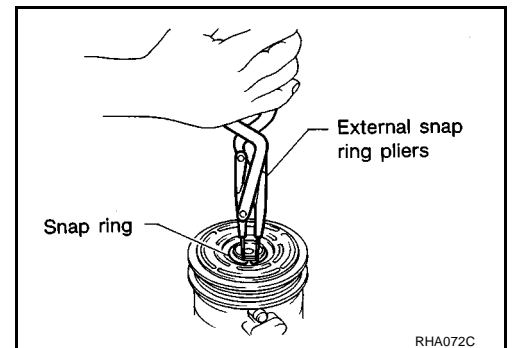
1. Remove the compressor. Refer to [MTC-122, "Removal and Installation for Compressor"](#)
2. Remove the center bolt while holding the clutch disc stationary using Tool as shown.

**Tool number : J-44614**

3. Remove the clutch disc.



4. Remove the snap ring using external snap ring pliers or suitable tool.

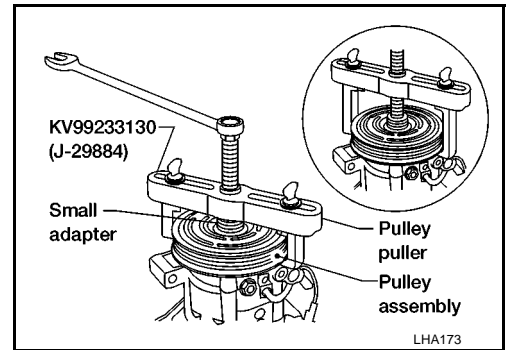


## REFRIGERANT LINES

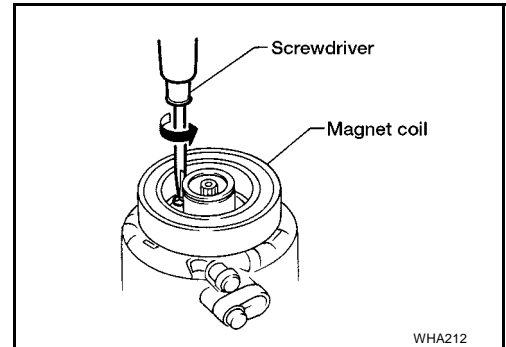
5. Remove the pulley using Tool with a small adapter. Position the small adapter on the end of the drive shaft and the center of the puller on the small adapter.

**CAUTION:**

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



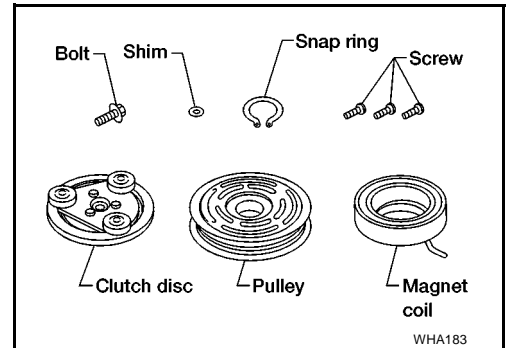
6. Remove the magnet coil harness clip using a screwdriver, remove the three magnet coil fixing screws and remove the magnet coil.



## INSPECTION

### Clutch Disc

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



### Pulley

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

### Coil

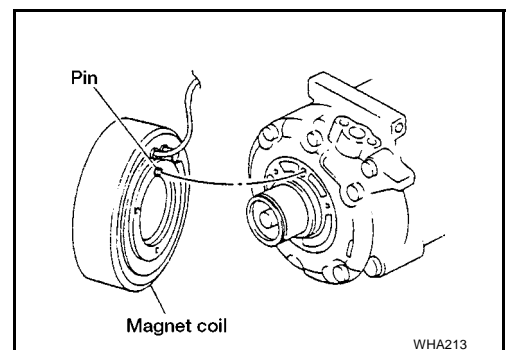
Check magnet coil for loose connections or any cracked insulation.

## INSTALLATION

1. Install the magnet coil.

**CAUTION:**

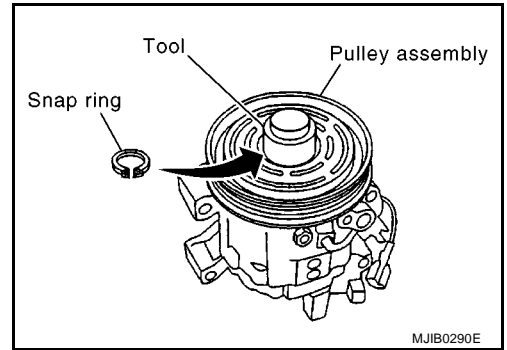
Be sure to align the magnet coil pin with the hole in the compressor front head.



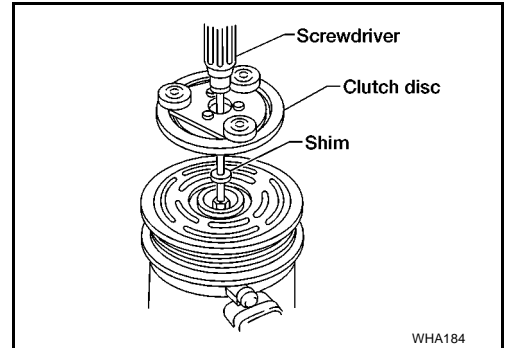
## REFRIGERANT LINES

2. Install the magnet coil harness clip using a screwdriver.
3. Install the pulley assembly using Tool and a wrench, then install the snap ring using snap ring pliers.

**Tool number : KV99106200**



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

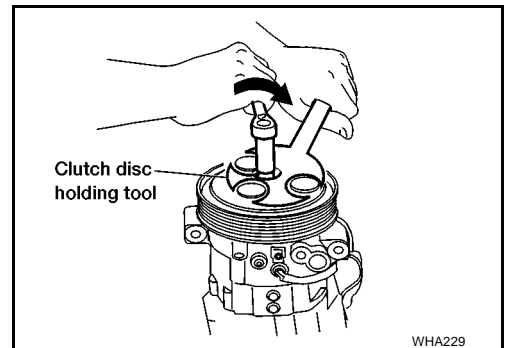


5. Install the clutch pulley bolt using Tool, to prevent the clutch disc from turning and tighten the bolt to specification. Refer to [MTC-120, "Components"](#).

**Tool number : J-44614**

**CAUTION:**

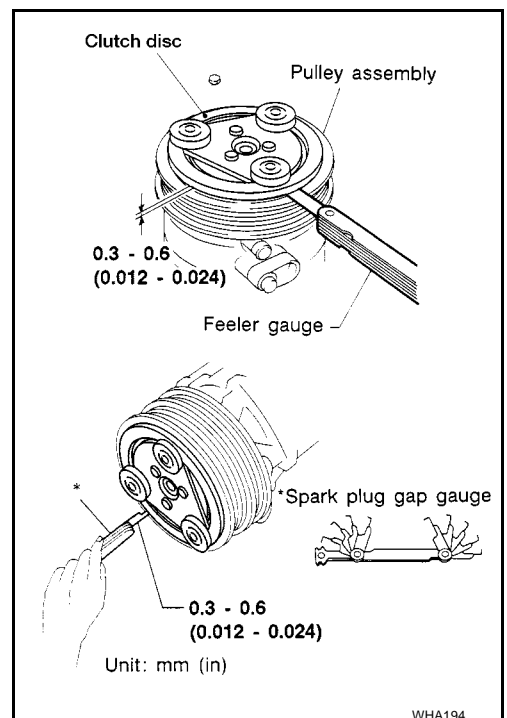
**After tightening the clutch pulley bolt, check that the clutch pulley rotates smoothly.**



6. Check the pulley clearance all the way around the clutch disc as shown.

**Clutch disc-to-pulley clearance : 0.3 - 0.6 mm  
(0.012 - 0.024 in)**

7. If the specified clearance is not obtained, replace the adjusting spacer to readjust.
8. Connect the compressor electrical connector.
9. Install the drive belt. Refer to [EM-12, "DRIVE BELTS"](#).
10. Install the engine under cover and the splash shield.



# REFRIGERANT LINES

## BREAK-IN OPERATION

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

## Removal and Installation for Low-pressure Flexible Hose

EJS005HE

### REMOVAL

1. Remove the engine room cover using power tools.
2. Remove the engine air cleaner and air ducts. Refer to [EM-15, "AIR CLEANER AND AIR DUCT"](#) .
3. Remove the cowl top extension. Refer to [EI-20, "COWL TOP"](#) .
4. Discharge the refrigerant. Refer to [MTC-118, "HFC-134a \(R-134a\) Service Procedure"](#) .

#### CAUTION:

**Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.**

5. Remove the low-pressure flexible hose. Refer to [MTC-120, "Components"](#) .

### INSTALLATION

Installation is in the reverse order of removal.

Refer to [MTC-120, "Components"](#) .

#### CAUTION:

- Replace the O-ring of the low-pressure flexible hose with a new one, then apply compressor oil to it when installing it.
- After charging refrigerant, check for leaks.

## Removal and Installation for High-pressure Flexible Hose

EJS005HF

### REMOVAL

1. Remove the engine under cover.
2. Remove the engine air cleaner and air ducts. Refer to [EM-15, "AIR CLEANER AND AIR DUCT"](#) .
3. Discharge the refrigerant. Refer to [MTC-118, "HFC-134a \(R-134a\) Service Procedure"](#) .
4. Remove the high-pressure flexible hose. Refer to [MTC-120, "Components"](#) .

#### CAUTION:

**Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.**

### INSTALLATION

Installation is in the reverse order of removal.

Refer to [MTC-120, "Components"](#) .

#### CAUTION:

- Replace the O-ring of the high-pressure flexible hose with a new one, then apply compressor oil to it when installing it.
- After charging refrigerant, check for leaks.

## Removal and Installation for High-pressure Pipe

EJS005HG

### REMOVAL

1. Remove the cowl top extension. Refer to [EI-20, "COWL TOP"](#) .
2. Disconnect the battery negative cable.
3. Reposition the IPDM E/R aside.
4. Remove the front right wheel and tire assembly. Refer to [WT-5, "Rotation"](#) .
5. Position aside the front floor insulator.
6. Discharge the refrigerant. Refer to [MTC-118, "HFC-134a \(R-134a\) Service Procedure"](#) .
7. Remove the low pressure pipe. Refer to [MTC-127, "Removal and Installation for Low-pressure Pipe"](#) .
8. Remove the high-pressure pipe. Refer to [MTC-120, "Components"](#) .

#### CAUTION:

**Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.**

### INSTALLATION

Installation is in the reverse order of removal.

Refer to [MTC-120, "Components"](#) .

# REFRIGERANT LINES

## CAUTION:

- Replace the O-ring of the high-pressure pipe with a new one, then apply compressor oil to it when installing it.
- After charging refrigerant, check for leaks.

## Removal and Installation for Low-pressure Pipe

EJS005HH

### REMOVAL

1. Discharge the refrigerant. Refer to [MTC-118, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the cowl top and the cowl top extension. Refer to [EI-20, "COWL TOP"](#).
3. Remove the low-pressure pipe. Refer to [MTC-120, "Components"](#).

## CAUTION:

Cap or wrap the joint of the pipes with suitable material such as vinyl tape to avoid the entry of air.

### INSTALLATION

Installation is in the reverse order of removal.

Refer to [MTC-120, "Components"](#).

## CAUTION:

- Replace the O-ring of the high/low-pressure pipe with a new one, then apply compressor oil to it when installing it.
- After charging refrigerant, check for leaks.

## Removal and Installation for Refrigerant Pressure Sensor

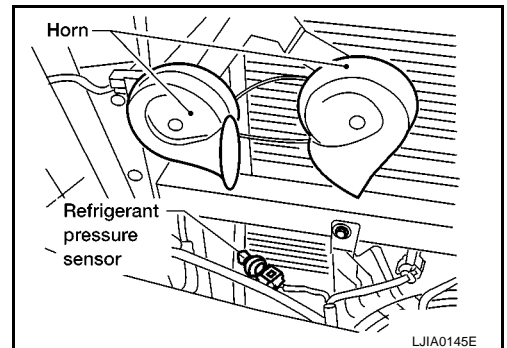
EJS005HI

### REMOVAL

1. Discharge the refrigerant. Refer to [MTC-118, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Disconnect the refrigerant pressure sensor electrical connector and remove the refrigerant pressure sensor from the condenser.

## CAUTION:

Be careful not to damage the condenser fins.



### INSTALLATION

Installation is in the reverse order of removal.

Refer to [MTC-120, "Components"](#).

## CAUTION:

- Be careful not to damage the condenser fins.
- Apply compressor oil to the O-ring of the refrigerant pressure sensor when installing it.
- After charging refrigerant, check for leaks.

## Removal and Installation for Condenser

EJS005HJ

### REMOVAL

1. Discharge the refrigerant. Refer to [MTC-118, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the radiator. Refer to [CO-11, "RADIATOR"](#).

## CAUTION:

Be careful not to damage the core surface of the condenser and the radiator.

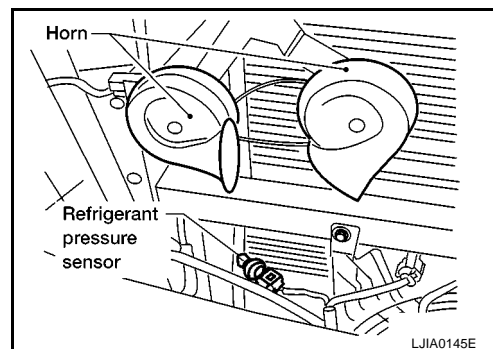
3. Disconnect the high-pressure flexible hose and the high-pressure pipe from the condenser.

## CAUTION:

Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.

## REFRIGERANT LINES

4. Disconnect the refrigerant pressure sensor connector.
  - Remove the refrigerant pressure sensor from the condenser as necessary.
5. Lift the condenser out of the mounting grommets to remove the condenser.



## INSTALLATION

Installation is in the reverse order of removal.

Refer to [MTC-120, "Components"](#) .

### CAUTION:

- Replace the O-rings of the high-pressure pipe and the high-pressure flexible hose with new ones, then apply compressor oil to them after installing them.
- After charging refrigerant, check for leaks.
- Replace the grommets as necessary.

# REFRIGERANT LINES

## Removal and Installation for Evaporator

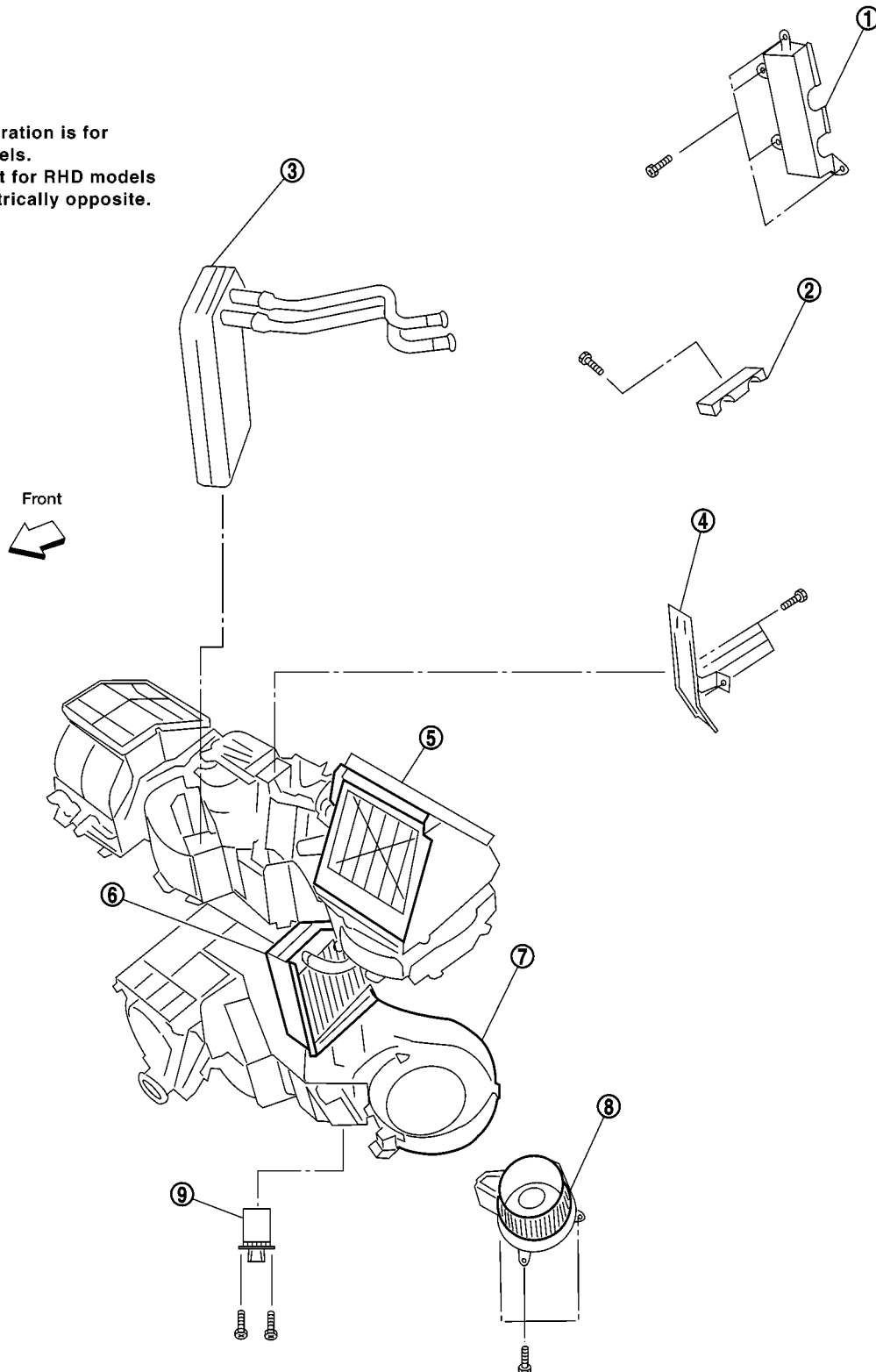
EJS005HK

### Heater and Cooling Unit Assembly

SEC. 271

**NOTE:**

This illustration is for LHD models.  
The layout for RHD models is symmetrically opposite.



- |                                       |                                       |                          |
|---------------------------------------|---------------------------------------|--------------------------|
| 1. Heater core cover                  | 2. Heater core pipe bracket           | 3. Heater core           |
| 4. Upper bracket                      | 5. Upper heater and cooling unit case | 6. A/C evaporator        |
| 7. Lower heater and cooling unit case | 8. Blower motor                       | 9. Blower motor resistor |

MJIB0252E

# REFRIGERANT LINES

## REMOVAL

1. Remove the heater core. Refer to [MTC-106, "HEATER CORE"](#) .
2. Remove the defroster mode door arm.
3. Separate the heater core and cooling unit case.
4. Remove the evaporator.

## INSTALLATION

Installation is in the reverse order of removal.

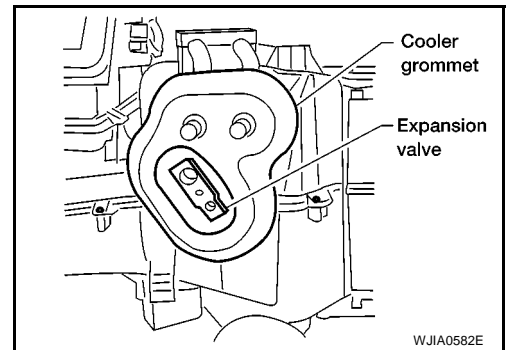
### CAUTION:

Replace the O-rings on the low-pressure flexible hose and the high-pressure pipe with new ones. Apply compressor oil to the O-rings before installing them.

## Removal and Installation for Expansion Valve REMOVAL

EJS005HM

1. Discharge the refrigerant. Refer to [MTC-118, "HFC-134a \(R-134a\) Service Procedure"](#) .
2. Remove the heater and cooling unit assembly. Refer to [MTC-103, "HEATER & COOLING UNIT ASSEMBLY"](#) .
3. Remove the cooler grommet.
4. Remove the expansion valve.



## INSTALLATION

Installation is in the reverse order of removal.

**Expansion valve bolts** : 4 N·m (0.41 kg-m, 35 in-lb)

**A/C refrigerant pipe to expansion valve bolt** : Refer to [MTC-120, "Components"](#)

### CAUTION:

- Replace the O-rings on the A/C refrigerant pipes with new ones, then apply compressor oil to them when installing them.
- After charging refrigerant, check for leaks.

## Checking for Refrigerant Leaks

EJS0062F

Perform a visual inspection of all refrigeration parts, fittings, hoses and components for signs of A/C lubricant leakage, damage and corrosion. A/C lubricant leakage may indicate an area of refrigerant leakage. Allow extra inspection time in these areas when using either an electronic refrigerant leak detector or fluorescent dye leak detector.

If dye is observed, confirm the leak with an electronic refrigerant leak detector. It is possible a prior leak was repaired and not properly cleaned.

When searching for leaks, do not stop when one leak is found but continue to check for additional leaks at all system components and connections.

When searching for refrigerant leaks using an electronic leak detector, move the probe along the suspected leak area at 1 to 2 inches per second and no further than 1/4 inch from the component.

### CAUTION:

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

## Checking System for Leaks Using the Fluorescent Leak Detector

EJS0062G

1. Check A/C system for leaks using the UV lamp and safety goggles [SST: 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 expansion valve) 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, with the UV lamp for dye residue.
3. After the leak is repaired, remove any residual dye using dye cleaner [SST: J-43872] to prevent future misdiagnosis.
4. Perform a system performance check and verify the leak repair with an approved electronic refrigerant leak detector.

### NOTE:

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 with any substance. This can also cause false readings and may damage the detector.

## Dye Injection

EJS0062H

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

1. Check A/C system static (at rest) pressure. Pressure must be at least 345 kPa (3.45 bar, 3.52 kg/cm<sup>2</sup>, 50 psi).
2. Pour one bottle (1/4 ounce / 7.4 cc) of the A/C refrigerant dye into the injector tool [SST: J-41459].
3. Connect the injector tool to the A/C Low-pressure side service fitting.
4. Start engine and switch A/C ON.
5. When the A/C operating (compressor running), inject one bottle (1/4 ounce / 7.4 cc) of fluorescent dye through the low-pressure service valve using dye injector tool J-41459 (refer to the manufacture's operating instructions).
6. With the engine still running, disconnect the injector tool from the service fitting.

### CAUTION:

**Be careful 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.

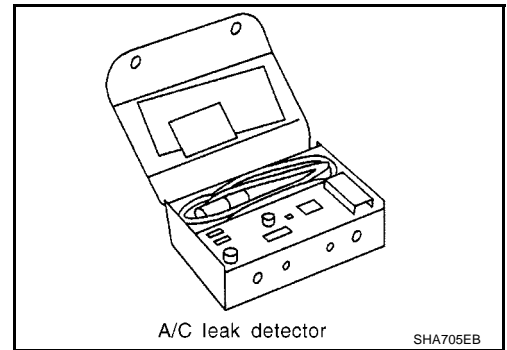
# REFRIGERANT LINES

## Electronic Refrigerant Leak Detector PRECAUTIONS FOR HANDLING LEAK DETECTOR

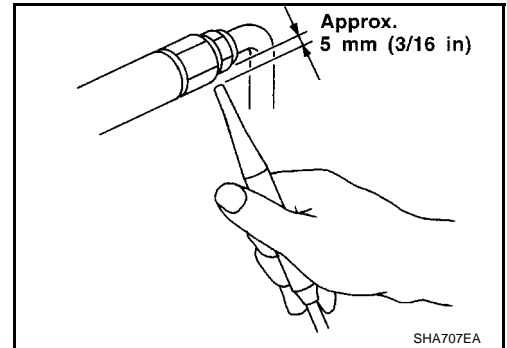
EJS0062I

When performing a refrigerant leak check, use an A/C electrical leak detector (SST) or equivalent. Ensure that the instrument is calibrated and set properly per the operating instructions.

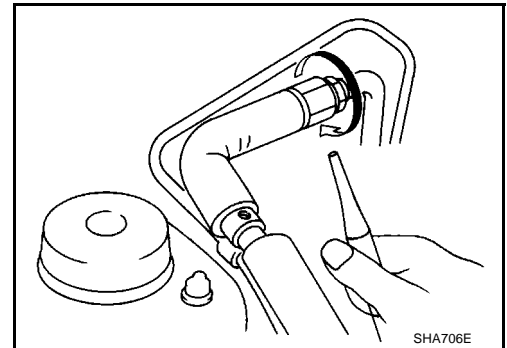
The leak detector is a delicate device. In order to use the leak detector properly, read the operating instructions and perform any specified maintenance.



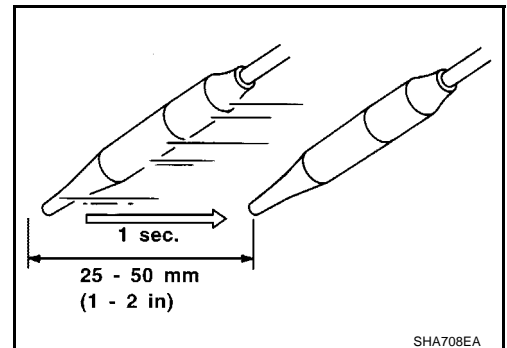
1. Position probe approximately 5 mm (3/16 in) away from point to be checked.



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



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



# REFRIGERANT LINES

## CHECKING PROCEDURE

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

1. Turn engine OFF.
2. Connect a suitable A/C manifold gauge set (SST) to the A/C service valves.
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.45 bar, 3.52 kg/cm<sup>2</sup>, 50 psi) above 16°C. If less than specification, recover/evacuate and recharge the system with the specified amount of refrigerant.

### NOTE:

At temperatures below 16°C, leaks may not be detected since the system may not reach 345 kPa (3.45 bar, 3.52 kg/cm<sup>2</sup>, 50 psi).

4. Perform the leak test from the high-pressure side (compressor discharge a to evaporator inlet g) to the low-pressure side (evaporator drain hose h to shaft seal l). Refer to [MTC-120, "Components"](#). Perform a leak check for the following areas carefully. Clean the component to be checked and move the leak detected probe completely around the connection/component.

Compressor

Check the fitting of high- and low-pressure flexible hoses, relief valve and shaft seal.

Liquid tank

Check the refrigerant pressure sensor.

Service valves

Check all around the service valves. Ensure service valve caps are secured on the service valves (to prevent leaks).

### NOTE:

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

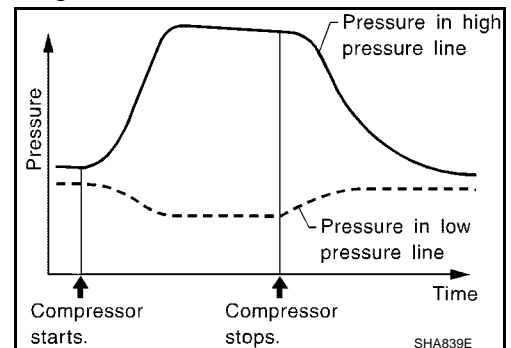
Cooling unit (Evaporator)

With engine OFF, turn blower fan on "High" for at least 15 seconds to dissipate any refrigerant trace in the cooling unit. Wait a minimum of 10 minutes accumulation time (refer to the manufacturer's recommended procedure for actual wait time) before inserting the leak detector probe into the drain hose.

Keep the probe inserted for at least 10 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 - 10.
7. Start engine.
8. Set the heater A/C control as follows;
  - a. A/C switch: ON
  - b. MODE control dial: VENT (Ventilation)
  - c. Intake door position: Recirculation
  - 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.



## REFRIGERANT LINES

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

## SERVICE DATA AND SPECIFICATIONS (SDS)

### SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

#### Service Data and Specifications (SDS) COMPRESSOR

EJS005HS

|                        |   |
|------------------------|---|
| Make                   | ZEXEL VALEO CLIMATE CONTROL                         |
| Model                  | DKS-17D   |
| Type                   | Swash plate   |
| Displacement           | 175.5 cm <sup>3</sup> (10.7 in <sup>3</sup> ) / rev |
| Cylinder bore × stroke | 30.5 mm (1.20 in) x 24.0 mm (0.94 in)               |
| Direction of rotation  | Clockwise (viewed from drive end)                   |
| Drive belt             | Poly V  |

#### LUBRICANT

|             |                 |  |
|-------------|-----------------|--|
| Make        |                 | ZEXEL VALEO CLIMATE CONTROL                |
| Model       |                 | DKS-17D                                    |
| Name        |                 | NISSAN A/C System Lubricant Type S (DH-PS) |
| Part number |                 | KLH00-PAGS0                                |
| Capacity    | Total in system | 290 m ℓ (10.2 Imp fl oz)                   |

#### REFRIGERANT

|          |                               |
|----------|-------------------------------|
| Type     | HFC-134a (R-134a)             |
| Capacity | 1080 ± 50 g (38.09 ± 1.76 oz) |

#### ENGINE IDLING SPEED

Refer to [EC-357, "General Specifications"](#).

#### BELT TENSION

Refer to [EM-13, "Deflection Adjustment"](#).

## SERVICE DATA AND SPECIFICATIONS (SDS)

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