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# 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”

EJS001RK

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. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. 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)

EJS001RL

#### **WARNING:**

- CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer [MTC-5, "Contaminated Refrigerant"](#) . To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.
- Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If lubricant other than that specified is used, compressor failure is likely to occur.
- The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:
  - 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. Remove HFC-134a (R-134a) from the A/C system using certified service equipment meeting requirements of SAE J2210 [HFC-134a (R-134a) recycling equipment] or J2209 [HFC-134a (R-134a) recycling equipment]. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.
  - Do not allow refrigerant lubricant to come in contact with styrofoam parts. Damage may result.

### Contaminated Refrigerant

EJS001RM

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

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does not have dedicated recovery equipment, you may contact a local refrigerant product retailer for available service. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.

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

## General Refrigerant Precautions

EJS001RN

### WARNING:

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

EJS001RO

- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety glasses to protect your eyes and enhance the visibility of the fluorescent dye.
- 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).
- For your safety and the customer's satisfaction, read and follow all manufacturer's operating instructions and precautions prior to performing work.
- A compressor shaft seal should not be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electronic refrigerant leak detector (J-41995).
- Always remove any dye from the leak area after repairs are complete to avoid a misdiagnosis during a future service.
- Do not allow dye to come into contact with painted body panels or interior components. If dye is spilled, clean immediately with the approved dye cleaner. Fluorescent dye left on a surface for an extended period of time **cannot be removed**.
- Do not spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Do not use more than one refrigerant dye bottle (1/4 ounce / 7.4 cc) per A/C system.
- Leak detection dyes for HFC-134a (R134a) and CFC-12 (R-12) A/C systems are different. Do not use HFC-134a (R134a) leak detection dye in CFC-12 (R-12) A/C systems or CFC-12 (R-12) leak detection dye in HFC-134a (R134a) A/C systems or A/C system damage may result.
- The fluorescent properties of the dye will remain for over three (3) years unless a compressor failure occurs.

# PRECAUTIONS

EJS001RP

## A/C Identification Label

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

AIR CONDITIONER NISSAN		
	REFRIGERANT	COMPRESSOR LUBRICANT
TYPE (PART NO.)	HFC 134a (R134a)	NISSAN LUMINOUS OIL TYPE DH-PS (KLH00-PAGSO)
AMOUNT	900 ± 50 g (1.98 ± 0.11 lbs)	220 ml (7.44 oz)

**CAUTION**  
PRECAUTION

- REFRIGERANT UNDER HIGH PRESSURE.
- SYSTEM TO BE SERVICED BY QUALIFIED PERSONNEL.
- IMPROPER SERVICE METHODS MAY CAUSE PERSONAL INJURY.
- CONSULT SERVICE MANUAL.
- THIS AIR CONDITIONER SYSTEM COMPLIES WITH SAE J-639.

Nissan Motor Corporation in USA, Carson, CA  
27090 52002

WJIA1232E

## Precautions for Refrigerant Connection

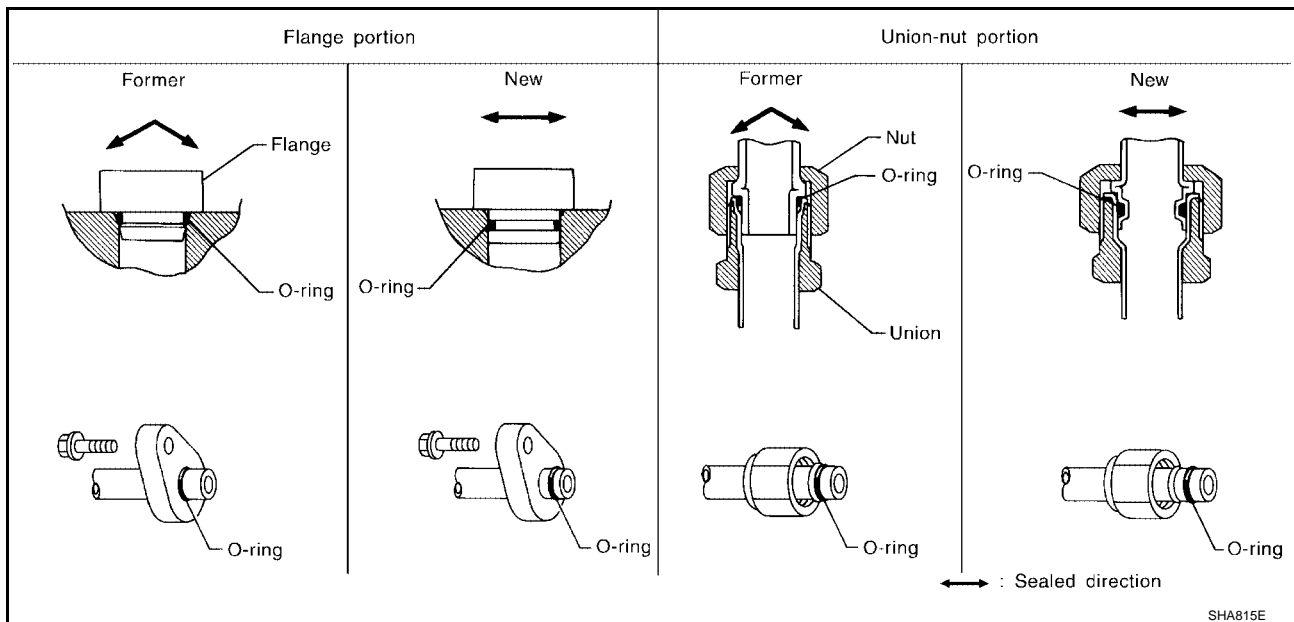
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A new type refrigerant connection has been introduced to all refrigerant lines except the following locations.

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

## FEATURES OF NEW TYPE REFRIGERANT CONNECTION

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

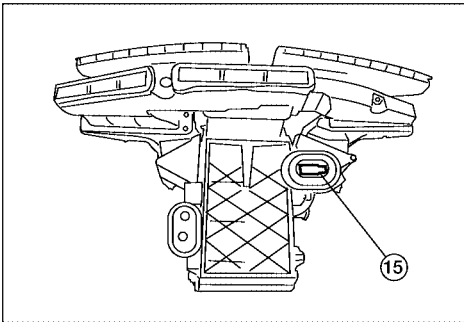
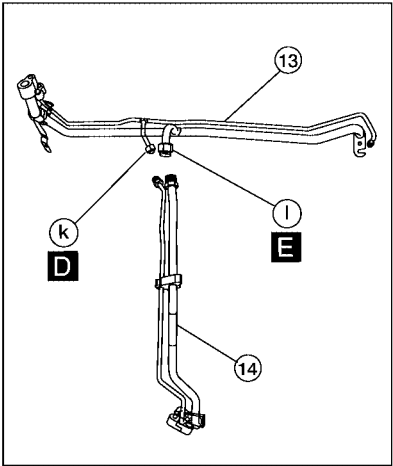
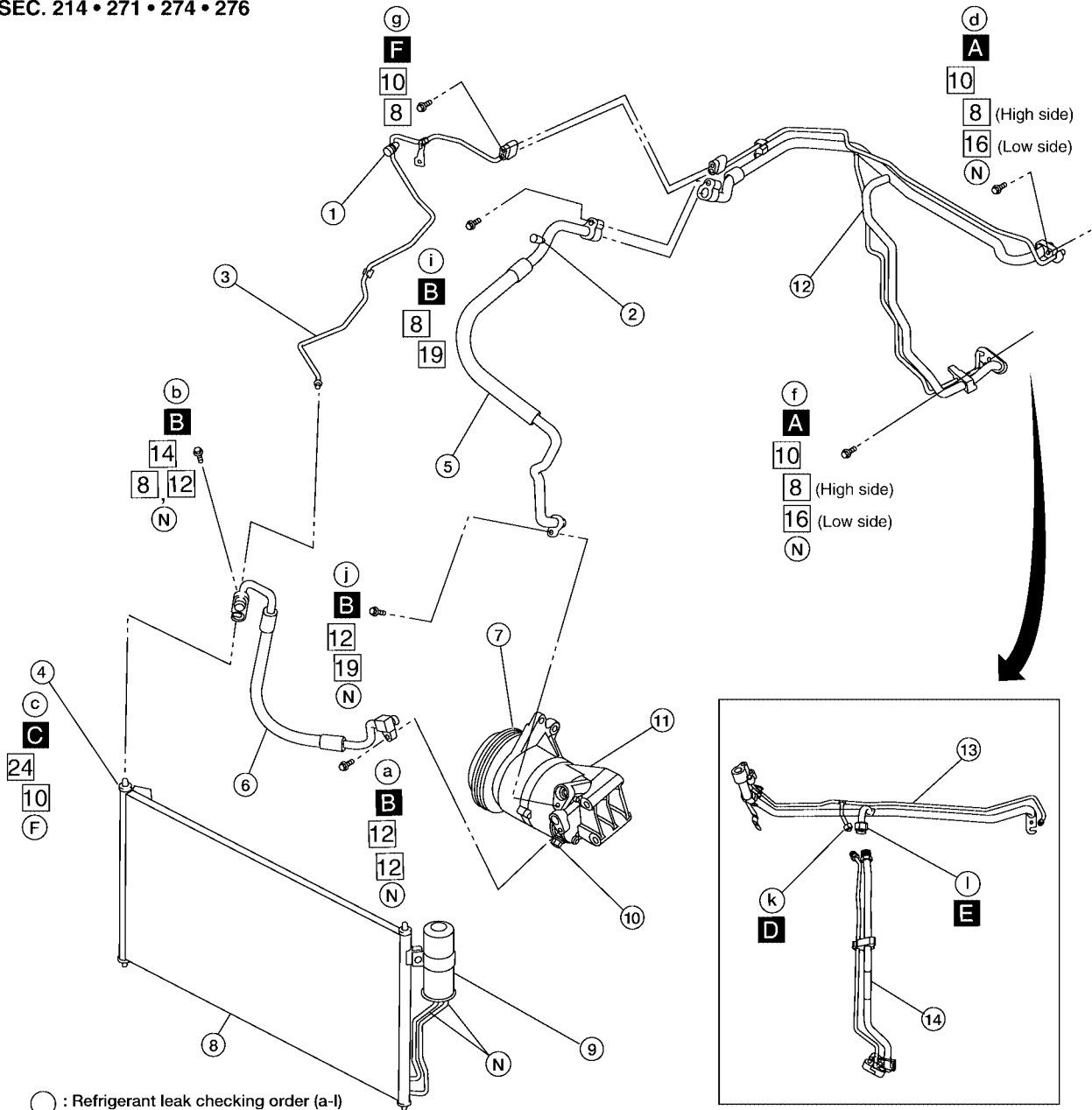


# PRECAUTIONS

## O-RING AND REFRIGERANT CONNECTION

### Front A/C Compressor and Condenser

SEC. 214 • 271 • 274 • 276



- : Refrigerant leak checking order (a-l)
- : Tightening torque
- □ : Wrench size
- : O-ring size
- ⊗ : N-m (kg-m, in-lb)
- ⊗ : N-m (kg-m, ft-lb)
- A** ⊗ : 6.8 (0.69 , 60)
- B** ⊗ : 14.2 (1.4 , 10)
- C** ⊗ : 10.8 (1.1 , 8)
- D** ⊗ : 18 (1.8 , 13)    ⊗ : Former type refrigerant connection
- E** ⊗ : 31 (3.2 , 23)    ⊗ : New type refrigerant connection
- F** ⊗ : 5.7 (0.58, 50)

WJIA1967E

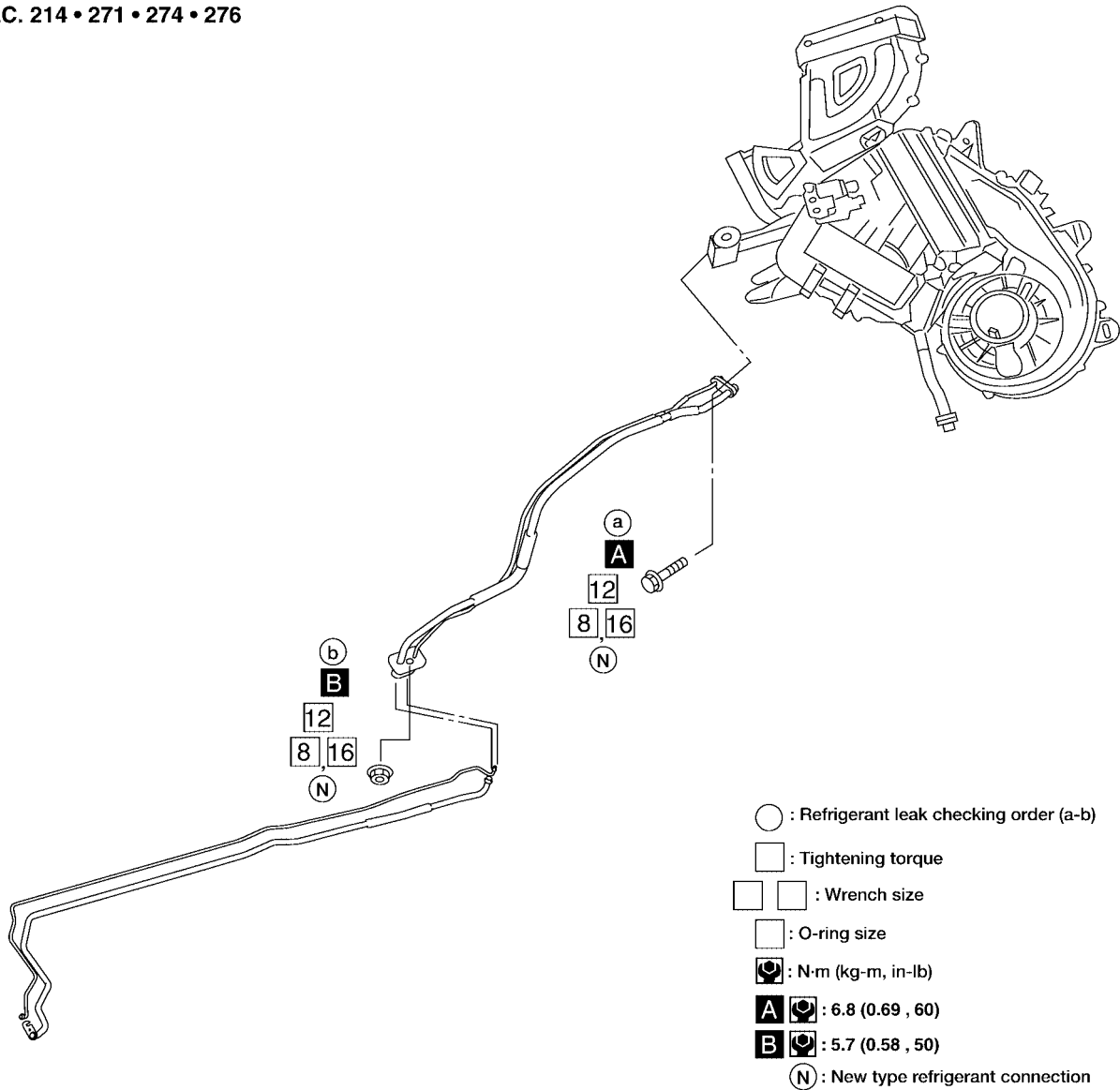


# PRECAUTIONS

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| 1. High-pressure service valve               | 2. Low-pressure service valve                | 3. High-pressure pipe                   |
| 4. Refrigerant pressure sensor               | 5. Low-pressure flexible hose                | 6. High-pressure flexible hose          |
| 7. Shaft seal                                | 8. Condenser                                 | 9. Liquid tank                          |
| 10. Pressure relief valve                    | 11. Compressor                               | 12. High/low pressure pipe (production) |
| 13. High/low pressure pipe - upper (service) | 14. High/low pressure pipe - lower (service) | 15. Expansion valve (front)             |

## Rear A/C

SEC. 214 • 271 • 274 • 276



- : Refrigerant leak checking order (a-b)
- : Tightening torque
- □ : Wrench size
- : O-ring size
- ⊗ : N-m (kg-m, in-lb)
- A** ⊗ : 6.8 (0.69 , 60)
- B** ⊗ : 5.7 (0.58 , 50)
- Ⓝ : New type refrigerant connection

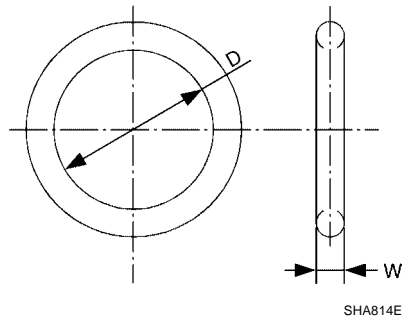
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### CAUTION:

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



Connec- tion 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.

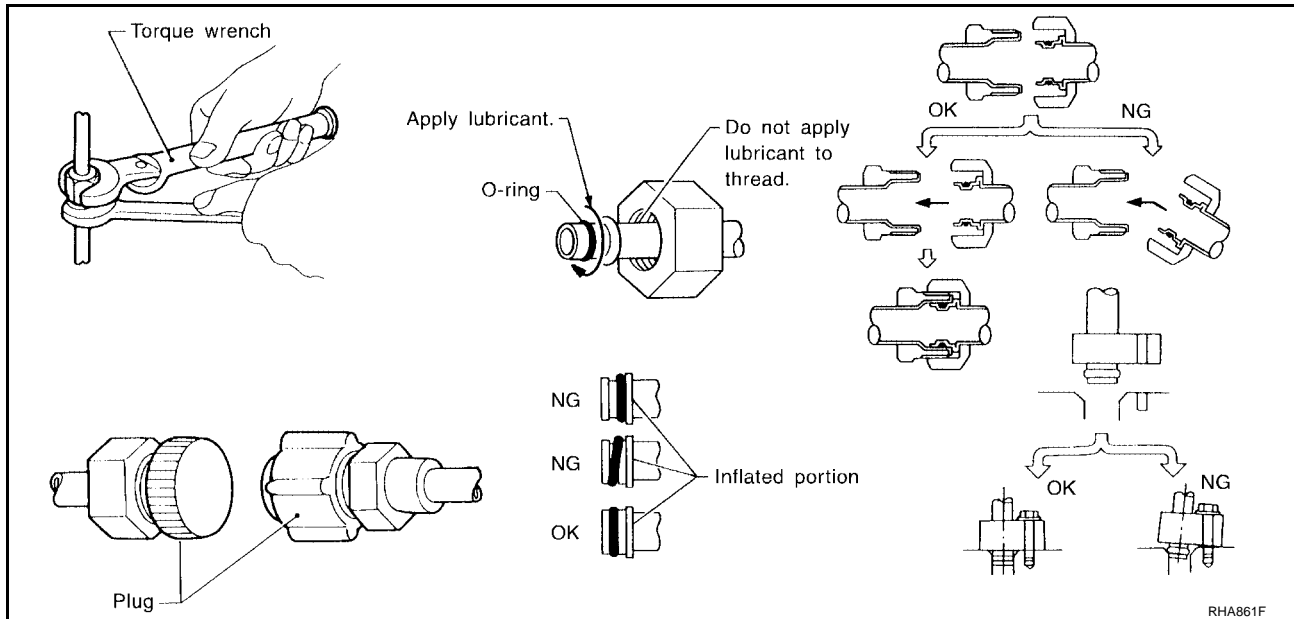
### CAUTION:

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.
- 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

EJS001RR

- 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-22, "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 5 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 1 hour.
- After replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation. Refer to [MTC-157, "Removal and Installation for Compressor Clutch"](#)

## Precautions for Service Equipment RECOVERY/RECYCLING EQUIPMENT

EJS001RS

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

## ELECTRONIC LEAK DETECTOR

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

# PRECAUTIONS

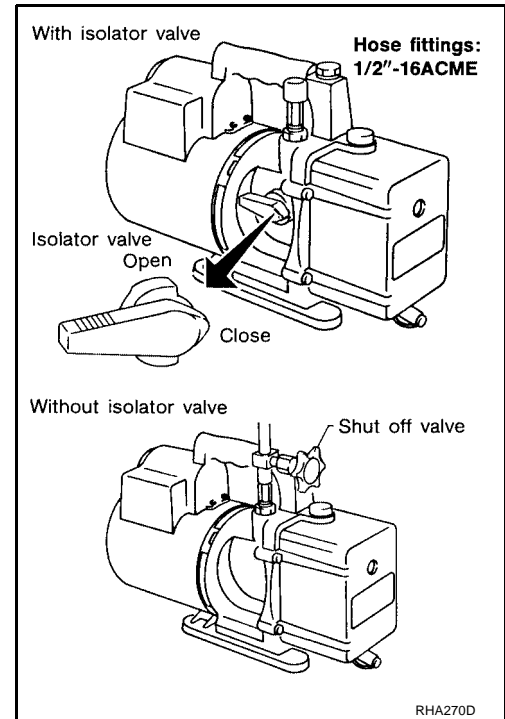
## VACUUM PUMP

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 situated near the hose-to-pump connection, as follows.

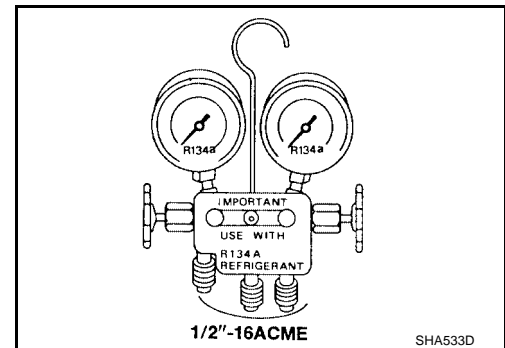
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has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

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



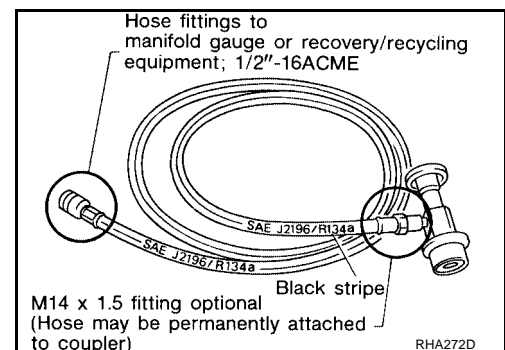
## MANIFOLD GAUGE SET

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



## SERVICE HOSES

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.

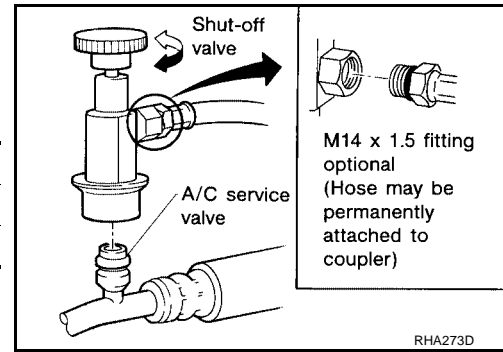


# PRECAUTIONS

## SERVICE COUPLERS

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

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



## 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.

## Wiring Diagrams and Trouble Diagnosis

EJS001RT

When you read wiring diagrams, refer to the following:

- [GI-13, "How to Read Wiring Diagrams"](#).
- [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).

When you perform trouble diagnosis, refer to the following:

- [GI-9, "How to Follow Trouble Diagnoses"](#).
- [GI-25, "How to Perform Efficient Diagnosis for an Electrical Incident"](#).

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# PREPARATION

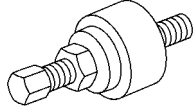
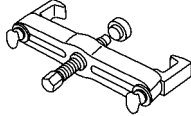
## PREPARATION

PFP:00002

### Special Service Tools

EJS001RU

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

Tool number (Kent-Moore No.) Tool name		Description
— (J-38873-A) Pulley installer	  LHA171	Installing pulley
KV99233130 (J-29884) Pulley puller	  LHA172	Removing pulley

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

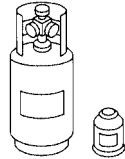

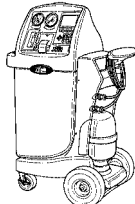
EJS0031K

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

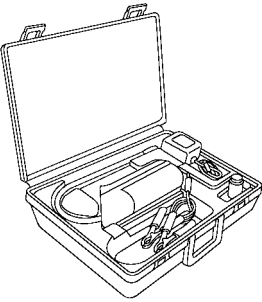
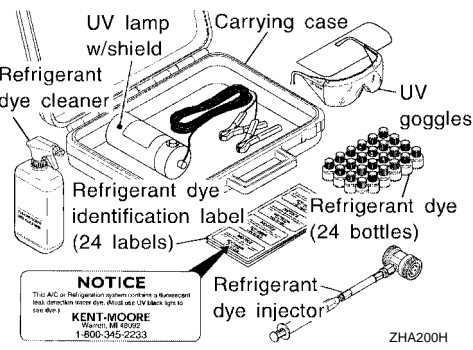
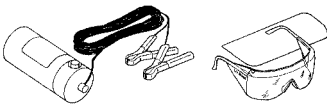

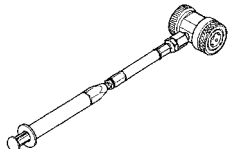

Separate and non-interchangeable service equipment must be used for handling each type of refrigerant/lubricant.

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

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

Tool number (Kent-Moore No.) Tool name		Description
HFC-134a (R-134a) ( — ) Refrigerant	  S-NT196	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size ● large container 1/2"-16 ACME
KLH00-PAGS1P ( — ) NISSAN A/C System Lubricant Type S (DH-PS)	  S-NT197	Type: Poly alkylene glycol oil (PAG), type S (DH-PS) Application: HFC-134a (R-134a) vane rotary compressors (NISSAN only) Lubricity: 40 m ℓ (1.4 US fl oz, 1.4 Imp fl oz)
KV991J0130 (ACR2005-NI) ACR5 A/C Service Center	  WJIA0293E	Refrigerant recovery, recycling and re-charging

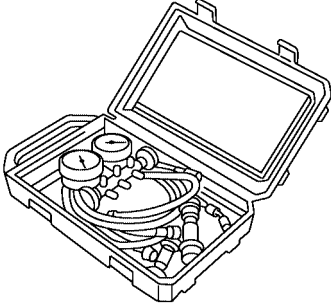
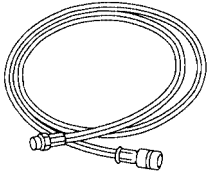
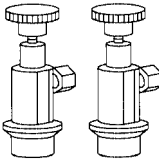

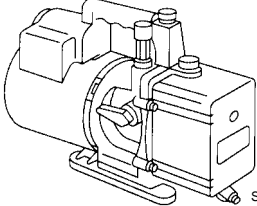
# PREPARATION

Tool number (Kent-Moore No.) Tool name	Description
<p>— (J-41995) Electronic refrigerant leak detector</p>	<p>Checking for refrigerant leaks (Power supply: DC 12V battery terminal)</p> <div style="text-align: center;">  <p>AHA281A</p> </div>
<p>— (J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) Refrigerant dye injector (J-41447) Quantity 24, 1/4 ounce bottles of HFC-134a (R-134a) fluorescent leak detection dye (J-43872) Refrigerant dye cleaner</p>	<p>Leak detection dye (Power supply: DC 12V battery terminal)</p> <div style="text-align: center;">  <p>ZHA200H</p> </div>
<p>— (J-42220) Fluorescent dye leak detector</p>	<p>Checking for refrigerant leaks when fluorescent dye is installed in A/C system. Includes: UV lamp and UV safety goggles (Power supply: DC 12V battery terminal)</p> <div style="text-align: center;">  <p>SHA438F</p> </div>
<p>— (J-41447) HFC-134a (R-134a) fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)</p>	<p>Application: For HFC-134a (R-134a) PAG oil Container: 1/4 ounce (7.4cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)</p> <div style="text-align: center;">  <p>Refrigerant dye (24 bottles)</p> <p>SHA439F</p> </div>
<p>— (J-41459) HFC-134a (R-134a) Dye injector Use with (J-41447) 1/4 ounce bottles</p>	<p>For injecting 1/4 ounce of fluorescent leak detection dye into A/C system.</p> <div style="text-align: center;">  <p>SHA440F</p> </div>
<p>— (J-43872) Refrigerant dye cleaner</p>	<p>For cleaning dye spills.</p> <div style="text-align: center;">  <p>SHA441F</p> </div>

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# PREPARATION

Tool number (Kent-Moore No.) Tool name	Description
<p>— (J-39183-C) Manifold gauge set (with hoses and couplers)</p>  <p style="text-align: right; font-size: small;">RJIA0196E</p>	<p>Identification:</p> <ul style="list-style-type: none"> <li>● The gauge face indicates R-134a.</li> <li style="padding-left: 20px;">Fitting size: Thread size</li> <li>● 1/2"-16 ACME</li> </ul>
<p>Service hoses:</p> <ul style="list-style-type: none"> <li>● (J-39500-72B) High side hose</li> <li>● (J-39500-72R) Low side hose</li> <li>● (J-39500-72Y) Utility hose</li> </ul>  <p style="text-align: right; font-size: small;">S-NT201</p>	<p>Hose colors:</p> <ul style="list-style-type: none"> <li>● Low side hose: Blue with black stripe</li> <li>● High side hose: Red with black stripe</li> <li>● Utility hose: Yellow with black stripe or green with black stripe</li> </ul> <p>Hose fitting to gauge:</p> <ul style="list-style-type: none"> <li>● 1/2"-16 ACME</li> </ul>
<p>Service couplers:</p> <ul style="list-style-type: none"> <li>● (J-39500-20A) High side coupler</li> <li>● (J-39500-24A) Low side coupler</li> </ul>  <p style="text-align: right; font-size: small;">S-NT202</p>	<p>Hose fitting to service hose:</p> <ul style="list-style-type: none"> <li>● M14 x 1.5 fitting is optional or permanently attached.</li> </ul>
<p>— (J-39699) Refrigerant weight scale</p>  <p style="text-align: right; font-size: small;">S-NT200</p>	<p>For measuring of refrigerant</p> <p>Fitting size - thread size:</p> <ul style="list-style-type: none"> <li>● 1/2" - 16 ACME</li> </ul>
<p>— (J-39649) Vacuum pump (Including the isolator valve)</p>  <p style="text-align: right; font-size: small;">S-NT203</p>	<p>Capacity:</p> <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> <p>Fitting size: Thread size</p> <ul style="list-style-type: none"> <li>● 1/2"-16 ACME</li> </ul>

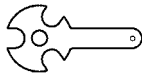
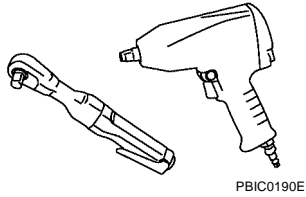
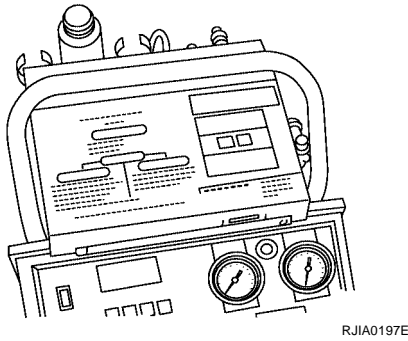
## Commercial Service Tools

EJS0031L



# PREPARATION

Tool number Tool name	Description	A
(J-41810-NI) Refrigerant identifier equipment (R-134a)	For checking refrigerant purity and system contamination	B C D
Power tool	Loosening bolts and nuts	E F
(J-44614) Clutch disc holding tool	Clutch disc holding tool	G H I



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# REFRIGERATION SYSTEM

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## REFRIGERATION SYSTEM

PFPP:KA990

### Refrigerant Cycle REFRIGERANT FLOW

EJS001RX

The refrigerant flows in the standard pattern, that is, through the compressor, the condenser with liquid tank, through the front and rear evaporators, and back to the compressor. The refrigerant evaporation through the evaporator coils are controlled by a front and rear externally equalized expansion valves, located inside the front and rear evaporator cases.

### Refrigerant System Protection REFRIGERANT PRESSURE SENSOR

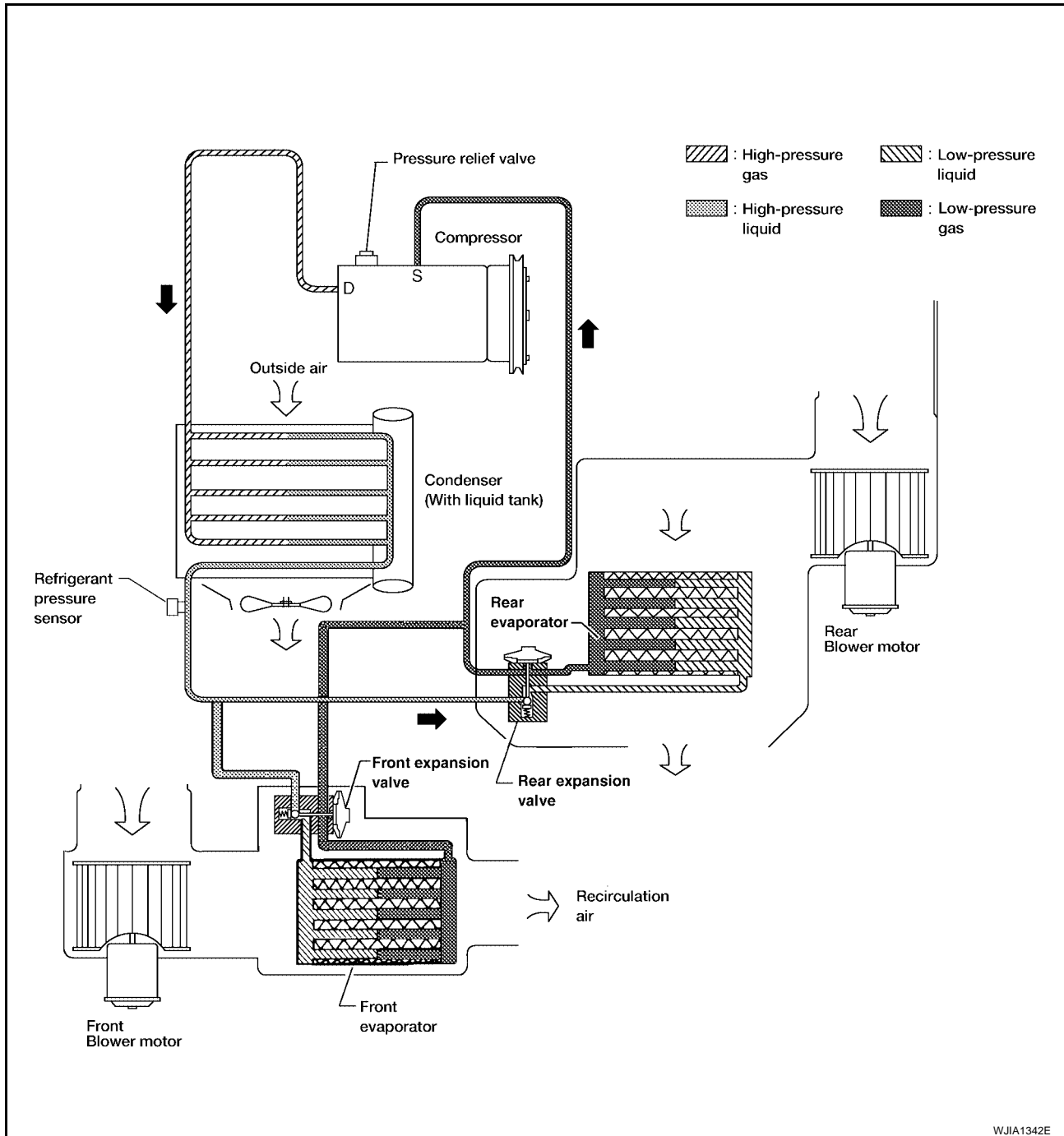
EJS001RY

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.

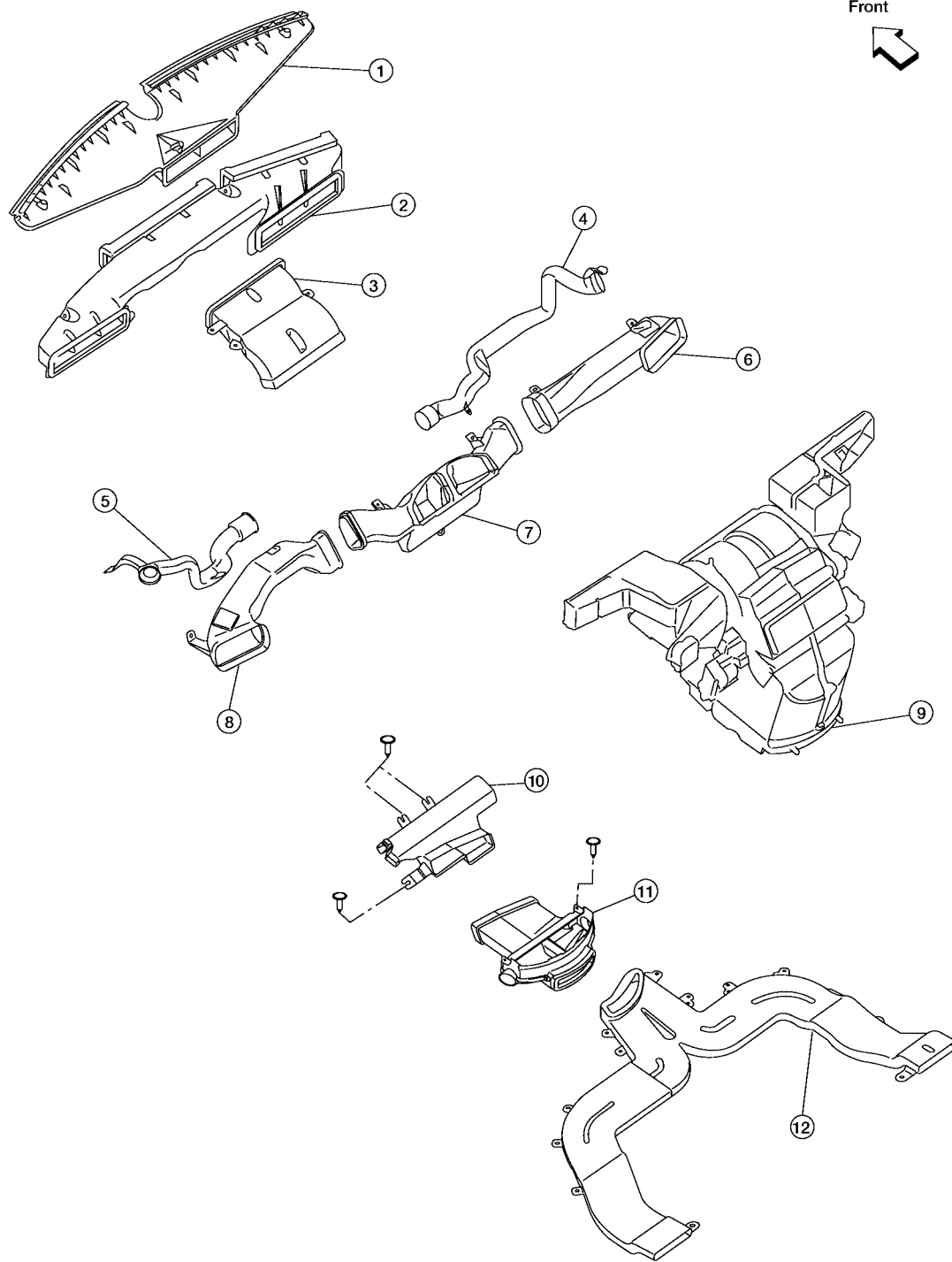


# REFRIGERATION SYSTEM

## Component Layout FRONT REFRIGERATION SYSTEM

EJS001RZ

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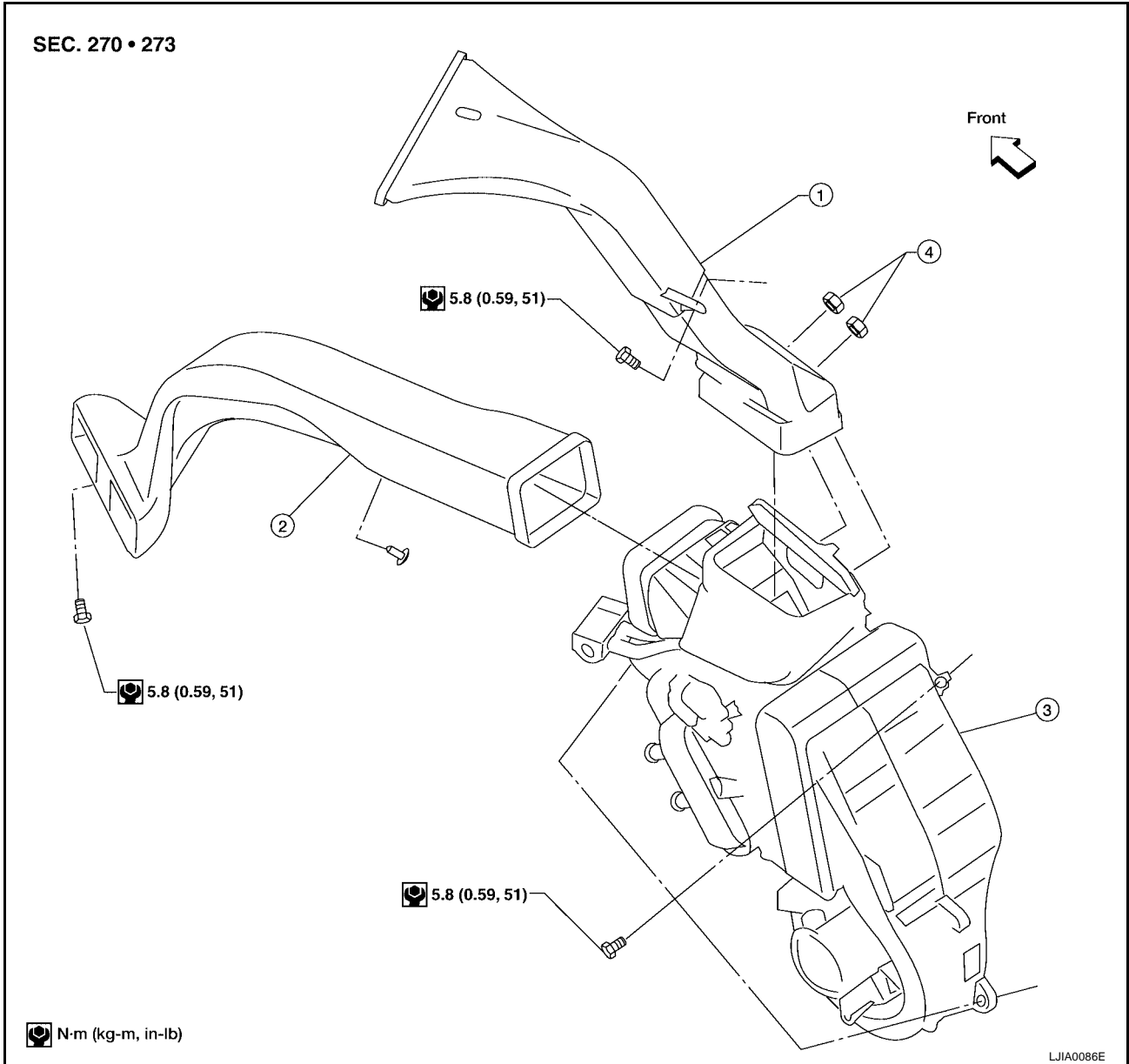


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# REFRIGERATION SYSTEM

- |                           |                             |   |
|---------------------------|-----------------------------|---|
| 1. Defroster nozzle       | 2. Fresh air duct           | 3. Defroster duct                         |
| 4. RH side demister duct  | 5. LH side demister duct    | 6. RH ventilator duct                     |
| 7. Center ventilator duct | 8. LH ventilator duct       | 9. Front heater and cooling unit assembly |
| 10. Floor connector duct  | 11. Floor distribution duct | 12. Floor duct                            |

## REAR REFRIGERATION SYSTEM



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| 1 Rear overhead duct | 2 Rear heat duct | 3 Rear heater and cooling unit assembly |
| 4 Clips              |                  |   |

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# LUBRICANT

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## LUBRICANT

### Maintenance of Lubricant Quantity in Compressor

EJS001S0

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-PAGS1P


### 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.

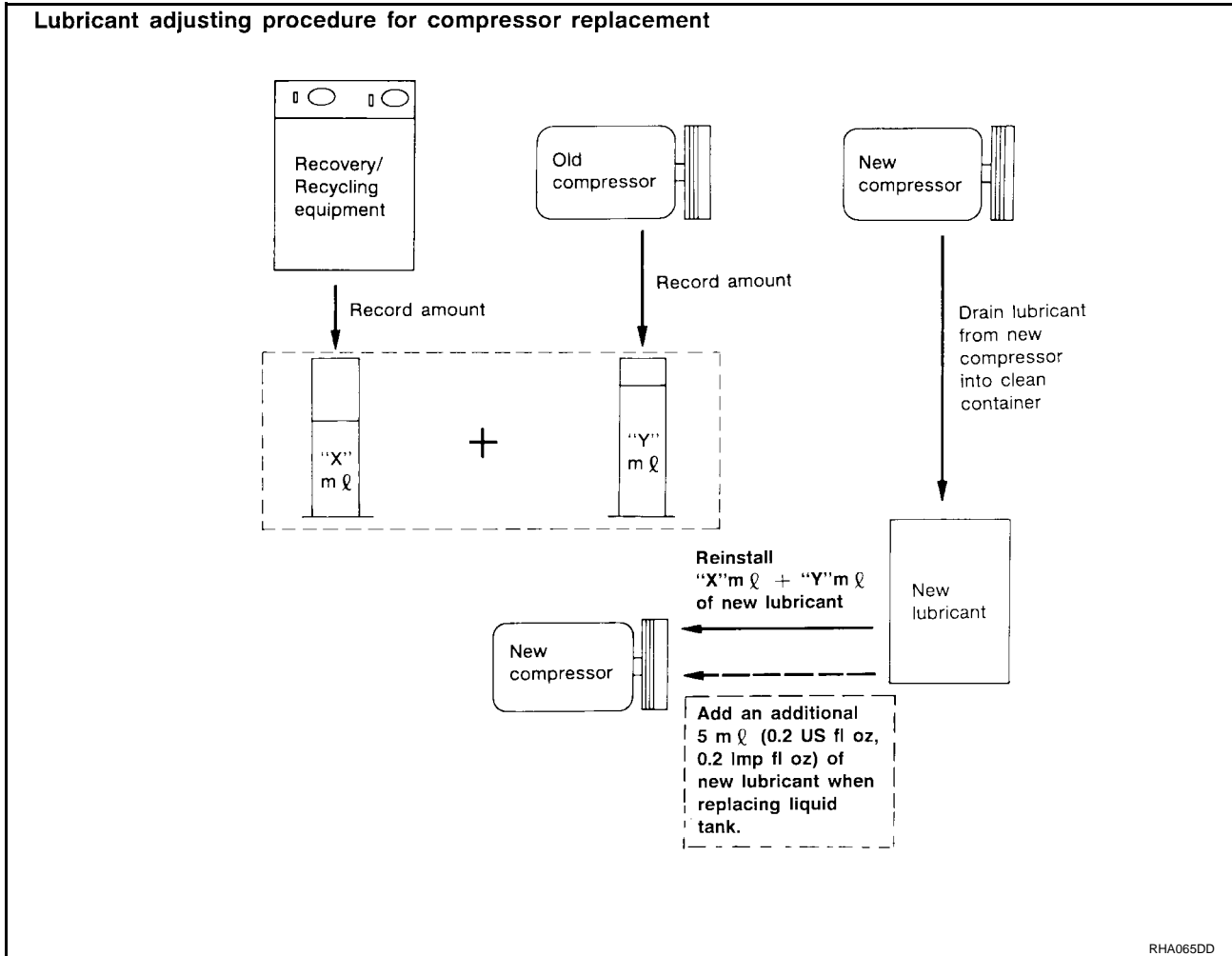
#### Amount of lubricant to be added

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

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

# LUBRICANT

## 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. Connect recovery/recycling equipment to vehicle. Confirm refrigerant purity in supply tank using recovery/recycling equipment and refrigerant identifier. If NG, refer to [MTC-5, "Contaminated Refrigerant"](#).
3. Confirm refrigerant purity in vehicle A/C system using recovery/recycling equipment and refrigerant identifier. If NG, refer to [MTC-5, "Contaminated Refrigerant"](#).
4. Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure lubricant discharged into the recovery/recycling equipment.
5. Drain the lubricant from the "old" (removed) compressor into a graduated container and recover the amount of lubricant drained.
6. Drain the lubricant from the "new" compressor into a separate, clean container.
7. Measure an amount of new lubricant installed equal to amount drained from "old" compressor. Add this lubricant to "new" compressor through the suction port opening.
8. Measure an amount of new lubricant equal to the amount recovered during discharging. Add this lubricant to "new" compressor through the suction port opening.
9. If the liquid tank also needs to be replaced, add an additional 5 mℓ (0.2 US fl oz, 0.2 Imp fl oz) of lubricant at this time.

### CAUTION:

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

# AIR CONDITIONER CONTROL

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## AIR CONDITIONER CONTROL

PF2:27500

### Description

EJS001UD

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:

- Ambient sensor
- 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 also provides separate regulation of the vehicle's interior temperature for the rear passenger area. The system is based on the temperature and rear blower settings selected from rear control switches located on the front air control, or from the temperature and rear blower settings selected from rear control switches on the rear air control, when the front air control switches are set to the rear position.

The front air control is used to select:

- Outlet air volume
- Air temperature/distribution

### Operation

EJS001S2

#### AIR MIX DOOR CONTROL

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

#### FAN SPEED CONTROL

Blower speed is controlled based on front and rear blower switch settings.

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

#### INTAKE DOORS CONTROL

The intake doors are controlled by the recirculation switch setting, and the mode (recirculation is not allowed in floor, floor/defrost or defrost modes) switch setting.

#### MODE DOOR CONTROL

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

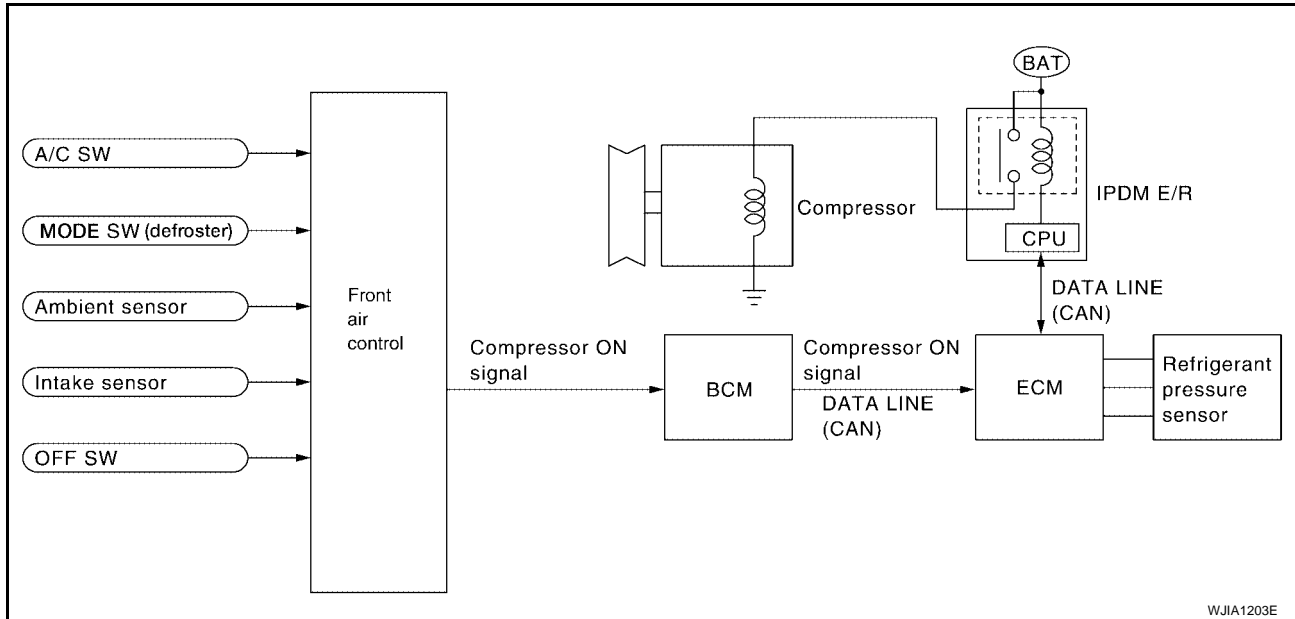
#### DEFROSTER DOOR CONTROL

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"](#).

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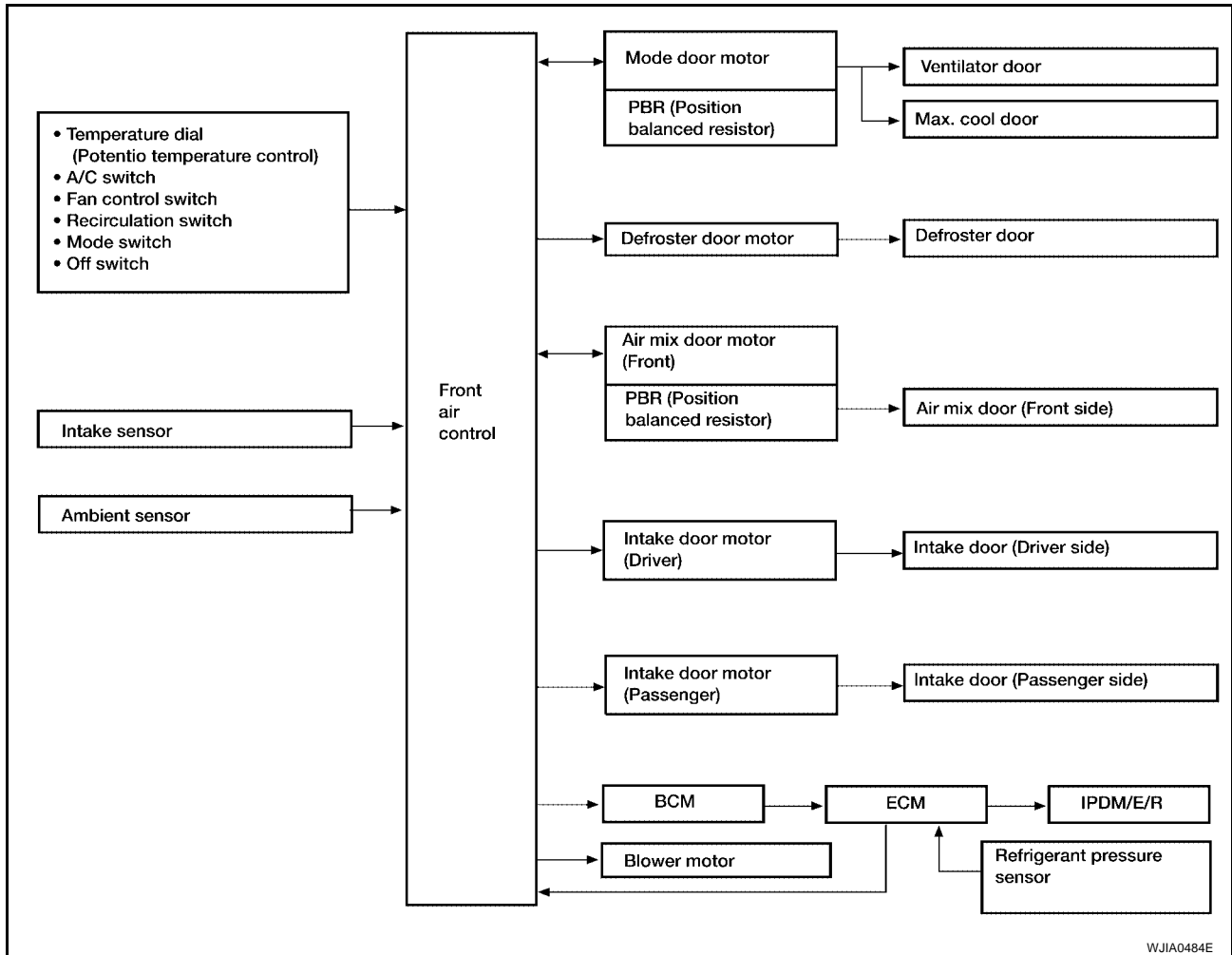
MTC

# AIR CONDITIONER CONTROL

EJS001S3

## Description of Control System

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:

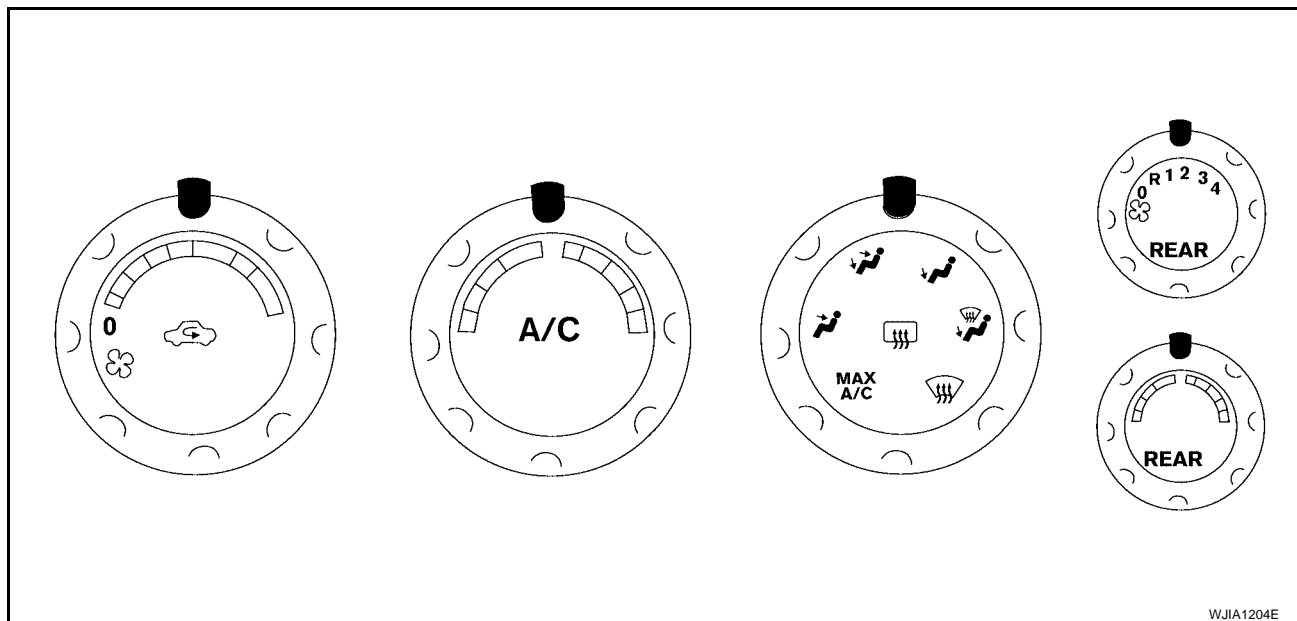


WJIA0484E

## Control Operation

EJS001S4

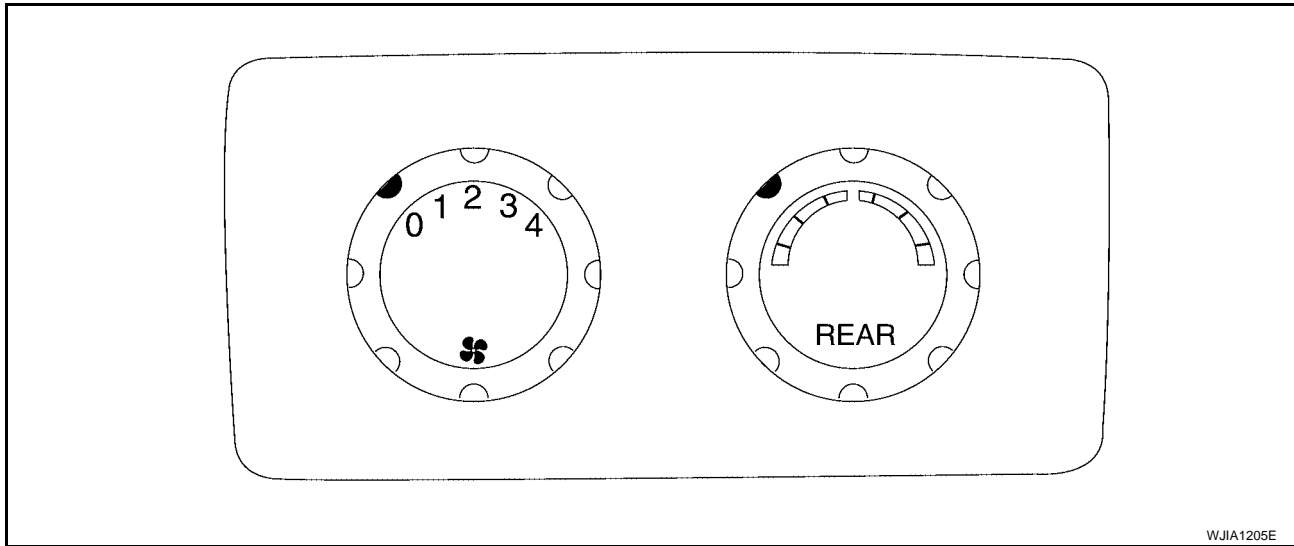
### Front air control



WJIA1204E

# AIR CONDITIONER CONTROL

## Rear air control



### DISPLAY SCREEN

Displays the operational status of the system.

### TEMPERATURE SWITCH (TEMPERATURE CONTROL) (FRONT)

Increases or decreases the set temperature.

### TEMPERATURE SWITCH (TEMPERATURE CONTROL) (REAR)

Increases or decreases the set temperature.

### 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, at the D/F position, or in floor mode.

### REAR WINDOW DEFOGGER SWITCH

When switch is ON, rear window is defogged.

### 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 position.

### A/C SWITCH

The compressor is ON or OFF.

### MODE SWITCH

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

### FRONT FAN CONTROL SWITCH

Manually control the blower speed. Fourteen speeds are available for manual control (7 fan bars shown on the display).

### REAR FAN CONTROL SWITCH

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

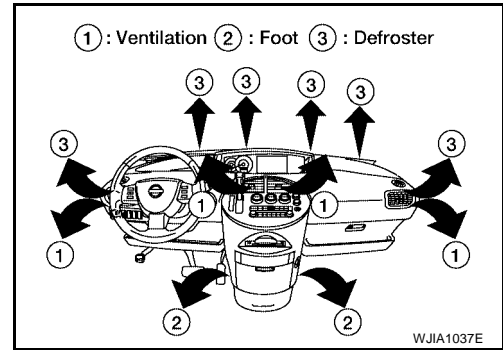
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MTC

# AIR CONDITIONER CONTROL

## Discharge Air Flow FRONT

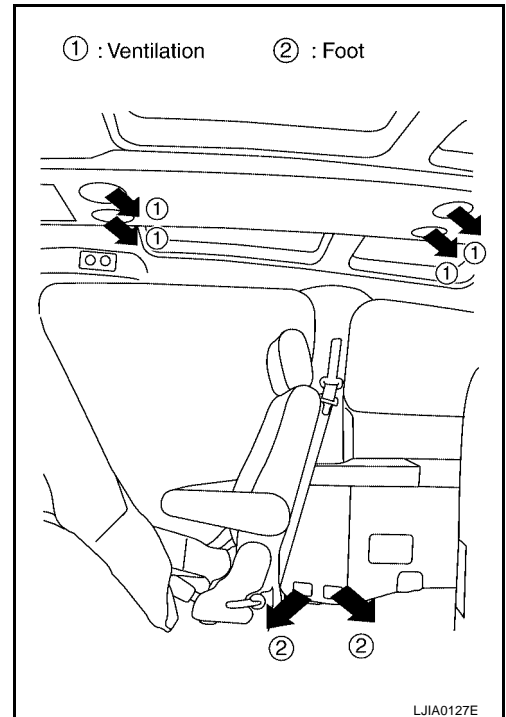
EJS001S6



## REAR

### NOTE:

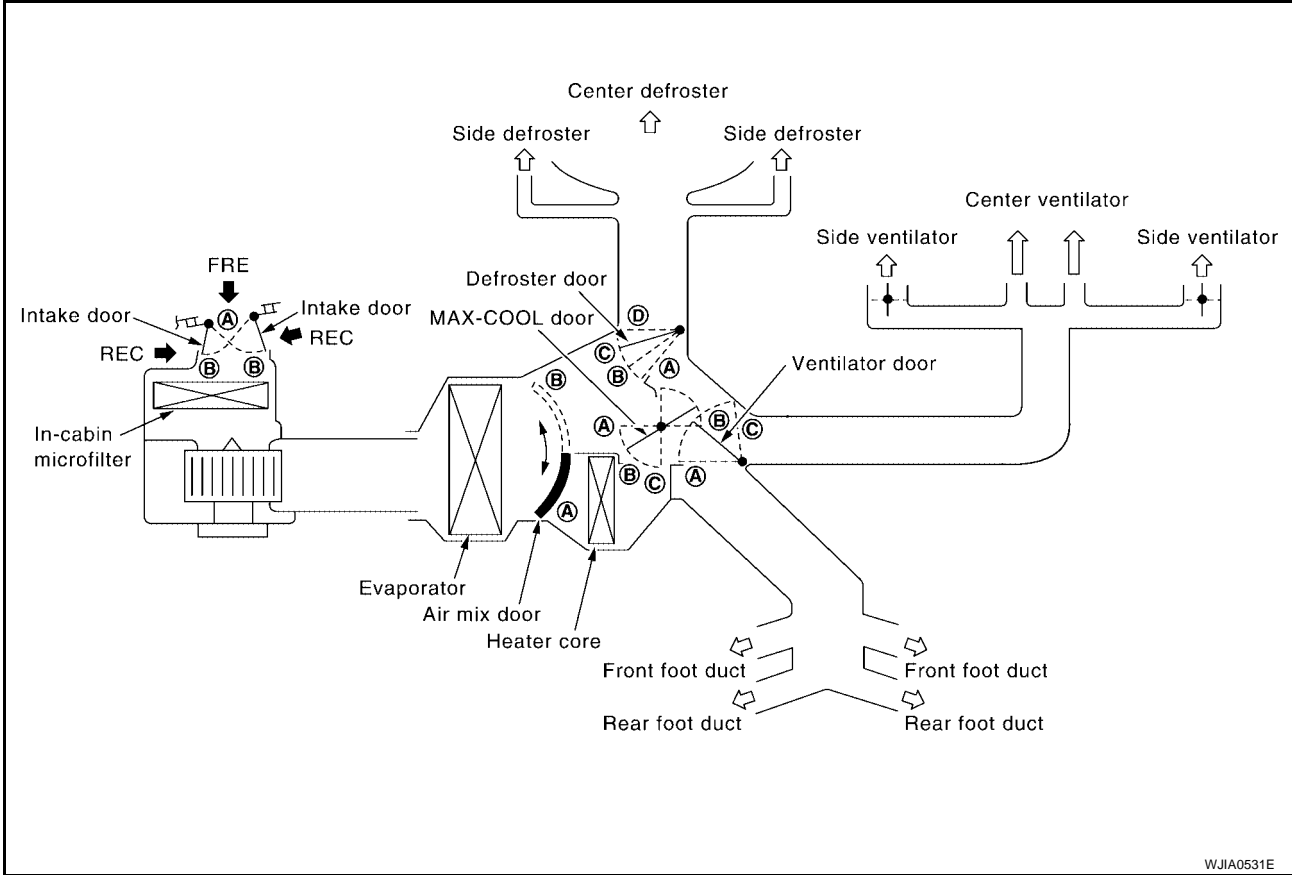
Hot air comes from the floor vents, cold air comes from the roof vents, and blended air comes from both vents.



# AIR CONDITIONER CONTROL

EJS001S7

## System Description SWITCHES AND THEIR CONTROL FUNCTION



WJIA0531E

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

WJIA1406E

# AIR CONDITIONER CONTROL

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## CAN Communication System Description

EJS001S8

Refer to [LAN-5, "CAN COMMUNICATION"](#) .

# TROUBLE DIAGNOSIS

PFP:00004

## TROUBLE DIAGNOSIS

### CONSULT-II Function (BCM)

EJS001S9

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

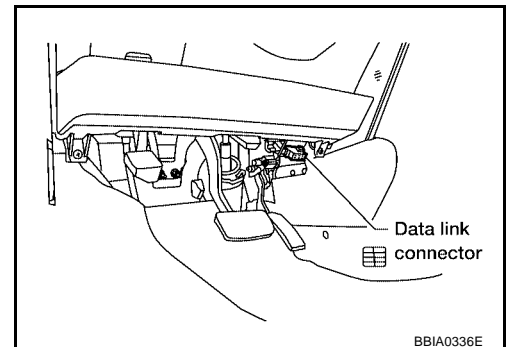
BCM diagnostic test item	Diagnostic mode	Description
Inspection by part	WORK SUPPORT	Supports inspections and adjustments. Commands are transmitted to the BCM for setting the status suitable for required operation, input/output signals are received from the BCM and received data is displayed.
	DATA MONITOR	Displays BCM input/output data in real time.
	ACTIVE TEST	Operation of electrical loads can be checked by sending drive signal to them.
	SELF-DIAG RESULTS	Displays BCM self-diagnosis results.
	CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
	ECU PART NUMBER	BCM part number can be read.
	CONFIGURATION	Performs BCM configuration read/write functions.

### CONSULT-II BASIC OPERATION

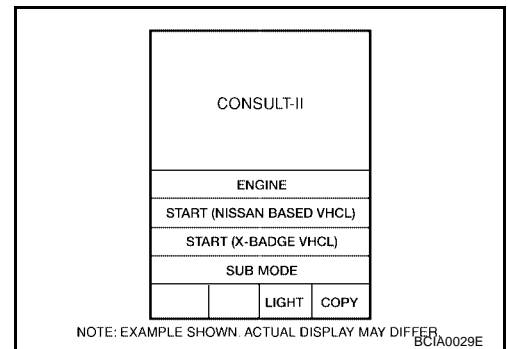
#### CAUTION:

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.

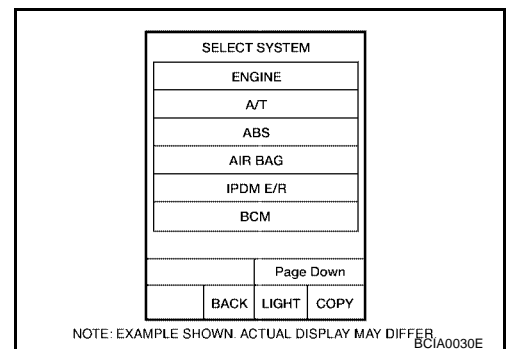
1. With the ignition switch OFF, connect CONSULT-II and CONSULT-II converter to the data link connector, and turn the ignition switch ON.



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



3. Touch "BCM" on "SELECT SYSTEM" screen. If "BCM" is not indicated, go to [GI-37, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

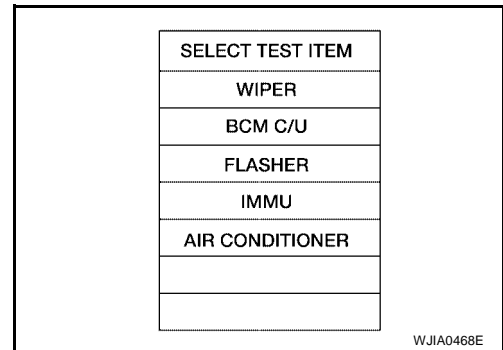


# TROUBLE DIAGNOSIS

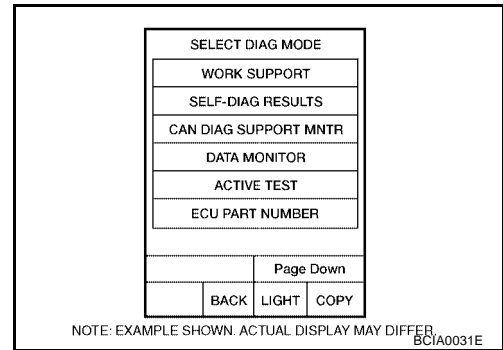
## DATA MONITOR

### Operation Procedure

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



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



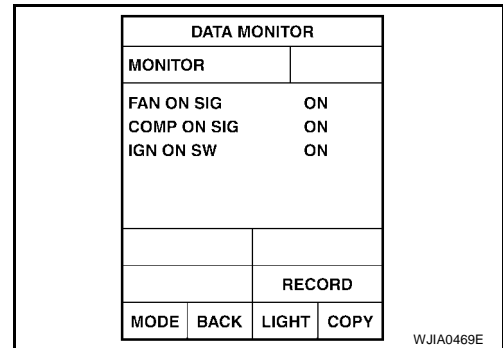
3. Touch either "ALL SIGNALS" or "SELECTION FROM MENU" on "DATA MONITOR" screen.

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

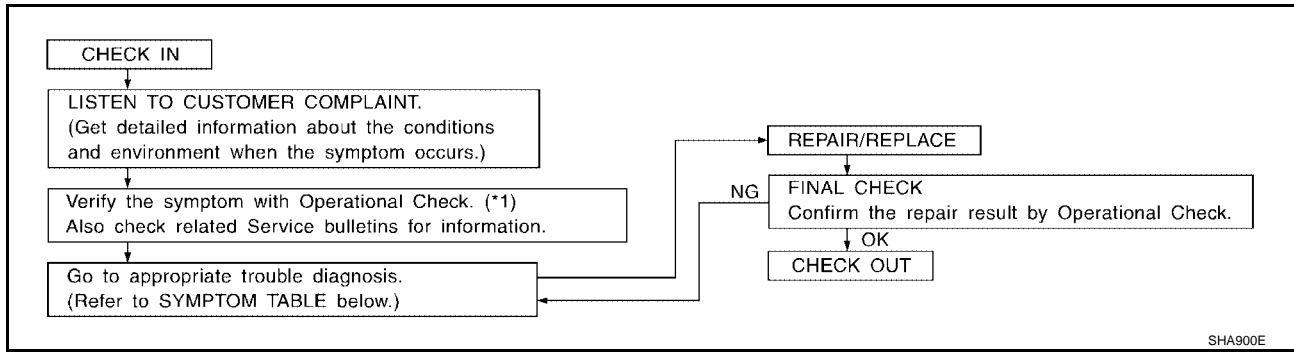
Monitor item name "operation or unit"	Contents
IGN ON SW "ON/OFF"	Displays "IGN Position (ON)/OFF, ACC Position (OFF)" status as judged from ignition switch signal.
COMP ON SIG "ON/OFF"	Displays "COMP (ON)/COMP (OFF)" status as judged from air conditioner switch signal.
FAN ON SIG "ON/OFF"	Displays "FAN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



# TROUBLE DIAGNOSIS

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

EJS001SA



\*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. "Power Supply and Ground Circuit for Front Air Control"</a>
A/C system display is malfunctioning.	Go to "Navigation System", or "Integrated Display System". <a href="#">AV-113. "NAVIGATION SYSTEM" (With Navi.)</a>  <a href="#">AV-86. "INTEGRATED DISPLAY SYSTEM" (Without Navi.)</a>
A/C system cannot be controlled.	Go to Self-diagnosis Function. <a href="#">MTC-51. "A/C System Self-diagnosis Function"</a>
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor. <a href="#">MTC-58. "Mode Door Motor Circuit"</a>
Mode door motor is malfunctioning.	
Discharge air temperature does not change.	
Air mix door motor is malfunctioning.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. <a href="#">MTC-63. "Air Mix Door Motor Circuit"</a>
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor. <a href="#">MTC-72. "Intake Door Motor Circuit"</a>
Intake door motor is malfunctioning.	
Defroster door motor is malfunctioning.	Go to Trouble Diagnosis Procedure for Defroster Door Motor. <a href="#">MTC-77. "Defroster Door Motor Circuit"</a>
Front blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Front Blower Motor. <a href="#">MTC-80. "Front Blower Motor Circuit"</a>
Rear blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Rear Blower Motor. <a href="#">MTC-87. "Rear Blower Motor Circuit"</a>
Rear discharge air temperature and/or air outlet does not change.	Go to Trouble Diagnosis Procedure for Rear Air Control circuit. <a href="#">MTC-98. "Rear Air Control Circuit"</a>
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch. <a href="#">MTC-101. "Magnet Clutch Circuit"</a>
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling. <a href="#">MTC-107. "Insufficient Cooling"</a>

## TROUBLE DIAGNOSIS

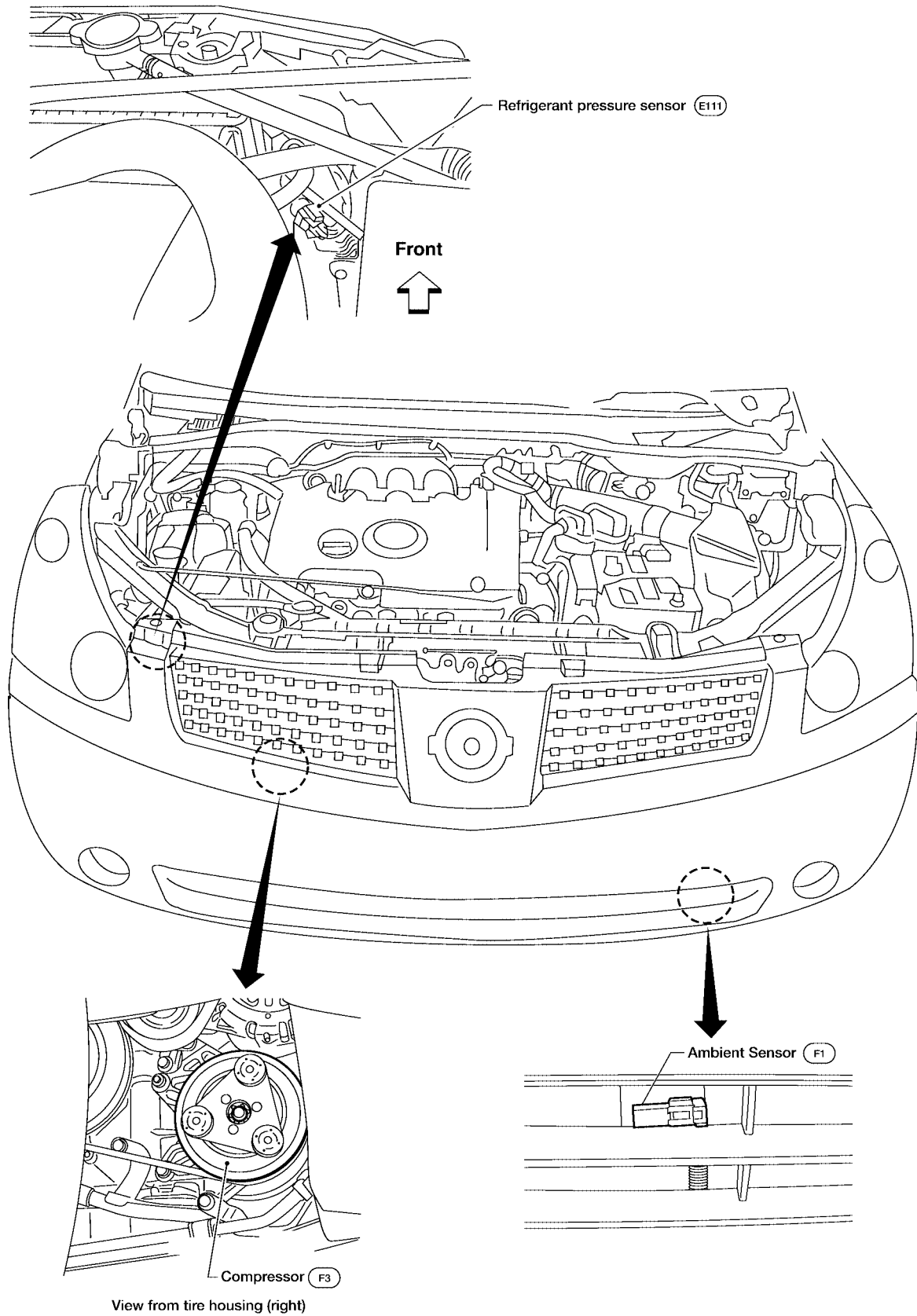
Symptom	Reference Page	
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	<a href="#">MTC-114, "Insufficient Heating"</a>
Noise	Go to Trouble Diagnosis Procedure for Noise.	<a href="#">MTC-118, "Noise"</a>
Self-diagnosis cannot be performed.	Go to Trouble Diagnosis Procedure for Self-diagnosis.	<a href="#">MTC-119, "Self-diagnosis"</a>

# TROUBLE DIAGNOSIS

## Component Parts and Harness Connector Location ENGINE COMPARTMENT

EJS001SB

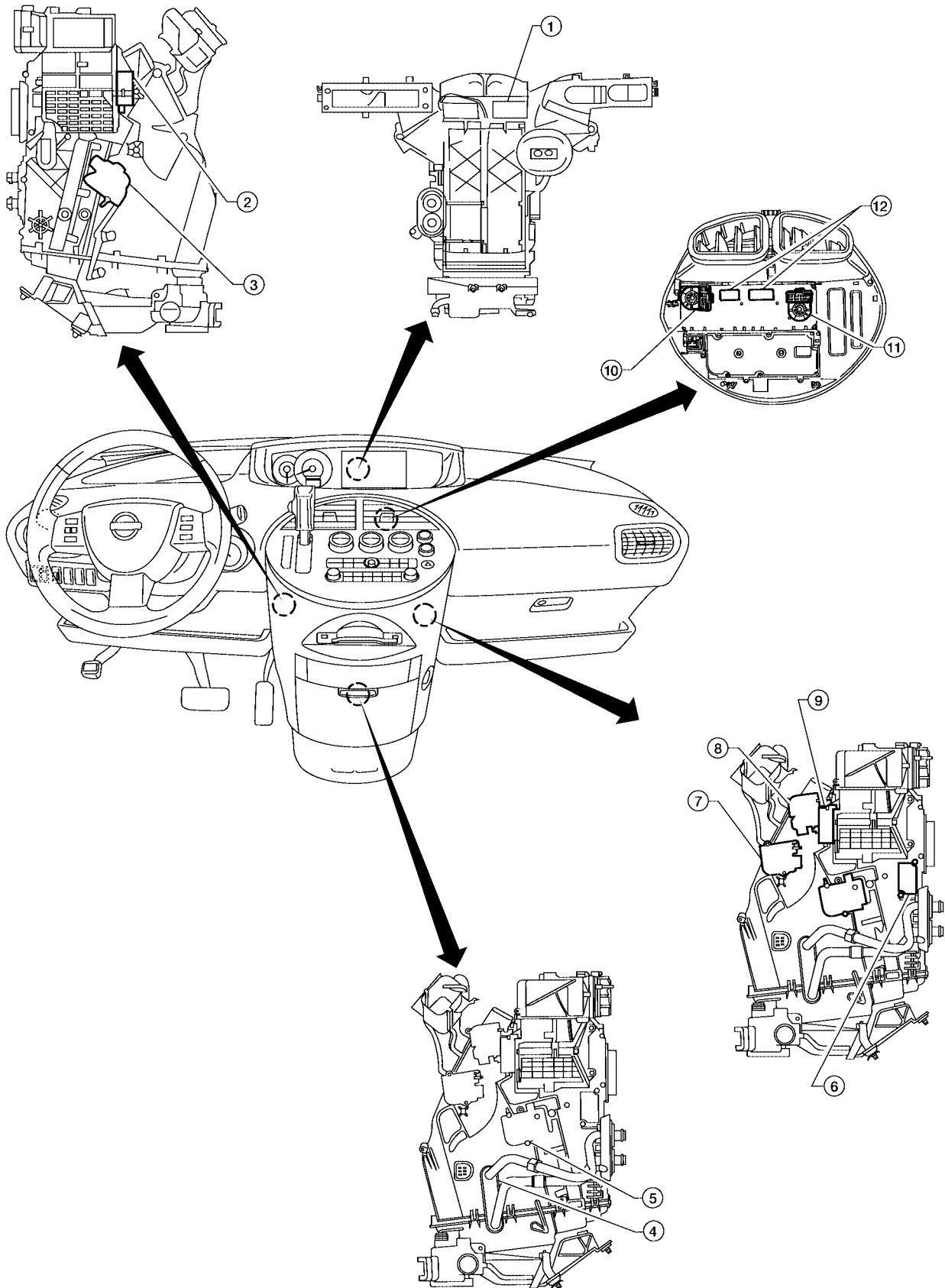
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WJIA0390E

# TROUBLE DIAGNOSIS

## FRONT PASSENGER COMPARTMENT



WJIA1959E

# TROUBLE DIAGNOSIS

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- |                                       |                                      |  |   |
|---------------------------------------|--------------------------------------|--|---|
| 1. Front blower motor<br>M62          | 2. Intake door motor (driver)<br>M58 | 3. Air mix door motor (front)<br>M307    | A |
| 4. Evaporator                         | 5. Intake sensor<br>M305             | 6. Front blower resistor<br>M122         | B |
| 7. Mode door motor<br>M304            | 8. Defroster door motor<br>M303      | 9. Intake door motor (passenger)<br>M302 | B |
| 10. Rear blower switch (front)<br>M52 | 11. Front blower switch<br>M51       | 12. Front air control<br>M49, M50        | C |

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**MTC**

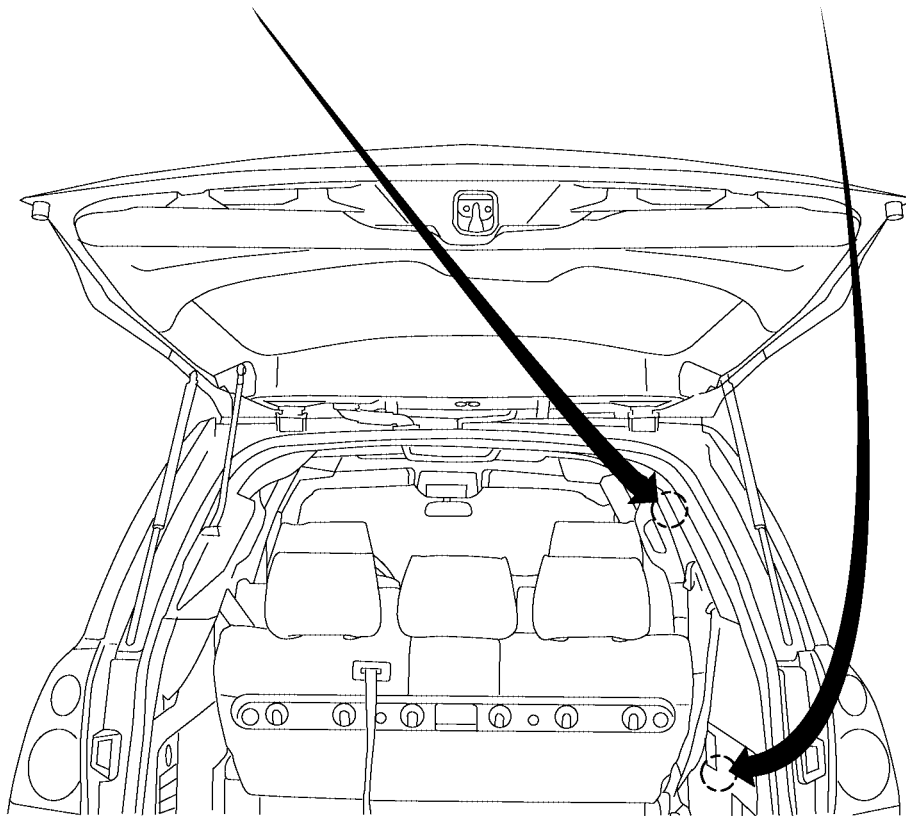
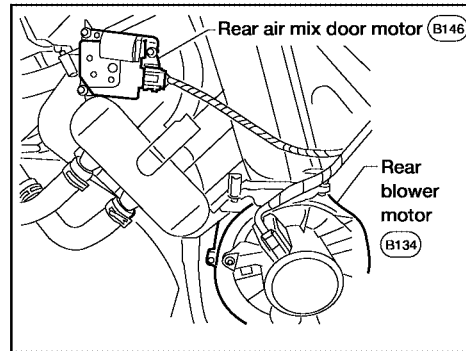
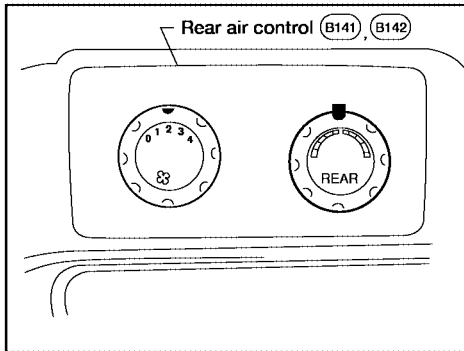
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# TROUBLE DIAGNOSIS

## REAR PASSENGER COMPARTMENT

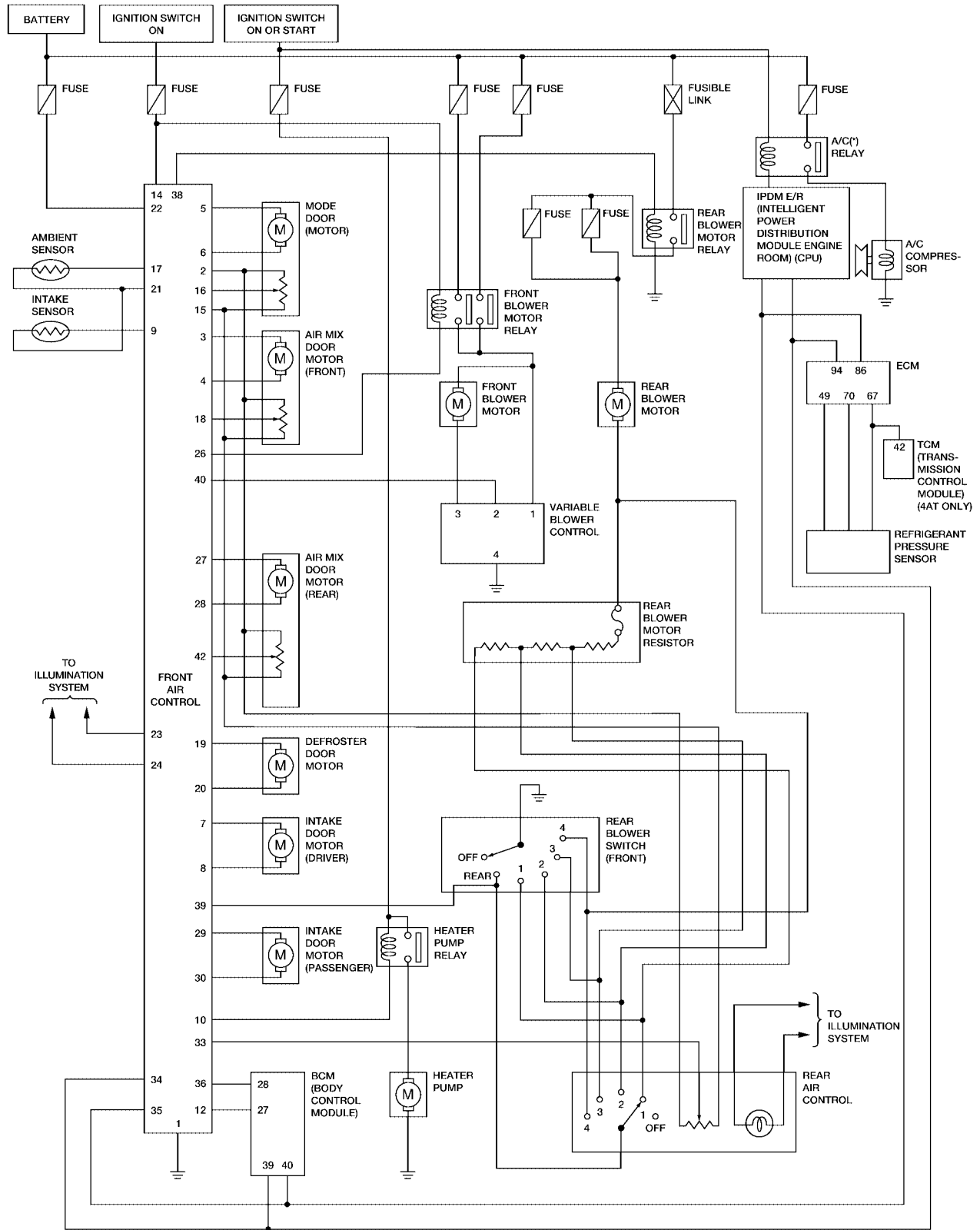


WJIA1206E

# TROUBLE DIAGNOSIS

## Schematic

EJS001SC



\* : THIS RELAY IS BUILT INTO THE IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

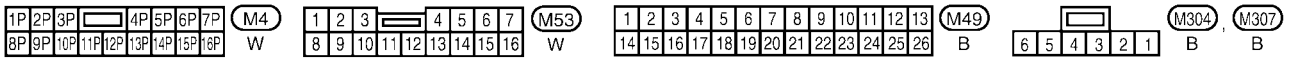
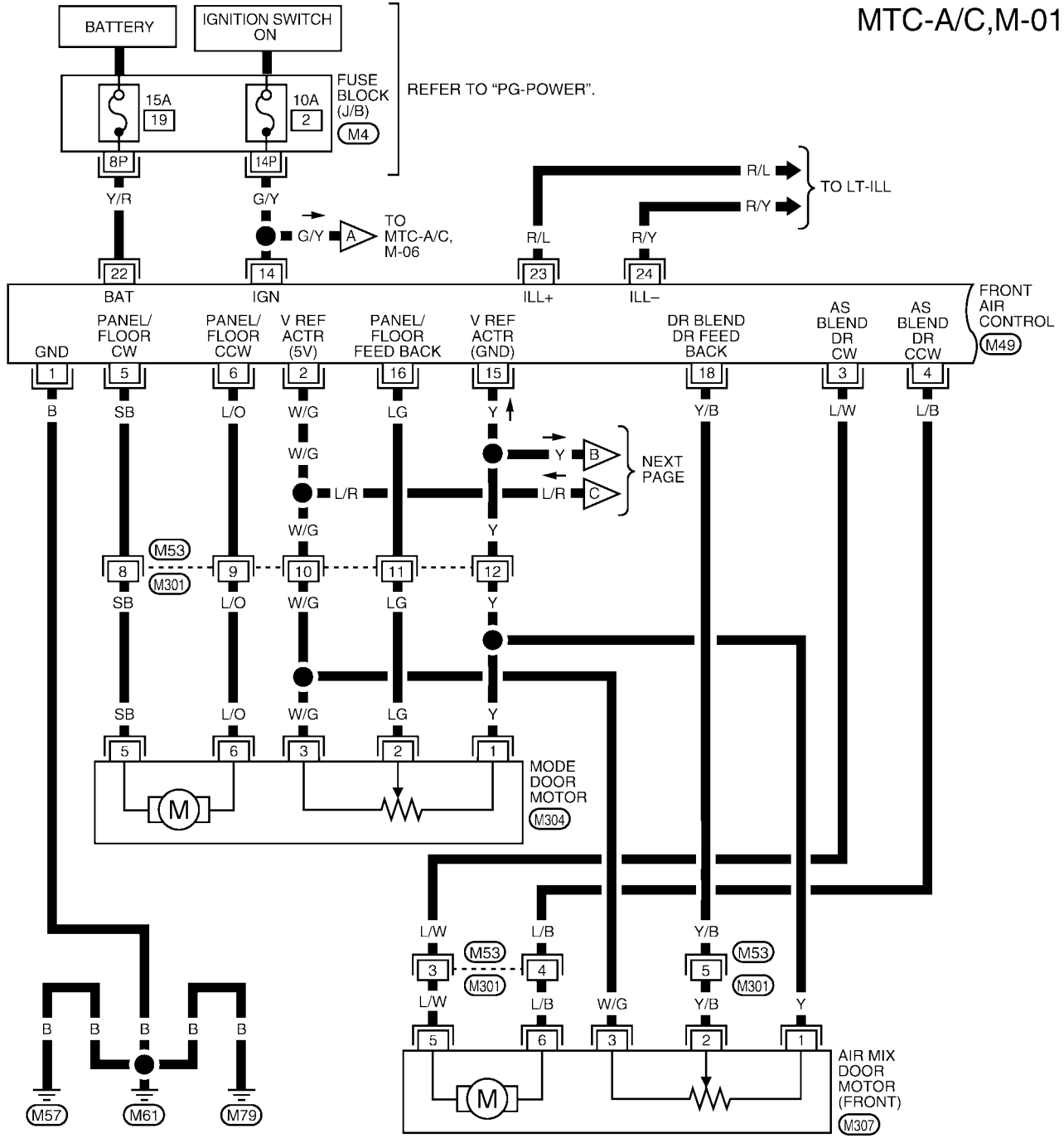
WJWA0178E

# TROUBLE DIAGNOSIS

## Wiring Diagram — A/C —

EJS001SD

MTC-A/C,M-01

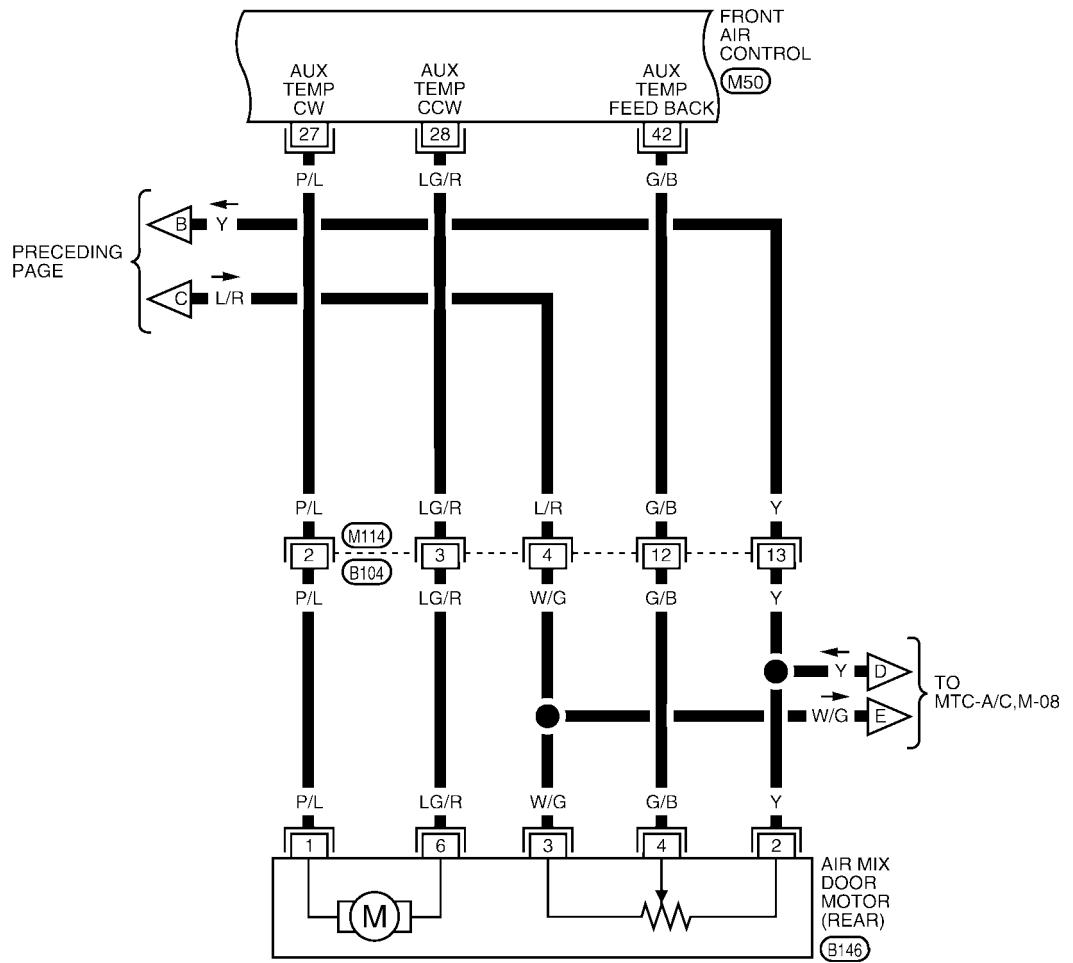


WJWA0179E



# TROUBLE DIAGNOSIS

MTC-A/C,M-02



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27	28	29	30	31	32	33	34	35	(M50)
36	37	38	39	40	41	42	43	44	W

1	2	3	4	5	6	7	8	9	10	11	(M114)		
12	13	14	15	16	17	18	19	20	21	22	23	24	W

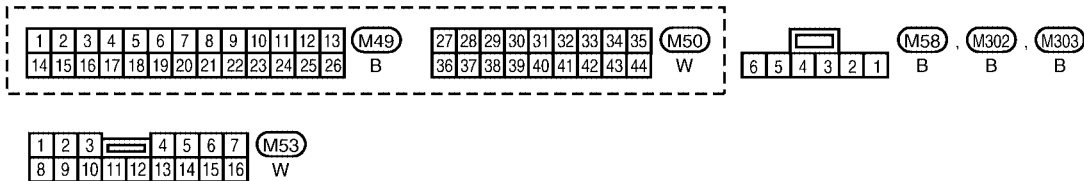
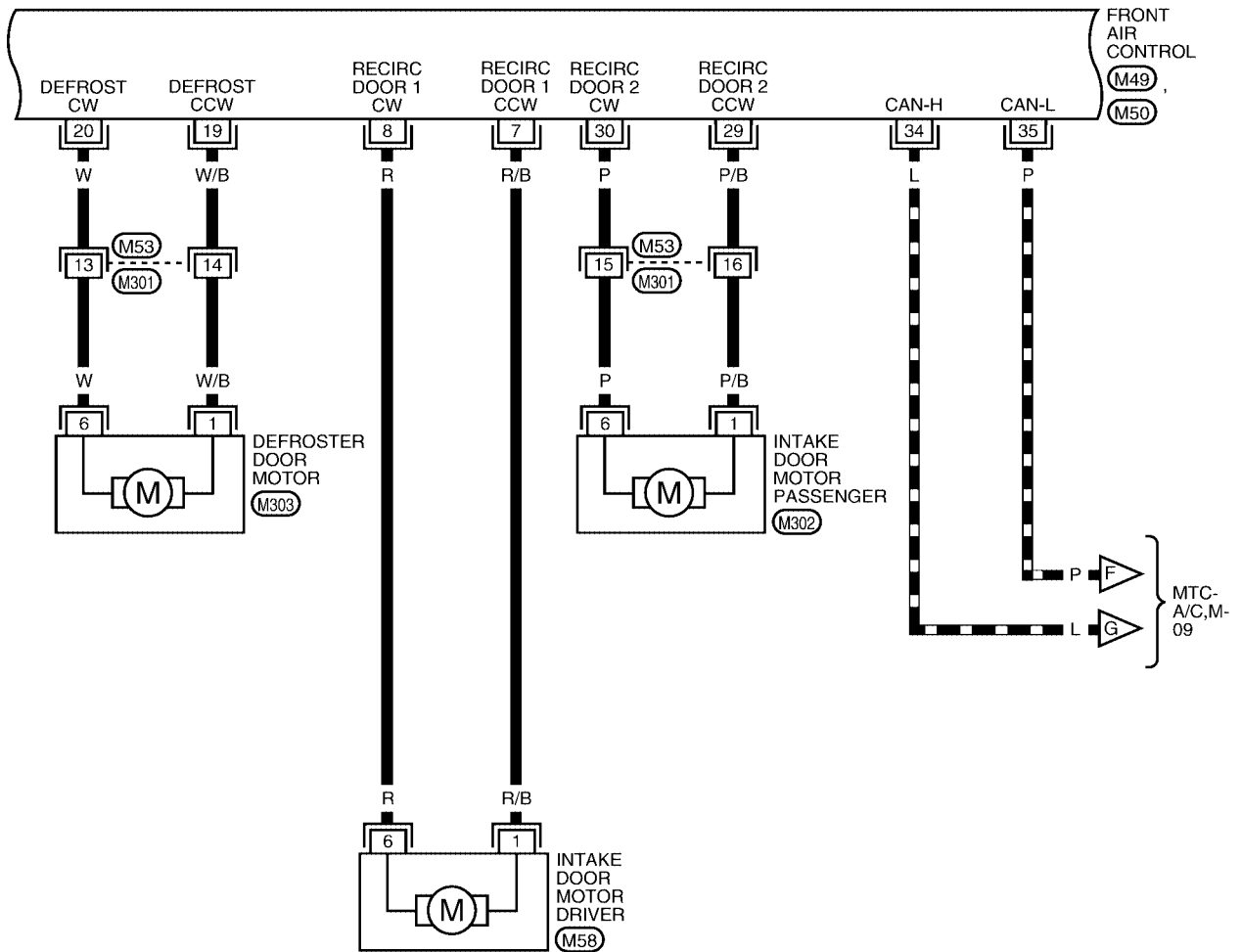
6	5	4	3	2	1	(B146)
						B

WJWA0180E

# TROUBLE DIAGNOSIS

MTC-A/C,M-03

— : DATA LINE

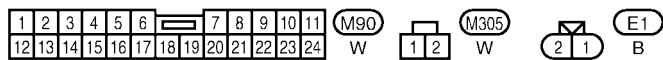
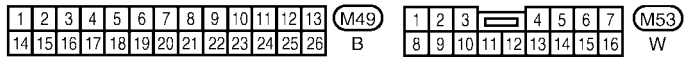
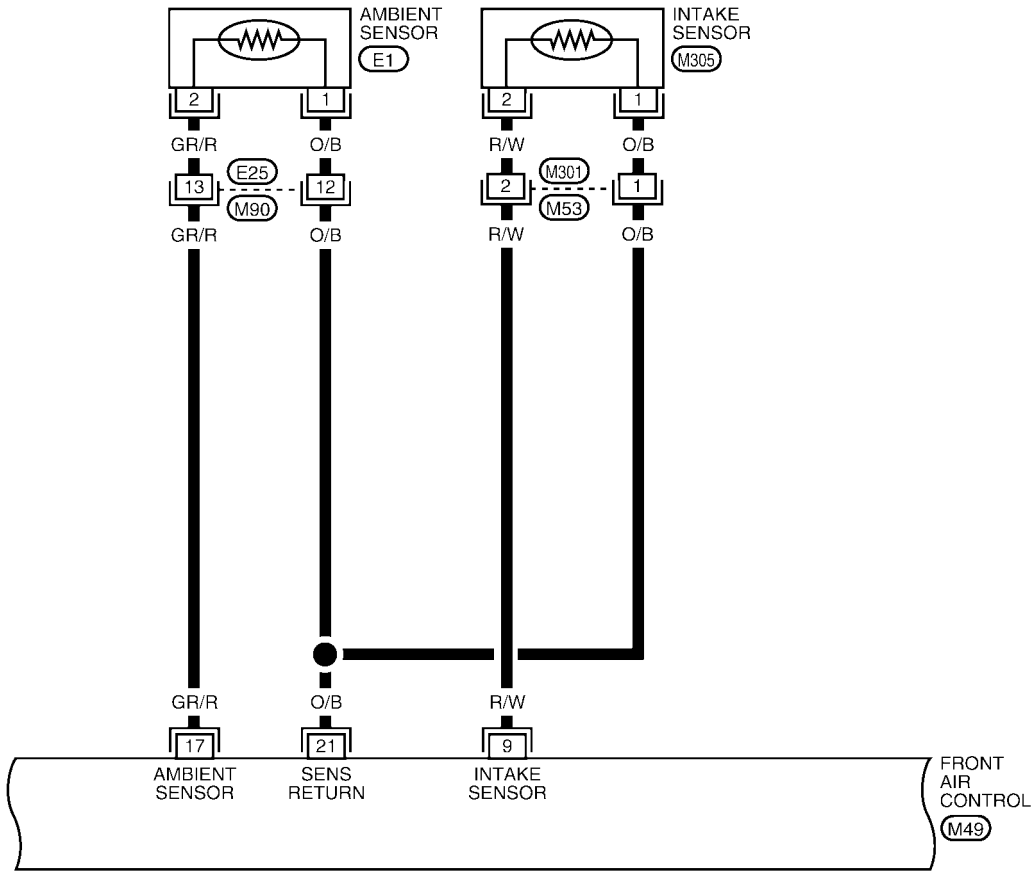


WJWA0358E

# TROUBLE DIAGNOSIS

MTC-A/C,M-04

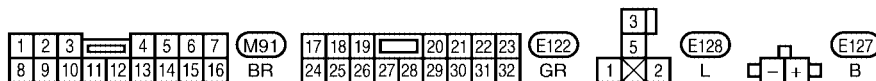
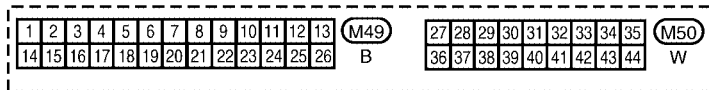
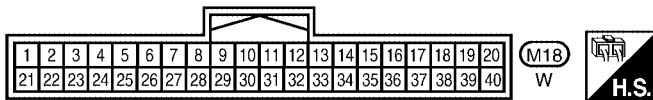
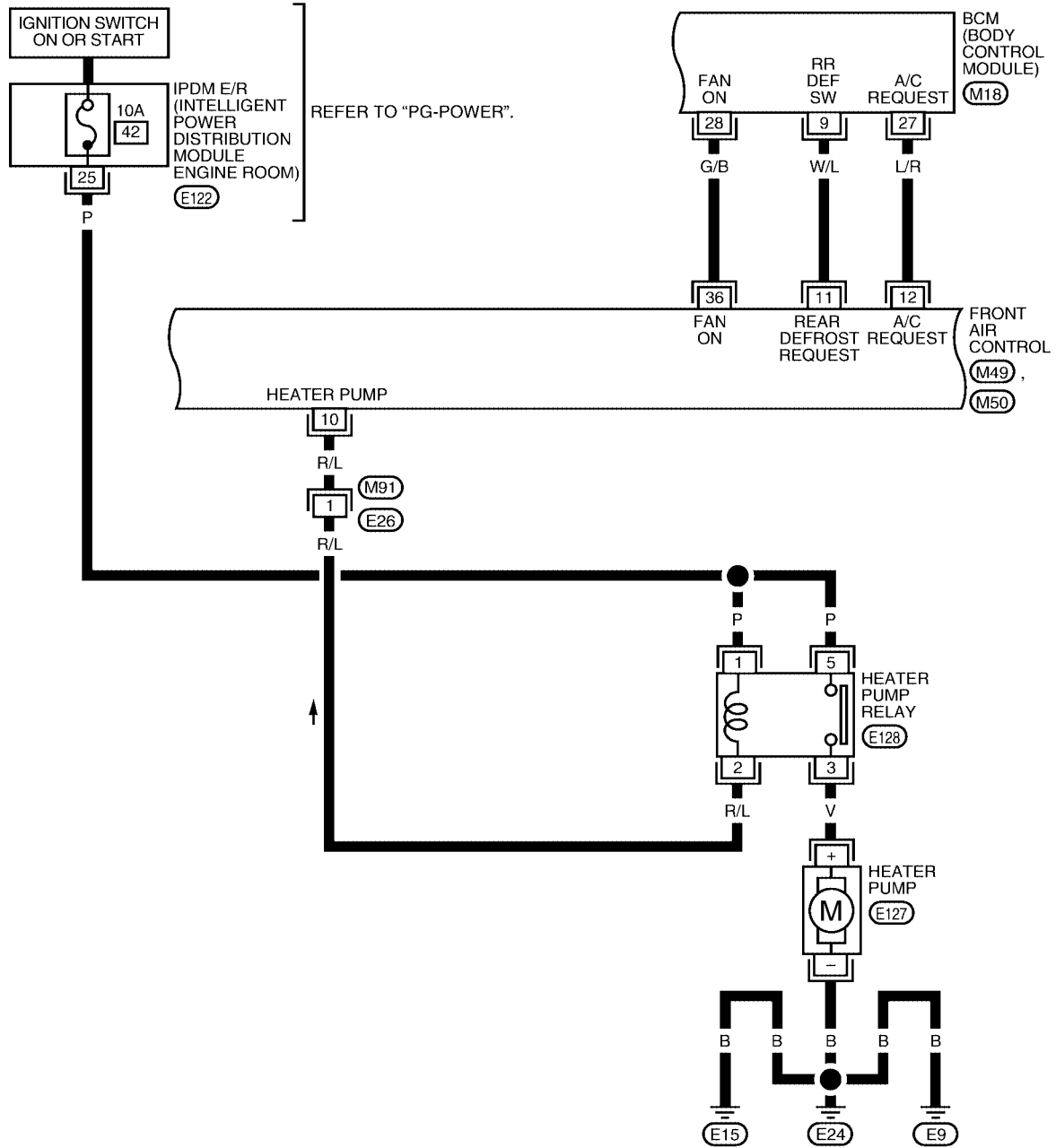
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WJWA0182E

# TROUBLE DIAGNOSIS

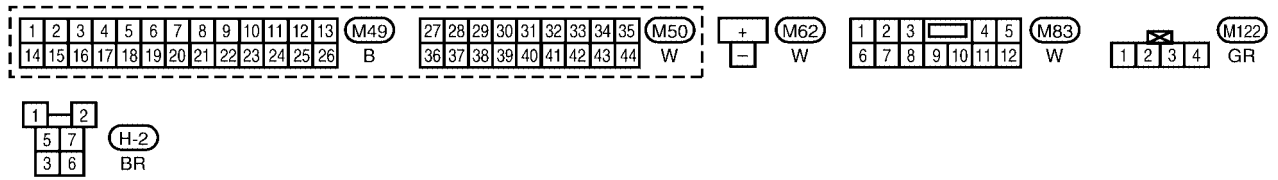
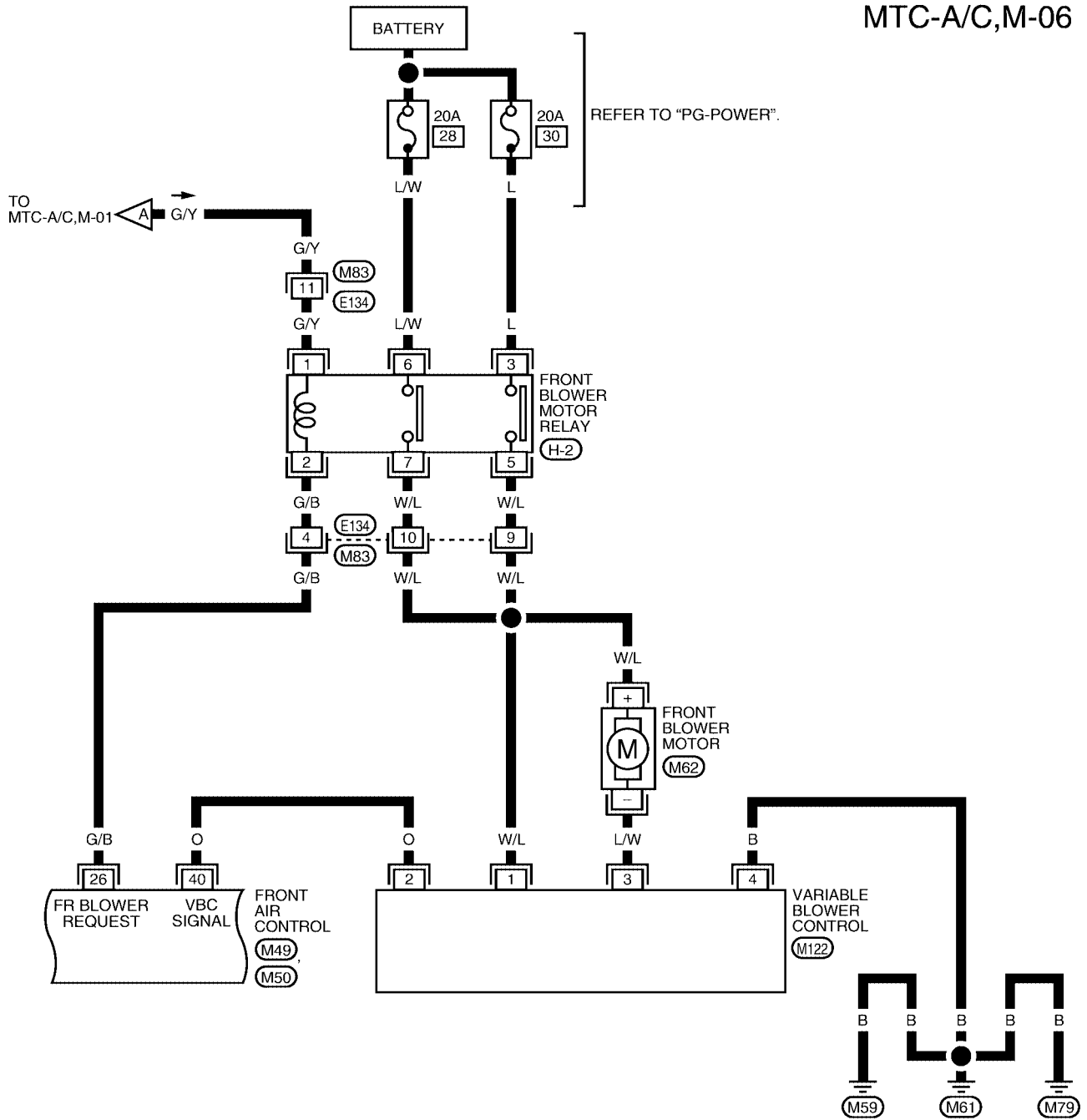
## MTC-A/C,M-05



WJWA0360E

# TROUBLE DIAGNOSIS

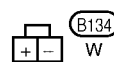
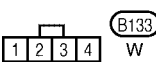
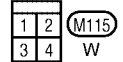
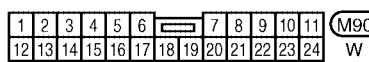
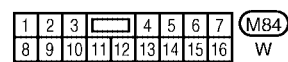
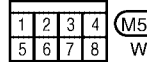
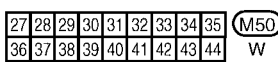
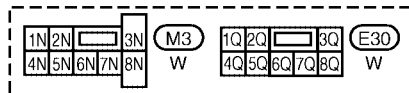
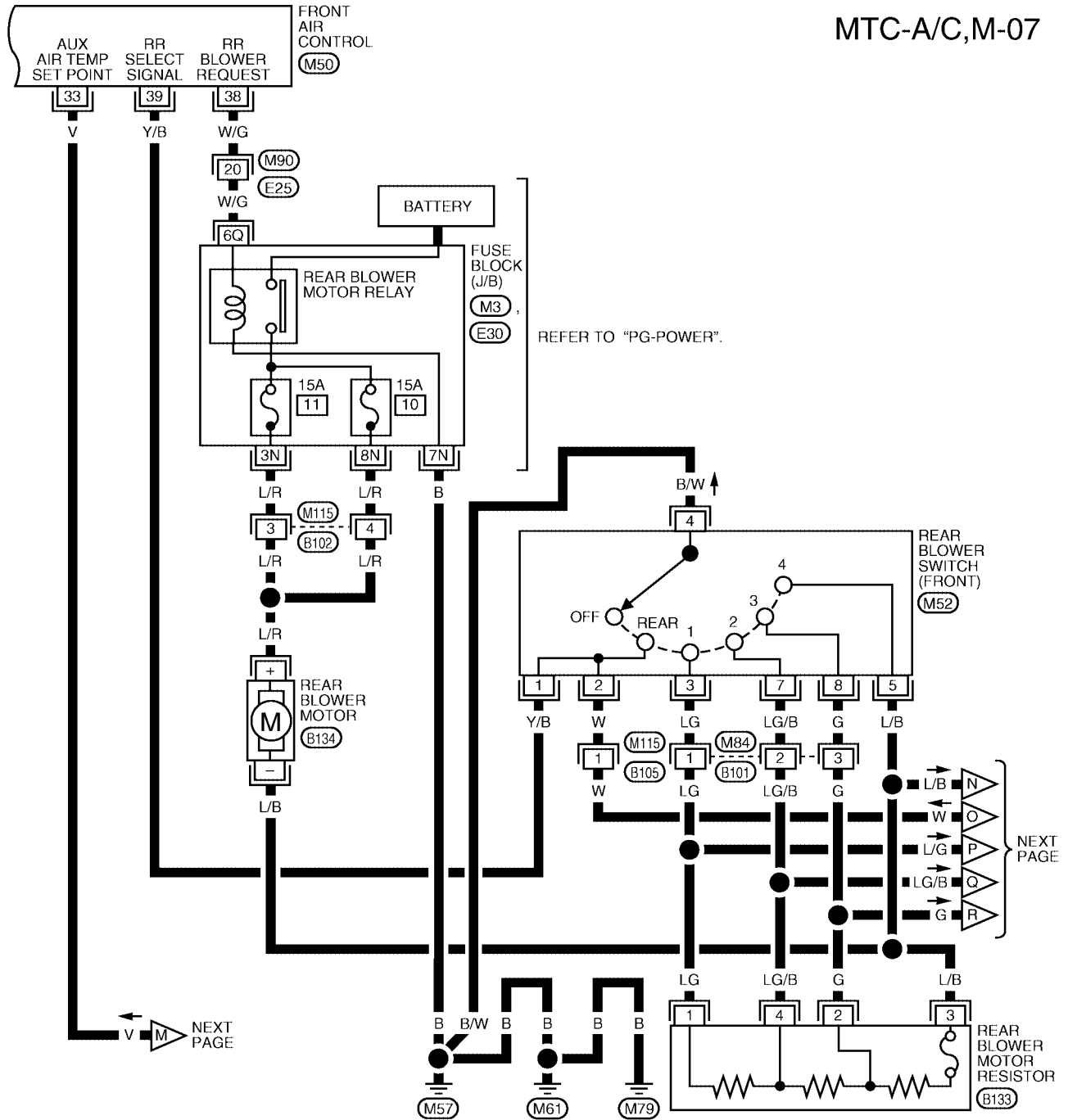
MTC-A/C,M-06



WJWA0359E

# TROUBLE DIAGNOSIS

MTC-A/C,M-07

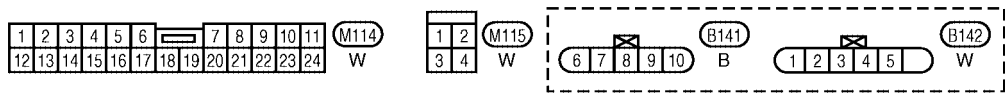
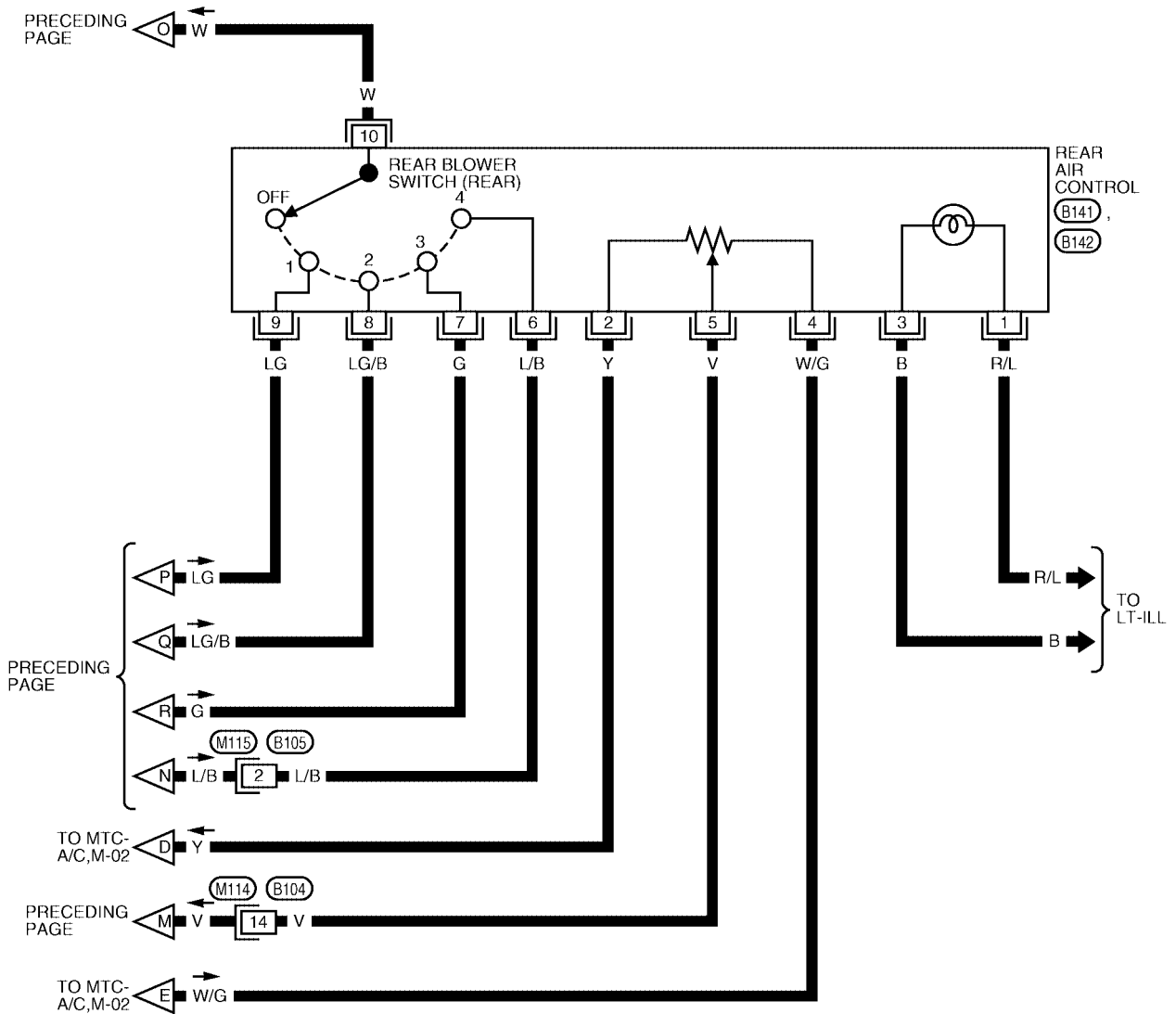


WJWA0185E

# TROUBLE DIAGNOSIS

MTC-A/C,M-08

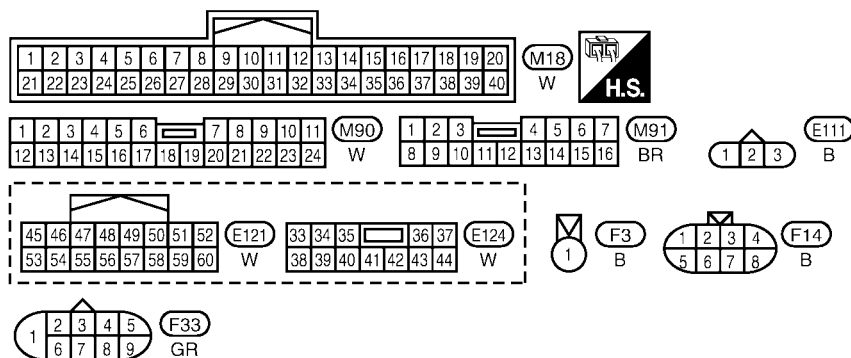
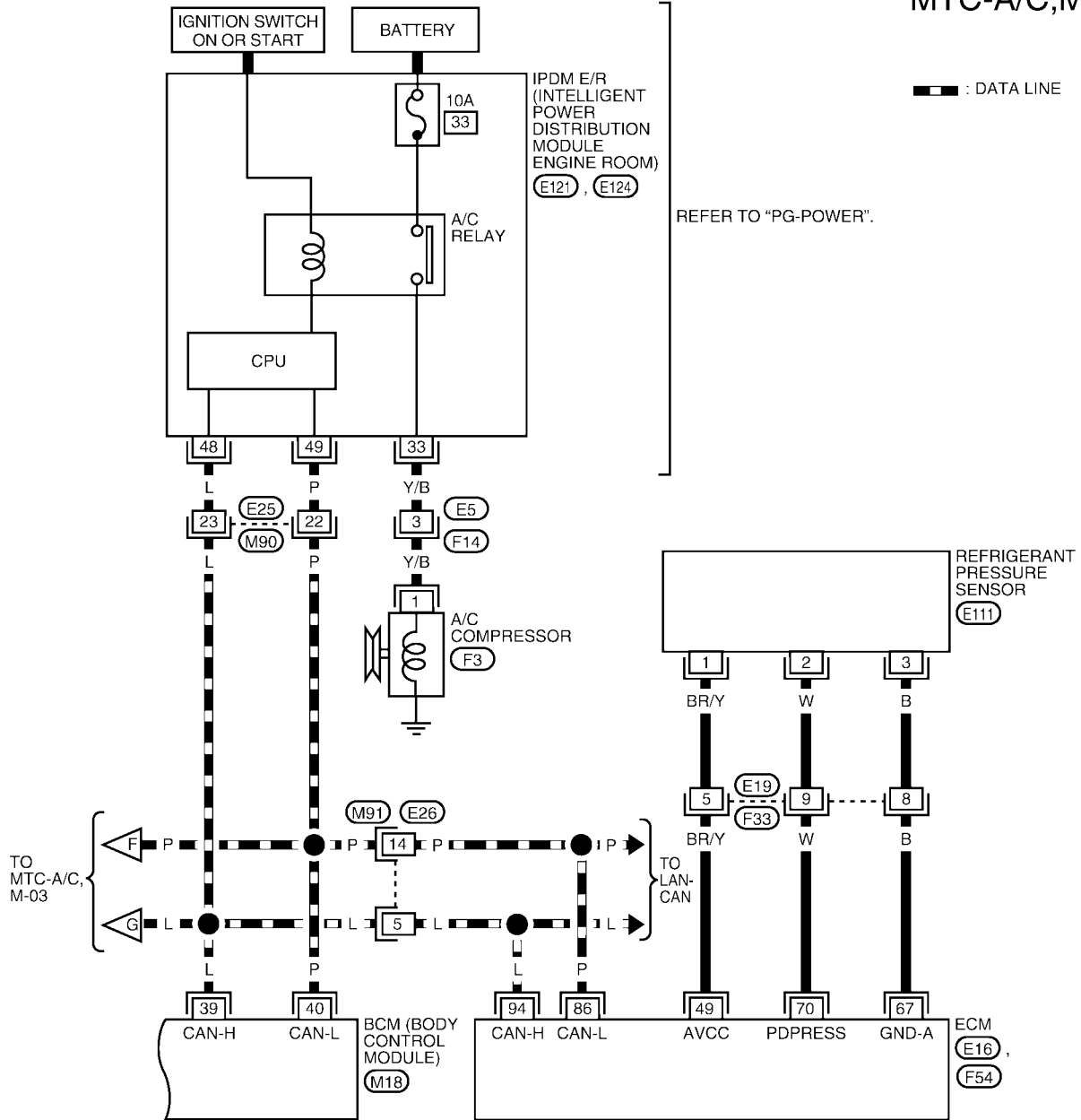
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WJWA0186E

# TROUBLE DIAGNOSIS

MTC-A/C,M-09



REFER TO THE FOLLOWING.  
(E16), (F54) - ELECTRICAL UNITS

WJWA0187E

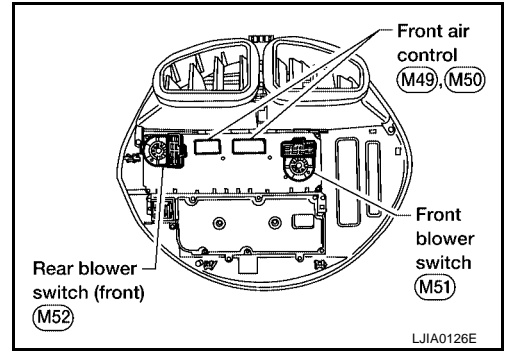


# TROUBLE DIAGNOSIS

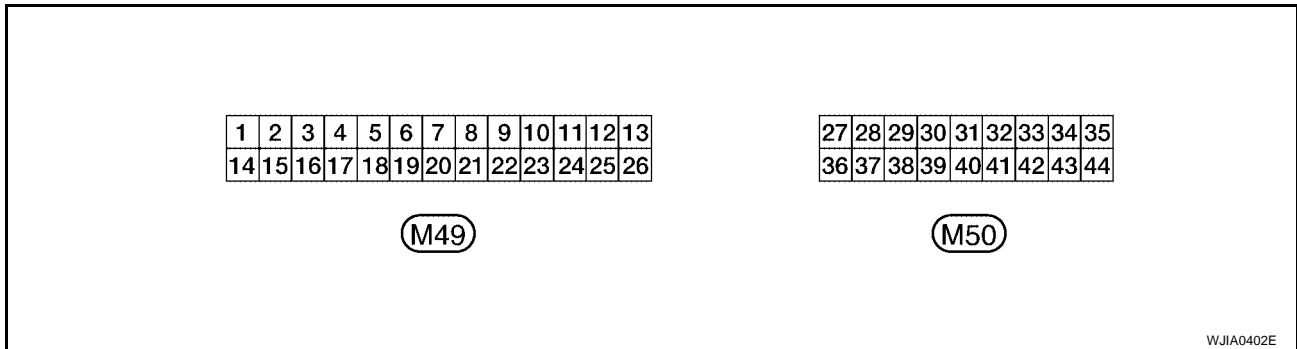
EJS001SE

## Front Air Control Terminals and Reference Value

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



### PIN CONNECTOR TERMINAL LAYOUT



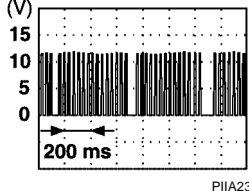
### TERMINALS AND REFERENCE VALUE FOR FRONT AIR CONTROL

Terminal No.	Wire Color	Item	Ignition Switch	Condition	Voltage (V) (Approx.)
1	B	Ground	-	-	0V
2	W/G	Position balanced resistor (PBR) power	ON	-	5V
3	L/W	Front air mix door motor CW	ON	Clockwise rotation	Battery voltage
4	L/B	Front air mix door motor CCW	ON	Counterclockwise rotation	Battery voltage
5	SB	Mode door motor CW	ON	Clockwise rotation	Battery voltage
6	L/O	Mode door motor CCW	ON	Counterclockwise rotation	Battery voltage
7	R/B	Intake door motor (driver) CCW	ON	Clockwise rotation	Battery voltage
8	R	Intake door motor (driver) CW	ON	Counterclockwise rotation	Battery voltage
9	R/W	Intake sensor	ON	-	0 - 5V
10	R/L	Heater pump	ON	Heater pump OFF	Battery voltage
				Heater pump ON	0V
11	W/L	Rear defroster request	ON	-	Battery voltage
12	L/R	Compressor ON signal	ON	A/C switch OFF	5V
			ON	A/C switch ON	0V
14	G/Y	Power supply for IGN	ON	-	Battery voltage
15	Y	Position balanced resistor (PBR) ground	ON	-	0V
16	LG	Mode door motor feedback	ON	-	0 - 5V
17	GR/R	Ambient sensor	ON	-	0 - 5V
18	Y/B	Front air mix door motor feedback			
19	W/B	Defroster door motor CCW	ON	Counterclockwise rotation	Battery voltage
20	W	Defroster door motor CW	ON	Clockwise rotation	Battery voltage
21	O/B	Sensor return	ON	-	0 - 5V

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

MTC

# TROUBLE DIAGNOSIS

Terminal No.	Wire Color	Item	Ignition Switch	Condition	Voltage (V) (Approx.)
22	Y/R	Power supply for BAT	-	-	Battery voltage
23	R/L	Illumination +	ON	Park lamps ON	Battery voltage
24	R/Y	Illumination -	-	Park lamps ON	
26	G/B	Front blower request (speed 1)	ON	Front blower motor OFF	Battery voltage
				Front blower motor ON	0 - 5V
27	P/L	Air mix door motor (rear) CW	ON	Clockwise rotation	Battery voltage
28	LG/R	Air mix door motor (rear) CCW	ON	Counterclockwise rotation	Battery voltage
29	P/B	Intake door motor (passenger) CCW	ON	Counterclockwise rotation	Battery voltage
30	P	Intake door motor (passenger) CW	ON	Clockwise rotation	Battery voltage
33	V	Air mix door (rear) set point	ON	-	0 - 5V
34	L	CAN-H	ON	-	0 - 5V
35	P	CAN-L	ON	-	0 - 5V
36	G/B	Fan on signal	ON	Fan OFF	5V
				Fan ON	0V
38	W/G	Rear blower request	ON	Rear blower motor OFF	Battery voltage
				Rear blower motor ON	0V
39	Y/B	Rear select signal	ON	-	0V - 5V voltage
40	O	Variable blower control	ON	-	0 - 5V
42	G/B	Air mix door motor (rear) feedback	ON	-	0 - 5V

# TROUBLE DIAGNOSIS

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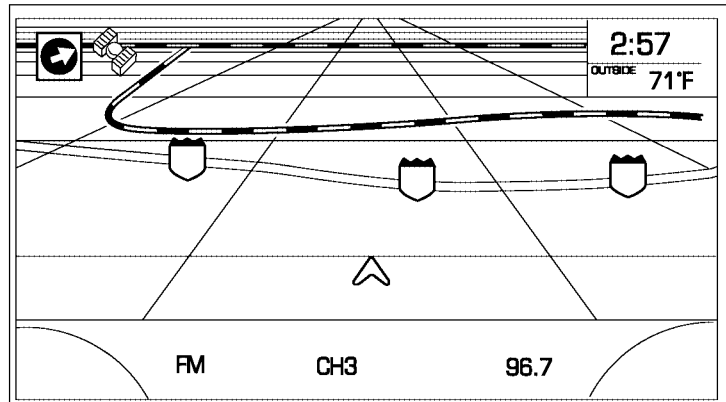
## A/C System Self-diagnosis Function DESCRIPTION

The self-diagnostic system diagnoses sensors, door motors, blower motor, etc. Refer to applicable sections (items) for details. Fault codes (if any are present) will be displayed in the ambient temperature display area. Refer to [MTC-52, "SELF-DIAGNOSIS CODE CHART"](#).

Ignition must be on to run self test.  
Self test must be run at an ambient of at least 10 degrees C.

### Self Test Via AV Switch w/navi Unit (color display)

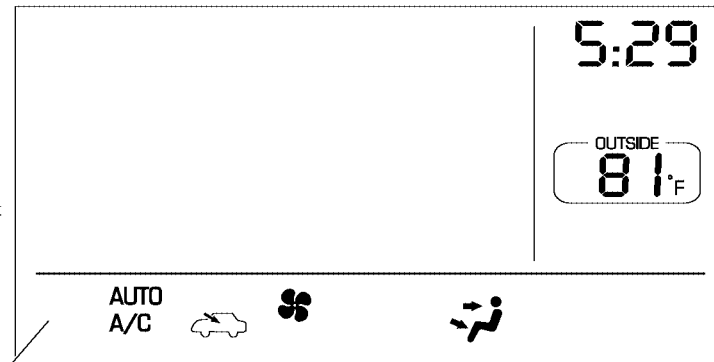
1. On the AV switch, hold the "Pause/Mute" button and twist the audio "Power/Volume" knob until the Self Diagnostic screen shows on the display.
2. Scroll down and select "Confirmation/Adjustment" with the joystick.
3. Scroll over and select the "Auto Climate Control" with the joystick to start the self-test.
4. The fan bars will flash on the display during the self-test, and then the fault codes will display in the ambient temperature area. They will continue scrolling until diagnostic mode is exited.
5. Exit by pressing the "Previous" button on AV switch until display returns to its normal operation screen. HVAC system will be off.



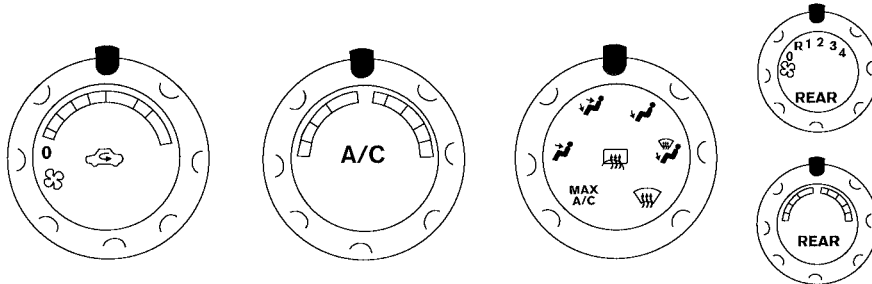
Display screen (with navigation)

### Self Test Via AV Switch w/o navi

1. On the audio/navi switches, hold the "Pause/Mute" button and twist the audio "Power/Volume" knob until the Self Diagnostic screen shows on the display.
2. Scroll down and select "Parts" with the joystick.
3. Select HVAC.
4. Select the "Start HVAC Diagnostics" with the joystick to start the self-test.
5. The fan bars will flash on the display during the self-test, and then the fault codes will display in the ambient temperature area. They will continue scrolling until diagnostic mode is exited.
6. Exit by pressing the "Previous" button on AV switch until display returns to its normal operation screen. HVAC system will be off.



Display screen (without navigation)



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# TROUBLE DIAGNOSIS

## SELF-DIAGNOSIS CODE CHART

Code No.	Reference page	
03	Battery voltage out of range	<a href="#">SC-4, "BATTERY"</a>
20	BCM not responding to A/C request	<a href="#">ATC-109, "DIAGNOSTIC PROCEDURE FOR MAGNET CLUTCH"</a>
21	BCM not responding to rear defroster request	<a href="#">GW-82, "REAR WINDOW DEFOGGER"</a>
22	Air mix door motor (front) circuit failure	<a href="#">MTC-65, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR (FRONT)"</a>
38	Air mix door motor (rear) circuit failure	<a href="#">MTC-68, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR (REAR)"</a>
40	Ambient sensor circuit short	<a href="#">MTC-120, "Ambient Sensor Circuit"</a>
41	Ambient sensor circuit open	
56	Intake sensor circuit short	<a href="#">MTC-122, "Intake Sensor Circuit"</a>
57	Intake sensor circuit open	
62	Defroster door motor circuit failure	<a href="#">MTC-77, "Defroster Door Motor Circuit"</a>
72	Intake door motor (passenger) circuit failure	<a href="#">MTC-75, "DIAGNOSTIC PROCEDURE FOR INTAKE DOOR MOTOR (PASSENGER)"</a>
80	CAN bus fault	<a href="#">LAN-5, "CAN COMMUNICATION"</a>
82	Intake door motor (driver) circuit failure	<a href="#">MTC-73, "DIAGNOSTIC PROCEDURE FOR INTAKE DOOR MOTOR (DRIVER)"</a>
90	Stuck switch	<a href="#">MTC-125, "FRONT AIR CONTROL"</a>
92	Mode door motor circuit failure	<a href="#">MTC-58, "Mode Door Motor Circuit"</a>

# TROUBLE DIAGNOSIS

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## Operational Check

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

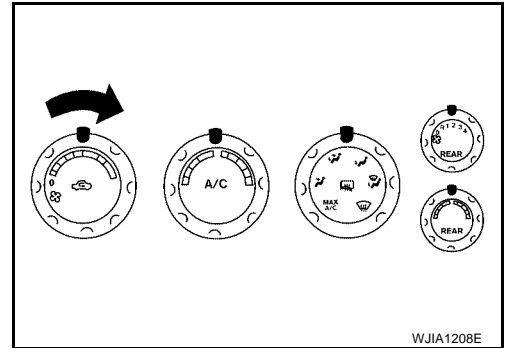
**Conditions : Engine running and at normal operating temperature**

### CHECKING BLOWER

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

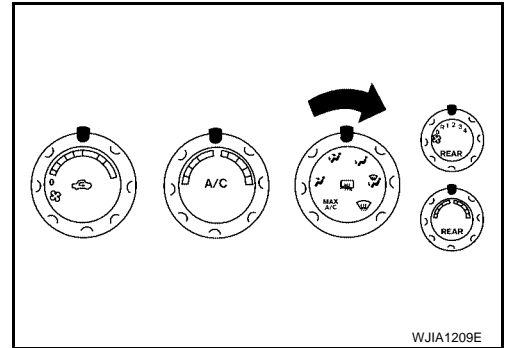
If NG, go to trouble diagnosis procedure for [MTC-82, "DIAGNOSTIC PROCEDURE FOR BLOWER MOTOR"](#)

If OK, continue with next check.



### CHECKING DISCHARGE AIR

1. Turn the mode dial.
2. Each position indicator should change shape (on display).



3. Confirm that discharge air comes out according to the air distribution table. Refer to [MTC-28, "Discharge Air Flow"](#).

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.

Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	100%	—	—
	50%	50%	—
	—	75%(100%)	25% (—)
	—	60%	40%
	—	—	100%

( ): Manually control

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### CHECKING RECIRCULATION

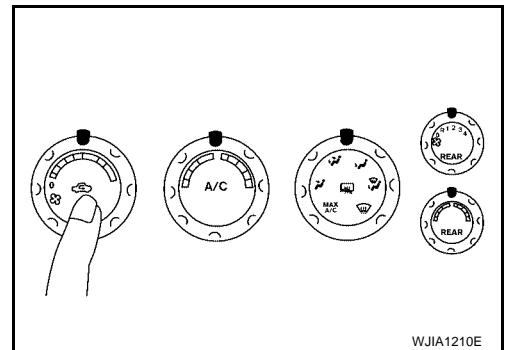
1. Press recirculation ( ) switch one time. Recirculation indicator should illuminate.
2. Press recirculation ( ) switch one more time. Recirculation indicator should go off.
3. Listen for intake door position change (blower sound should change slightly).

If NG, go to trouble diagnosis procedure for [MTC-72, "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, D/F or floor is selected.



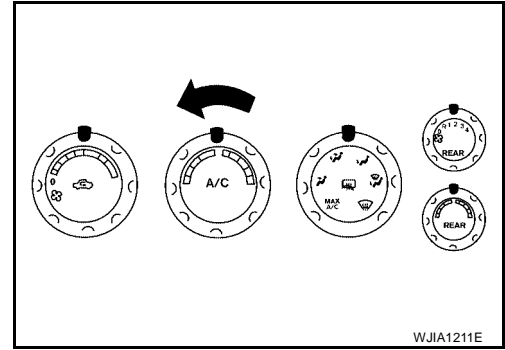
# TROUBLE DIAGNOSIS

## 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-107, "Insufficient Cooling"](#) . If air mix door motor appears to be malfunctioning, go to [MTC-65, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(FRONT\)"](#) .

If OK, continue with next check.

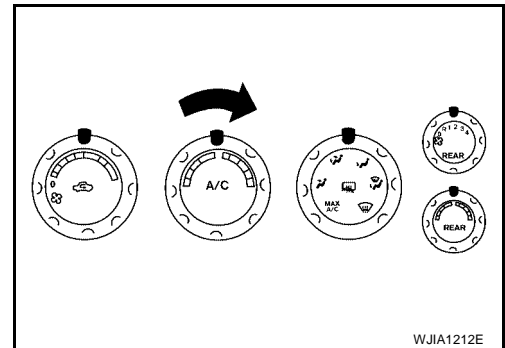


## CHECKING TEMPERATURE INCREASE

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-114, "Insufficient Heating"](#) . If air mix door motor appears to be malfunctioning, go to [MTC-65, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(FRONT\)"](#) .

If OK, continue with next check.

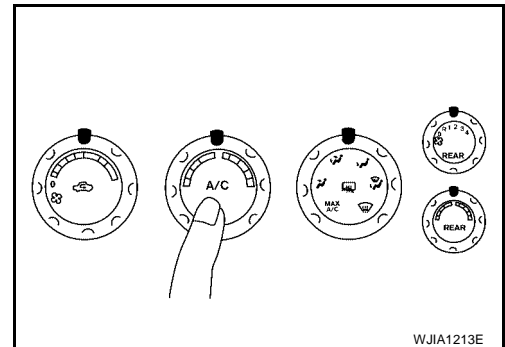


## CHECK A/C SWITCH

1. Press A/C switch with the fan 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-101, "Magnet Clutch Circuit"](#) .

If OK, continue with next check.



# TROUBLE DIAGNOSIS

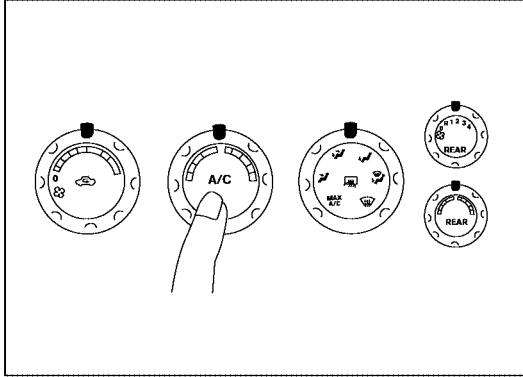
EJS001SH

## Power Supply and Ground Circuit for Front Air Control

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)

4. Replace front air control.

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

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# TROUBLE DIAGNOSIS

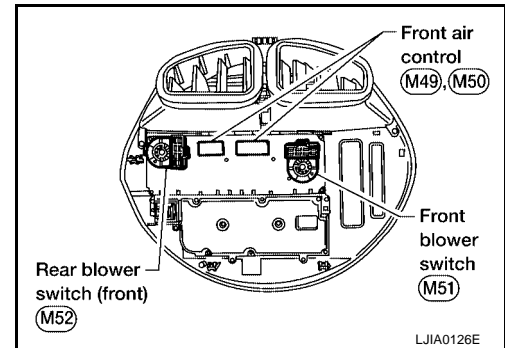
## COMPONENT DESCRIPTION

### 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.

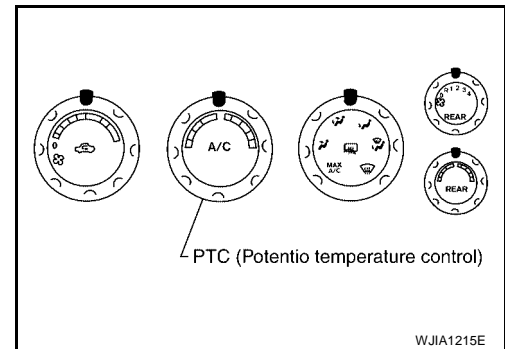
The front air control is unitized with control mechanisms. When the various switches and temperature dials are operated, data is input to the front air control.

Self-diagnostic functions are also built into the front air control to provide quick check of malfunctions in the auto air conditioner system.



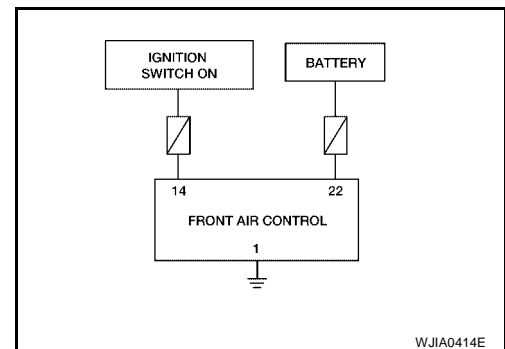
### Potential Temperature Control (PTC)

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.



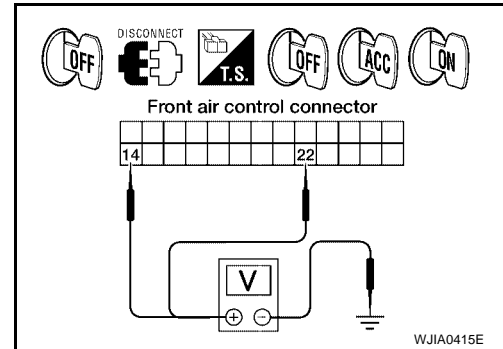


# TROUBLE DIAGNOSIS

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

1. Disconnect front air control connector.
2. Check voltage between front air control harness connector M49 terminals 14 (G/Y) and 22 (Y/R), and ground.

Terminals		Ignition switch position			
(+)		(-)	OFF	ACC	ON
front air control connector	Terminal No. (Wire color)				
M49	14 (G/Y)	Ground	Approx. 0V	Approx. 0V	Battery voltage
M49	22 (Y/R)		Battery voltage	Battery voltage	Battery voltage



### OK or NG

OK >> GO TO 2.

NG >> Check 10A and 15A fuses [Nos. 2 and 19, located in the fuse block (J/B)]. Refer to [PG-74](#).

- 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

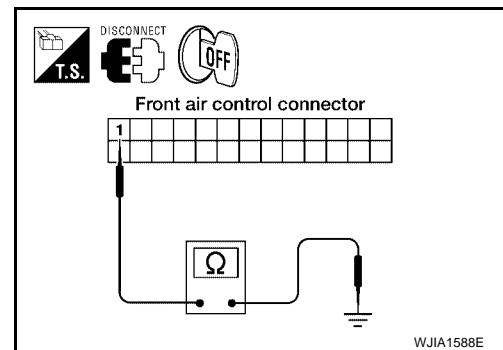
1. Turn ignition switch OFF.
2. Check continuity between front air control harness connector M49 terminal 1 (B) and ground.

**Continuity should exist.**

### OK or NG

OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).

NG >> Repair harness or connector.



# TROUBLE DIAGNOSIS

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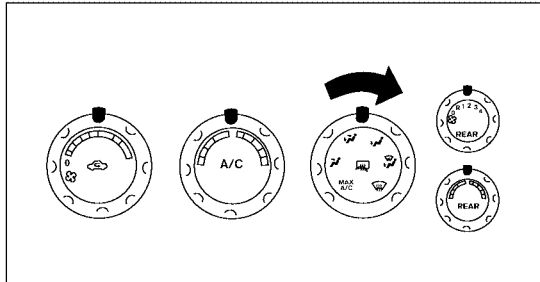
## Mode Door Motor Circuit

### 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

- Rotate mode dial four times.
- Each position indicator should change shape. (on display)

#### Discharge air flow

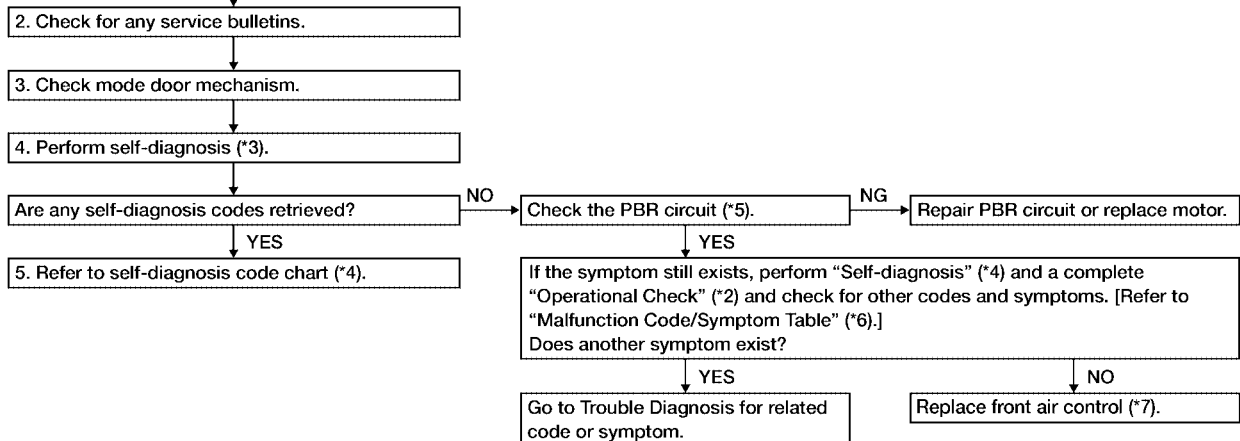
Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	100%	–	–
	60%	40%	–
	–	75%(100%)	25%(–)
	–	60%	40%
	–	–	100%

c. 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.



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\*1 [MTC-28, "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-59, "DIAGNOSTIC PROCEDURE FOR MODE DOOR MOTOR".](#)

\*6 [MTC-33, "SYMPTOM TABLE".](#)

\*7 [MTC-125, "FRONT AIR CONTROL".](#)

# TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

### Component Parts

Mode door control system components are:

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

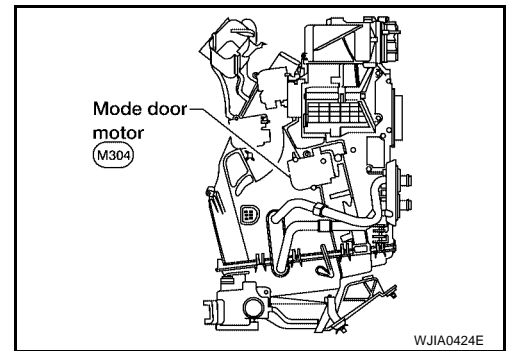
### System Operation

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.

## 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 set by the front air control. Motor rotation is conveyed to a link which activates the mode door.

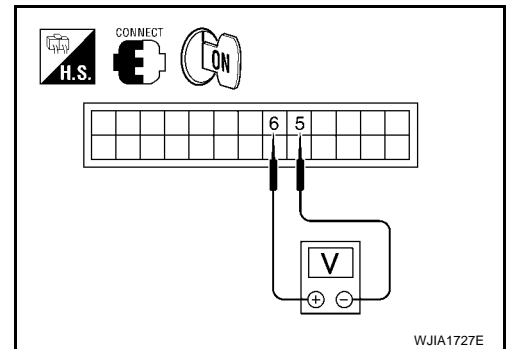


## DIAGNOSTIC PROCEDURE FOR MODE DOOR MOTOR

### 1. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Press the mode switch to the B/L (B/L) mode.
3. Check voltage between front air control harness connector M49 terminal 5 and terminal 6 while pressing the mode switch to the floor (FLOOR) mode.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	6	5	Press mode switch	Battery voltage



### OK or NG

- OK >> GO TO 3.  
NG >> GO TO 2.

# TROUBLE DIAGNOSIS

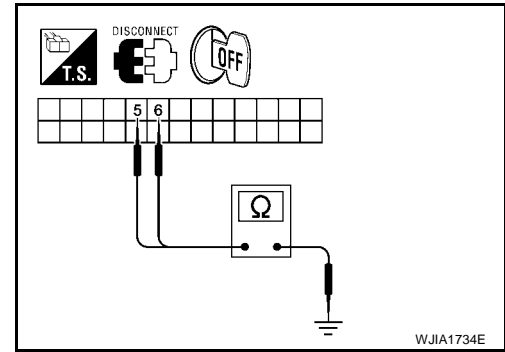
## 2. CHECK MODE DOOR MOTOR CIRCUITS FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check resistance between front air control harness connector M49 terminal 5, 6 and ground.

**5 - Ground : Continuity should not exist.**  
**6 - Ground : Continuity should not exist.**

OK or NG

- OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).  
 NG >> Repair or replace harness as necessary.



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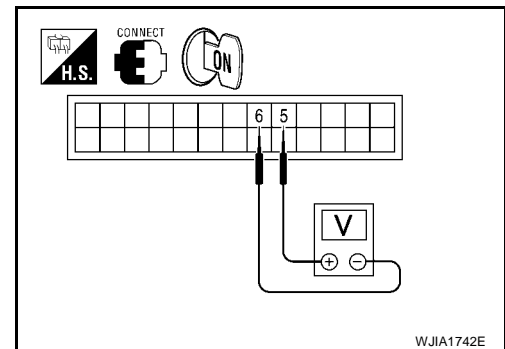
## 3. CHECK FRONT AIR CONTROL FOR GROUND AND POWER

1. Press the mode switch to the D/F (D/F) mode.
2. Check voltage between front air control harness connector M49 terminal 5 and terminal 6 while pressing the mode switch to the vent (V) mode.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	5	6	Press mode switch	Battery voltage

OK or NG

- OK >> GO TO 4.  
 NG >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).



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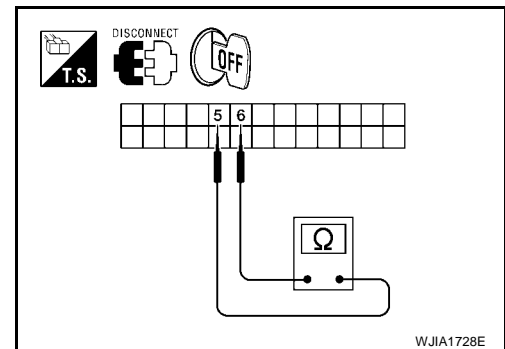
## 4. CHECK MODE DOOR MOTOR AND CIRCUITS FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 5 and terminal 6.

**Continuity should exist.**

OK or NG

- OK >> GO TO 6.  
 NG >> GO TO 5.



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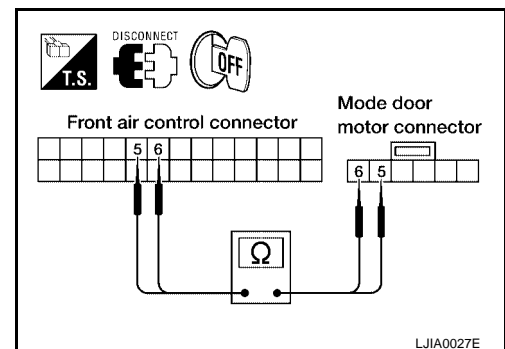
## 5. CHECK MODE DOOR MOTOR CIRCUITS FOR OPEN

1. Disconnect the mode door motor harness connector.
2. Check continuity between front air control harness connector M49 terminal 5, 6 and the mode door motor harness connector terminal 5, 6.

**5 - 5 : Continuity should exist.**  
**6 - 6 : Continuity should exist.**

OK or NG

- OK >> Replace mode door motor. Refer to [MTC-141, "MODE DOOR MOTOR"](#).  
 NG >> Repair or replace harness as necessary.



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# TROUBLE DIAGNOSIS

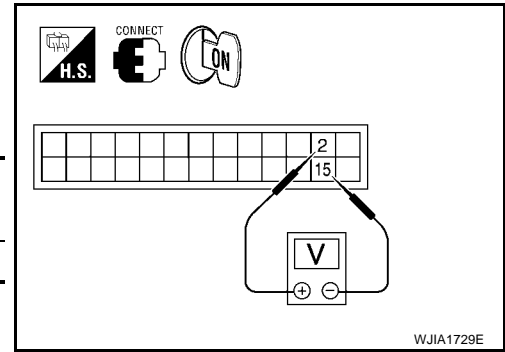
## 6. CHECK FRONT AIR CONTROL FOR PBR POWER AND GROUND

1. Reconnect front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M49 terminal 2 and terminal 15.

Connector	Terminals		Voltage (Approx.)
	(+)	(-)	
Front air control: M49	2	15	5V

### OK or NG

- OK >> GO TO 8.  
 NG >> GO TO 7.



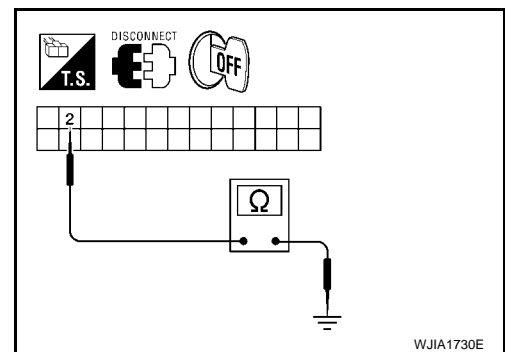
## 7. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 2 and ground.

**Continuity should not exist.**

### OK or NG

- OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).  
 NG >> Repair or replace harness as necessary.



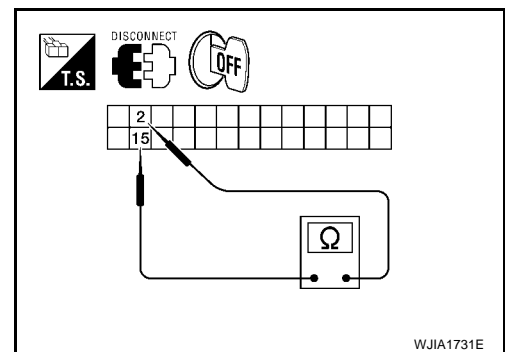
## 8. CHECK PBR REFERENCE VOLTAGE AND GROUND CIRCUITS

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 2 and terminal 15.

**Continuity should exist.**

### OK or NG

- OK >> GO TO 10.  
 NG >> GO TO 9.



## 9. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR OPEN

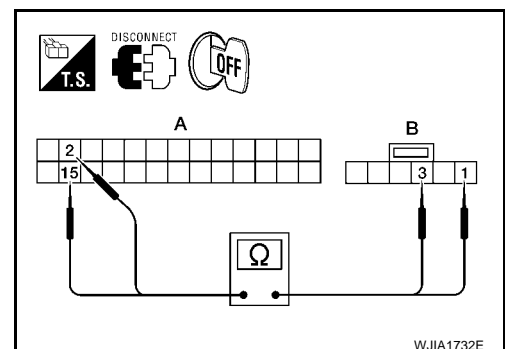
1. Disconnect the mode door motor harness connector.
2. Check continuity between mode door motor harness connector (B) M304 terminal 3, 1 and front air control harness connector (A) M49 terminal 2, 15.

**2 - 3 : Continuity should exist.**

**15 - 1 : Continuity should exist.**

### OK or NG

- OK >> Replace mode door motor. Refer to [MTC-141, "MODE DOOR MOTOR"](#).  
 NG >> Repair or replace harness as necessary.



# TROUBLE DIAGNOSIS

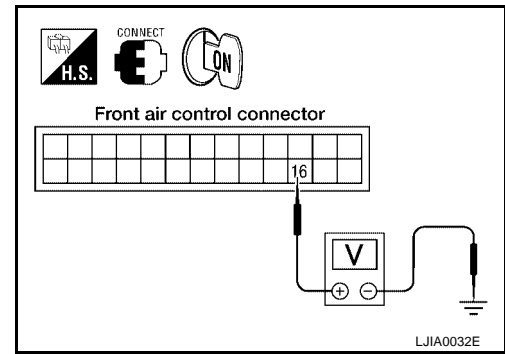
## 10. CHECK PBR FEEDBACK VOLTAGE

1. Reconnect the front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M49 terminal 16 and ground while cycling mode switch through all modes.

**Voltage** : **Approx. 1.V - 4.5V**

OK or NG

- OK >> GO TO 12.  
NG >> GO TO 11.



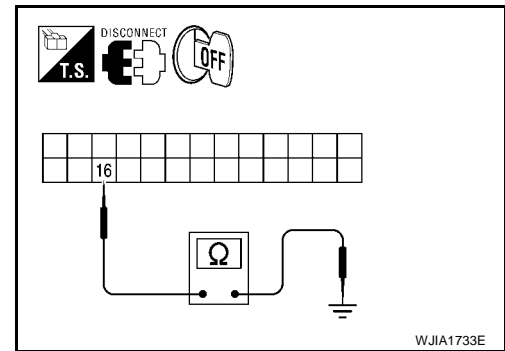
## 11. CHECK PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 16 and ground.

**Continuity should not exist.**

OK or NG

- OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).
- NG >> Repair or replace harness as necessary.



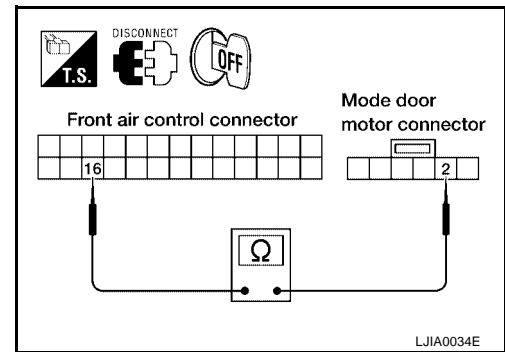
## 12. CHECK PBR FEEDBACK CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the mode door motor harness connector and front air control harness connector.
3. Check continuity between mode door motor harness connector M304 terminal 2 and front air control harness connector M49 terminal 16.

**Continuity should exist.**

OK or NG

- OK >> Replace mode door motor. Refer to [MTC-141, "MODE DOOR MOTOR"](#).
- NG >> Repair or replace harness as necessary.



# TROUBLE DIAGNOSIS

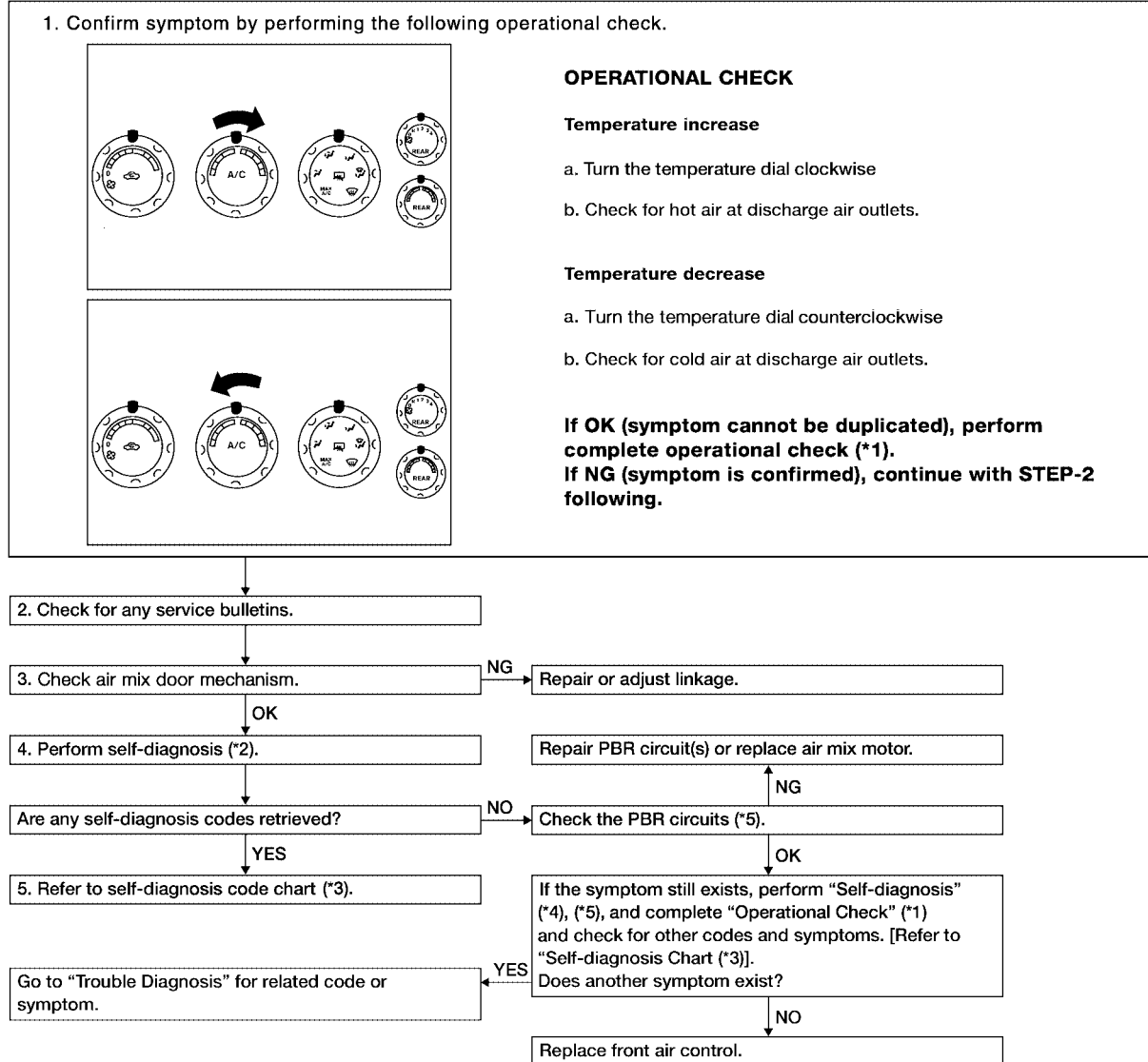
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## Air Mix Door Motor Circuit

### SYMPTOM:

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

### INSPECTION FLOW



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

\*4 [MTC-65. "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(FRONT\)"](#)

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

\*5 [MTC-68. "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(REAR\)"](#)

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

WJIA1217E

# 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

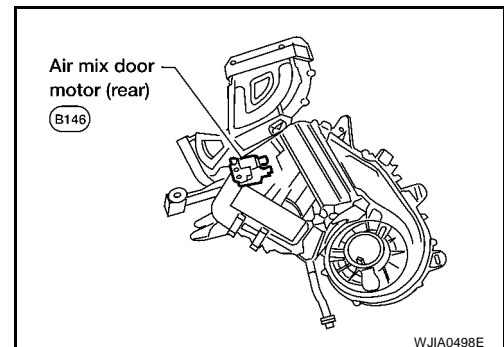
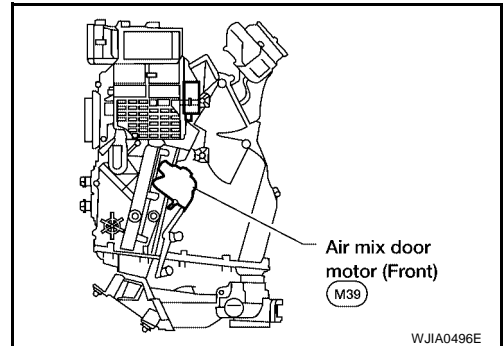
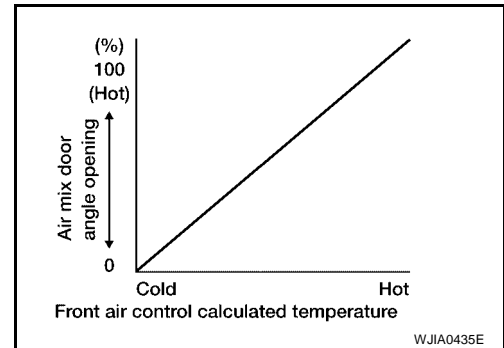
The front air control receives data from the temperature selected by the driver and rear passenger. The front air control then applies a voltage to one circuit of the appropriate air mix door motor, while ground is applied to the other circuit, causing the appropriate air mix door motor to rotate. The 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 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 front air mix door motor is attached to the front heater & cooling unit. The rear air mix door motor is attached to the rear heater & cooling unit. These motors rotate so that the air mix door is opened or closed to a position set by the front (or rear) 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 motors.





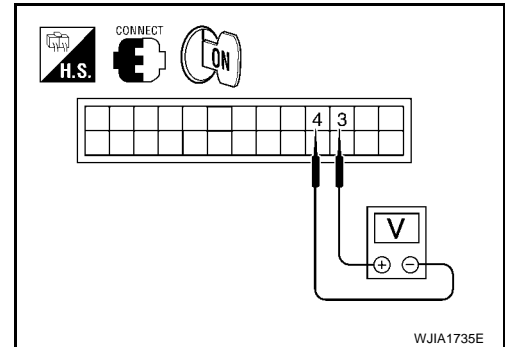
# TROUBLE DIAGNOSIS

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

### 1. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Rotate temperature control dial (front) to maximum heat.
3. Check voltage between front air control harness connector M49 terminal 3 and terminal 4 while rotating temperature control dial (front) to maximum cold.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	3	4	Rotate temp control dial	Battery voltage



OK or NG

- OK >> GO TO 3.
- NG >> GO TO 2.

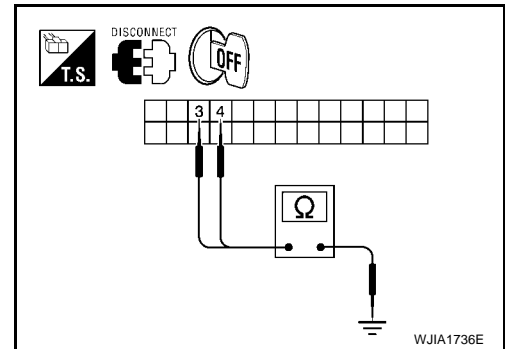
### 2. CHECK AIR MIX DOOR MOTOR (FRONT) CIRCUITS FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 3, 4 and ground.

- 3 - Ground : Continuity should not exist.**
- 4 - Ground : Continuity should not exist.**

OK or NG

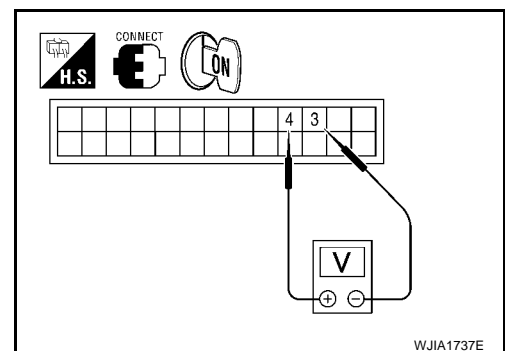
- OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).
- NG >> Repair or replace harness as necessary.



### 3. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Rotate temperature control dial (front) to maximum heat.
2. Check voltage between front air control harness connector M49 terminal 3 and terminal 4 while rotating temperature control dial (front) to maximum cold.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	4	3	Rotate temp control dial	Battery voltage



OK or NG

- OK >> GO TO 4.
- NG >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).

# TROUBLE DIAGNOSIS

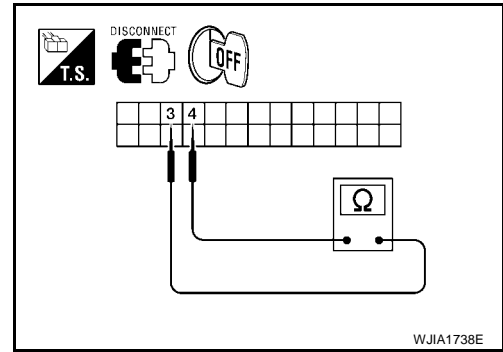
## 4. CHECK AIR MIX DOOR MOTOR (FRONT) CIRCUITS FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 3 and terminal 4.

**Continuity should exist.**

OK or NG

- OK >> GO TO 6.  
NG >> GO TO 5.



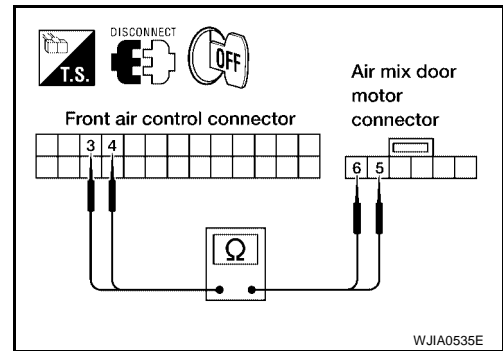
## 5. CHECK AIR MIX DOOR MOTOR (FRONT) CIRCUITS FOR OPEN

1. Disconnect the air mix door motor (front) harness connector.
2. Check continuity between front air control harness connector M49 terminal 3, 4 and the air mix door motor (front) harness connector M307 terminal 5, 6.

**3 - 5 : Continuity should exist.**  
**4 - 6 : Continuity should exist.**

OK or NG

- OK >> Replace air mix door motor (front). Refer to [MTC-143, "AIR MIX DOOR MOTOR \(FRONT\)"](#) .  
NG >> Repair or replace harness as necessary.



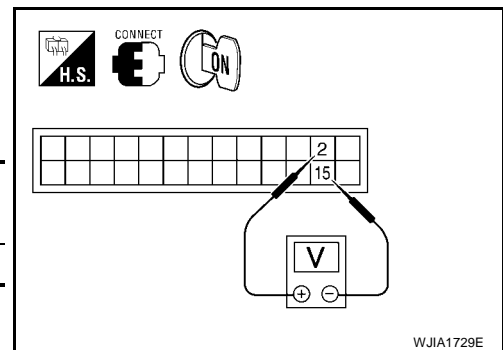
## 6. CHECK FRONT AIR CONTROL FOR PBR POWER AND GROUND

1. Reconnect front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M49 terminal 2 and terminal 15.

Connector	Terminals		Voltage (Approx.)
	(+)	(-)	
Front air control: M49	2	15	5V

OK or NG

- OK >> GO TO 8.  
NG >> GO TO 7.



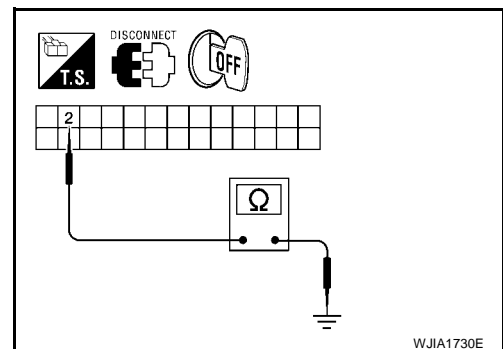
## 7. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 2 and ground.

**Continuity should not exist.**

OK or NG

- OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#) .  
NG >> Repair or replace harness as necessary.



# TROUBLE DIAGNOSIS

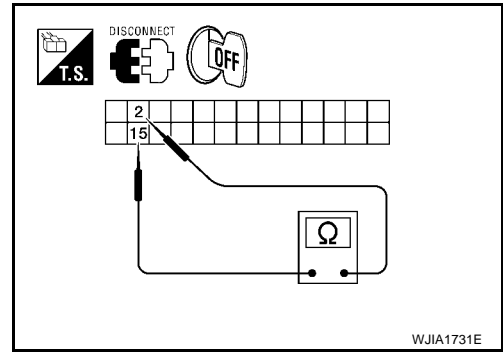
## 8. CHECK PBR REFERENCE VOLTAGE AND GROUND CIRCUITS

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 2 and terminal 15.

**Continuity should exist.**

OK or NG

- OK >> GO TO 10.  
NG >> GO TO 9.



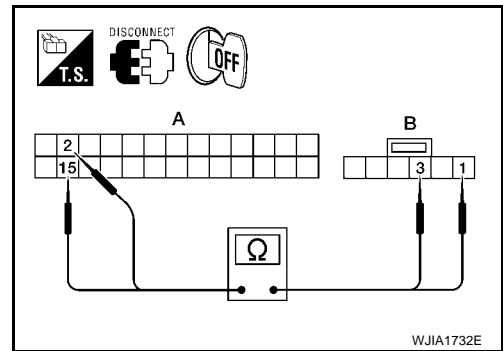
## 9. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR OPEN

1. Disconnect the air mix door motor (front) harness connector.
2. Check continuity between air mix door motor (front) harness connector (B) M307 terminal 3, 1 and front air control harness connector (A) M49 terminal 2, 15.

**2 - 3 : Continuity should exist.**  
**15 - 1 : Continuity should exist.**

OK or NG

- OK >> Replace air mix door motor (front). Refer to [MTC-143, "AIR MIX DOOR MOTOR \(FRONT\)"](#).  
NG >> Repair or replace harness as necessary.



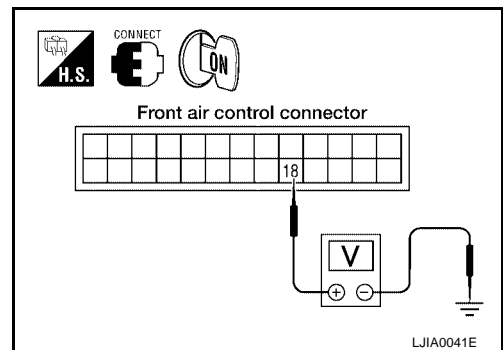
## 10. CHECK PBR FEEDBACK VOLTAGE

1. Reconnect the front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M49 terminal 18 and ground while rotating temperature control dial from maximum heat to maximum cold.

**Voltage : Approx. .5V - 4.5V**

OK or NG

- OK >> GO TO 12.  
NG >> GO TO 11.



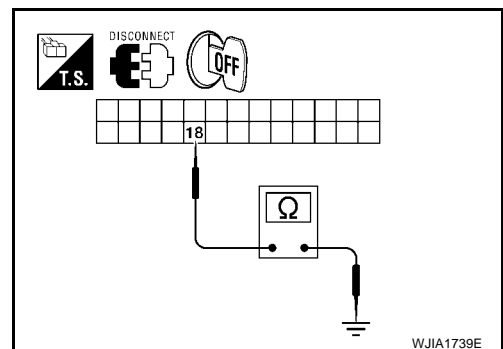
## 11. CHECK PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 18 and ground.

**Continuity should not exist.**

OK or NG

- OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).  
NG >> Repair or replace harness as necessary.



# TROUBLE DIAGNOSIS

## 12. CHECK PBR FEEDBACK CIRCUIT FOR OPEN

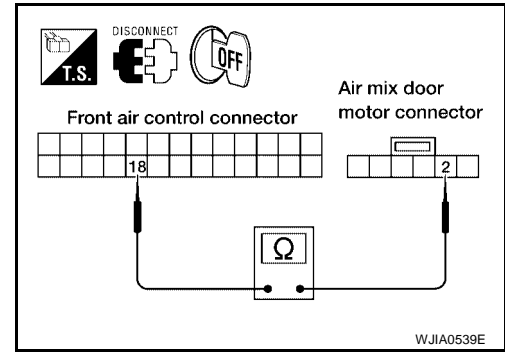
1. Turn ignition switch OFF.
2. Disconnect the air mix door motor (front) harness connector and front air control harness connector.
3. Check continuity between air mix door motor (front) harness connector M307 terminal 2 and front air control harness connector M49 terminal 18.

**Continuity should exist.**

OK or NG

OK >> Replace air mix door motor (front). Refer to [MTC-143, "AIR MIX DOOR MOTOR \(FRONT\)"](#).

NG >> Repair or replace harness as necessary.



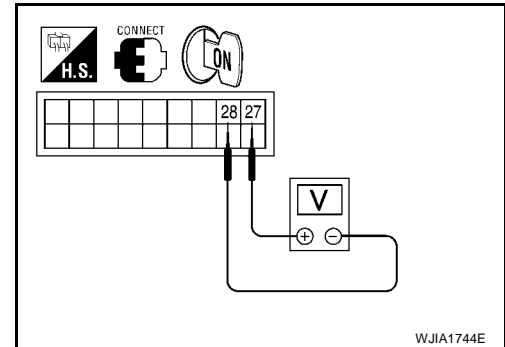
WJIA0539E

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

### 1. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Rotate temperature control dial (rear) to maximum heat.
3. Check voltage between front air control harness connector M50 terminal 27 and terminal 28 while rotating temperature control dial (rear) to maximum cold.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M50	27	28	Rotate temp control dial	Battery voltage



WJIA1744E

OK or NG

OK >> GO TO 3.

NG >> GO TO 2.

### 2. CHECK AIR MIX DOOR MOTOR (REAR) CIRCUITS FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M50 terminal 27, 28 and ground.

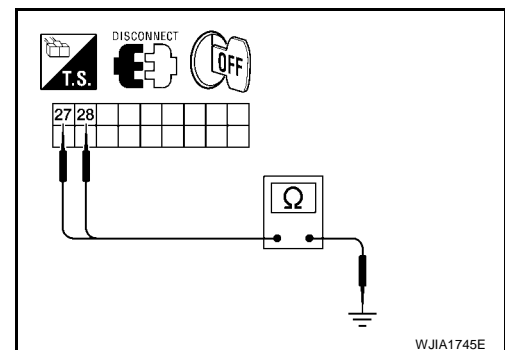
**27 - Ground : Continuity should not exist.**

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

OK or NG

OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).

NG >> Repair or replace harness as necessary.



WJIA1745E

# TROUBLE DIAGNOSIS

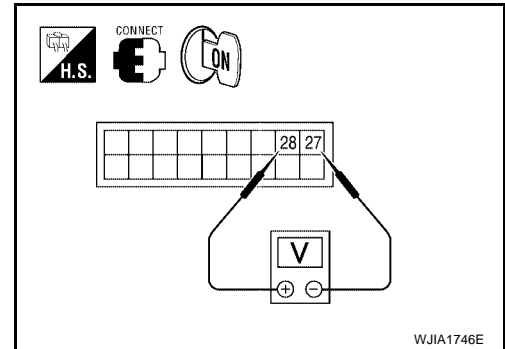
## 3. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Rotate temperature control dial (rear) to maximum cold.
2. Check voltage between front air control harness connector M50 terminal 27 and terminal 28 while rotating temperature control dial (rear) to maximum heat.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M50	28	27	Rotate temp control dial	Battery voltage

OK or NG

- OK >> GO TO 4.  
 NG >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#) .



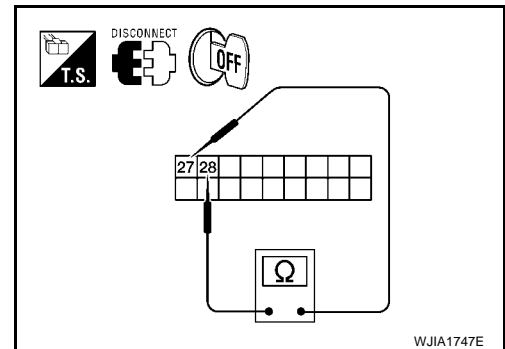
## 4. CHECK AIR MIX DOOR MOTOR (REAR) CIRCUITS FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M50 terminal 27 and terminal 28.

**Continuity should exist.**

OK or NG

- OK >> GO TO 6.  
 NG >> GO TO 5.



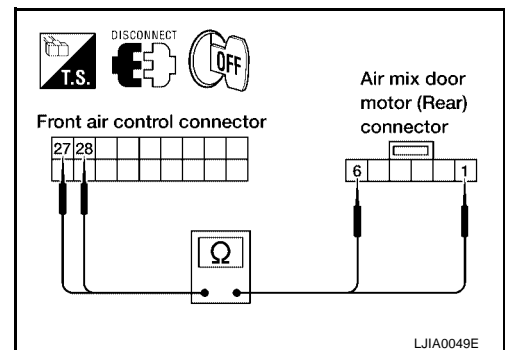
## 5. CHECK AIR MIX DOOR MOTOR (REAR) CIRCUITS FOR OPEN

1. Disconnect the air mix door motor (rear) harness connector.
2. Check continuity between front air control harness connector M50 terminal 27, 28 and the air mix door motor (rear) harness connector B146 terminal 1, 6.

**27 - 1 : Continuity should exist.**  
**28 - 6 : Continuity should exist.**

OK or NG

- OK >> Replace air mix door motor (rear). Refer to [MTC-144, "AIR MIX DOOR MOTOR \(REAR\)"](#) .  
 NG >> Repair or replace harness as necessary.



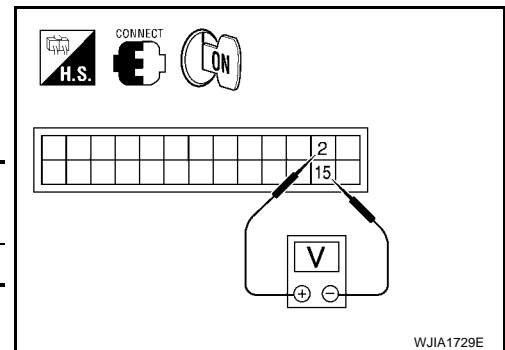
## 6. CHECK FRONT AIR CONTROL FOR PBR POWER AND GROUND

1. Reconnect front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M49 terminal 2 and terminal 15.

Connector	Terminals		Voltage (Approx.)
	(+)	(-)	
Front air control: M49	2	15	5V

OK or NG

- OK >> GO TO 8.  
 NG >> GO TO 7.



# TROUBLE DIAGNOSIS

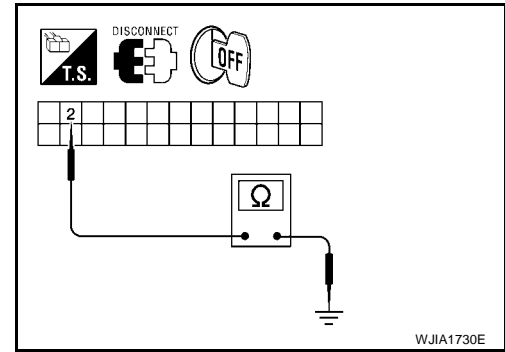
## 7. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 2 and ground.

**Continuity should not exist.**

OK or NG

- OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).
- NG >> Repair or replace harness as necessary.



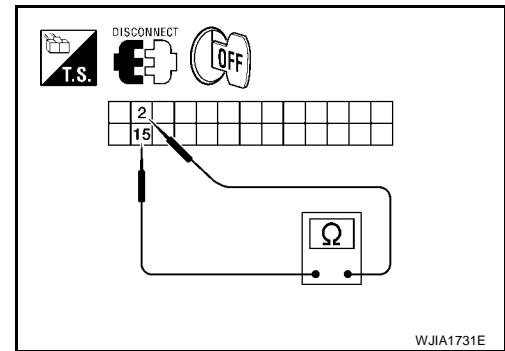
## 8. CHECK PBR REFERENCE VOLTAGE AND GROUND CIRCUITS

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 2 and terminal 15.

**Continuity should exist.**

OK or NG

- OK >> GO TO 10.
- NG >> GO TO 9.



## 9. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR OPEN

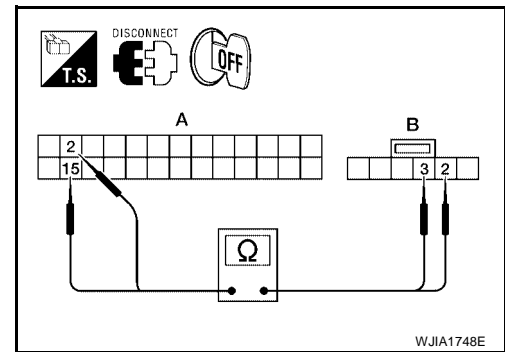
1. Disconnect the air mix door motor (rear) harness connector.
2. Check continuity between air mix door motor (rear) harness connector (B) B146 terminal 3, 2 and front air control harness connector (A) M49 terminal 2, 15.

**2 - 3 : Continuity should exist.**

**15 - 2 : Continuity should exist.**

OK or NG

- OK >> Replace air mix door motor (rear). Refer to [MTC-144, "AIR MIX DOOR MOTOR \(REAR\)"](#).
- NG >> Repair or replace harness as necessary.



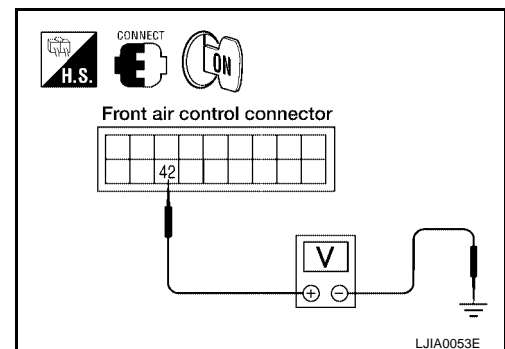
## 10. CHECK PBR FEEDBACK VOLTAGE

1. Reconnect the front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M50 terminal 42 and ground while rotating temperature control dial (rear) from maximum cold to maximum heat.

**Voltage : Approx. 1V - 4.5V**

OK or NG

- OK >> GO TO 12.
- NG >> GO TO 11.



# TROUBLE DIAGNOSIS

## 11. CHECK PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT TO GROUND

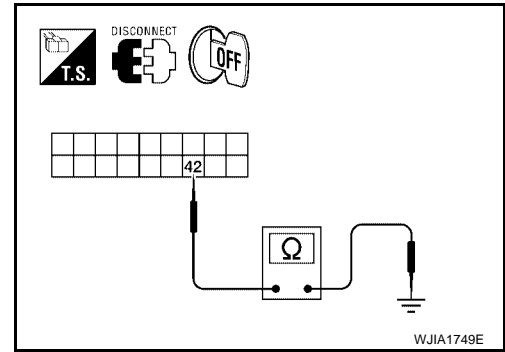
1. Turn ignition switch OFF.
2. Disconnect front air control harness connector.
3. Check continuity between front air control harness connector M50 terminal 42 and ground.

**Continuity should not exist.**

OK or NG

OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).

NG >> Repair or replace harness as necessary.



## 12. CHECK PBR FEEDBACK CIRCUIT FOR OPEN

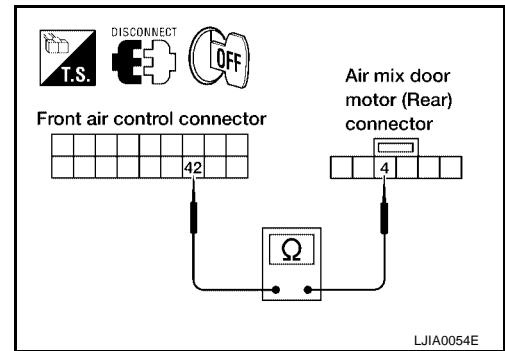
1. Turn ignition switch OFF.
2. Disconnect the air mix door motor (rear) harness connector and front air control harness connector.
3. Check continuity between air mix door motor (rear) harness connector B146 terminal 4 and front air control harness connector M50 terminal 42.

**Continuity should exist.**

OK or NG

OK >> Replace air mix door motor (rear). Refer to [MTC-144, "AIR MIX DOOR MOTOR \(REAR\)"](#).

NG >> Repair or replace harness as necessary.



A  
B  
C  
D  
E  
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L  
M

MTC

# TROUBLE DIAGNOSIS

EJS001SK

## Intake Door Motor Circuit

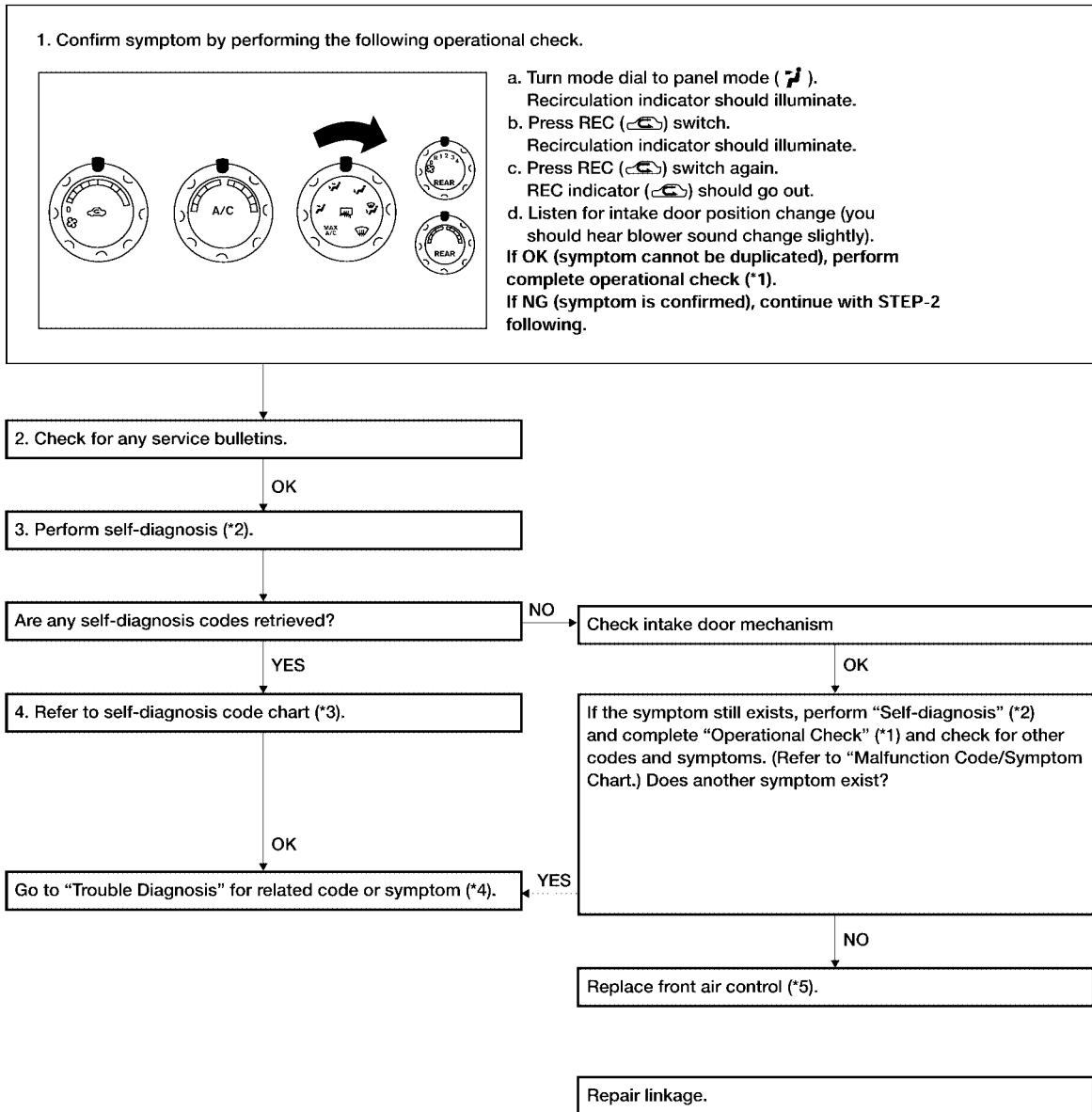
### SYMPTOM:

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

### NOTE:

Recirculation is not allowed in defrost, defrost/floor or floor modes.

### 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-31, "TROUBLE DIAGNOSIS"](#)

\*5 [MTC-125, "FRONT AIR CONTROL"](#)

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# TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

### Component Parts

Intake door control system components are:

- Front air control
- Intake door motor (driver and passenger)

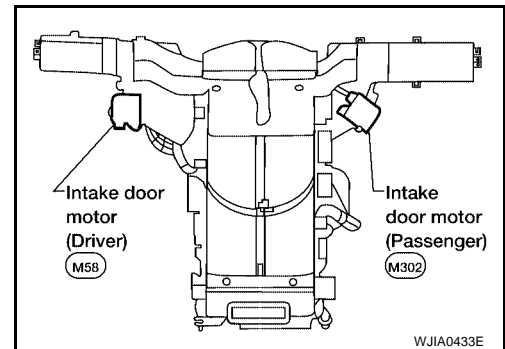
### System Operation

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

## COMPONENT DESCRIPTION

### Intake door motors

The driver and passenger intake door motors are attached to the intake unit. They rotate 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.



## DIAGNOSTIC PROCEDURE FOR INTAKE DOOR MOTOR (DRIVER)

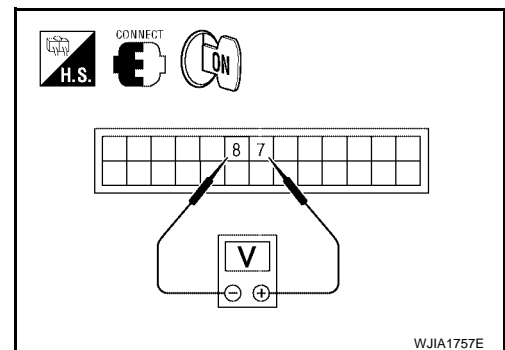
### 1. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Check voltage between front air control harness connector M49 terminal 7 and terminal 8 while placing the HVAC system into self-diagnostic mode.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	7	8	Self-diagnostic mode	Battery voltage

OK or NG

- OK >> GO TO 3.  
NG >> GO TO 2.



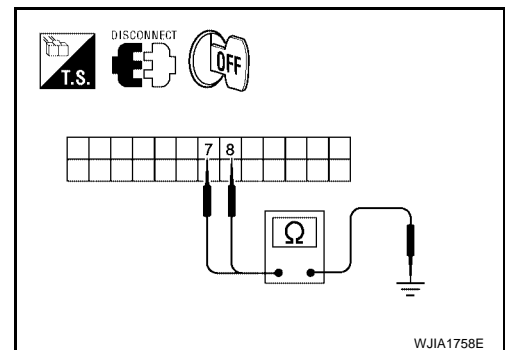
### 2. CHECK INTAKE DOOR MOTOR (DRIVER) CIRCUITS FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 7, 8 and ground.

- 7 - Ground : Continuity should not exist.**  
**8 - Ground : Continuity should not exist.**

OK or NG

- OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).  
NG >> Repair or replace harness as necessary.



# TROUBLE DIAGNOSIS

## 3. CHECK FRONT AIR CONTROL FOR GROUND AND POWER

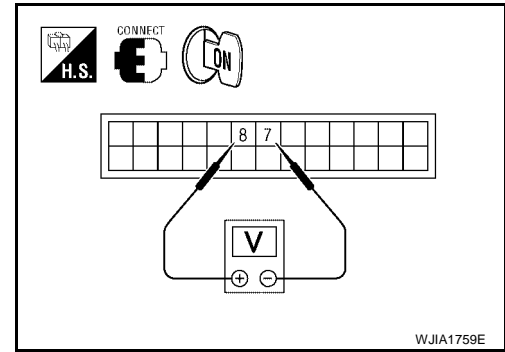
1. Press the "PREV" button to back out of self-diagnostic mode.
2. Check voltage between front air control harness connector M49 terminal 7 and terminal 8 while placing the HVAC system into self-diagnostic mode.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	8	7	Self-diagnostic mode	Battery voltage

### OK or NG

OK >> GO TO 4.

NG >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#) .



## 4. CHECK INTAKE DOOR MOTOR (DRIVER) AND CIRCUITS FOR OPEN

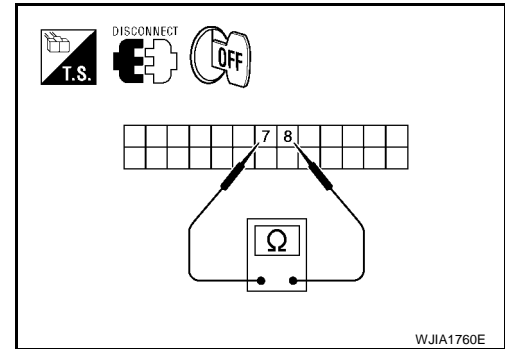
1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 7 and terminal 8.

**Continuity should exist.**

### OK or NG

OK >> Replace intake door motor (driver). Refer to [MTC-139, "DRIVER SIDE"](#) .

NG >> GO TO 5.



## 5. CHECK INTAKE DOOR MOTOR (DRIVER) CIRCUITS FOR OPEN

1. Disconnect the intake door motor (driver) harness connector.
2. Check continuity between front air control harness connector M49 terminal 7, 8 and the intake door motor (driver) harness connector terminal 1, 6.

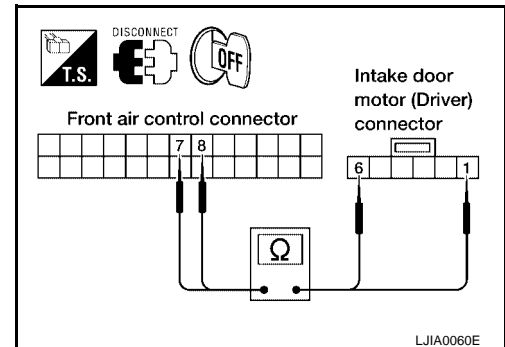
**1 - 7 : Continuity should exist.**

**6 - 8 : Continuity should exist.**

### OK or NG

OK >> Replace intake door motor (driver). Refer to [MTC-139, "DRIVER SIDE"](#) .

NG >> Repair or replace harness as necessary.



# TROUBLE DIAGNOSIS

## DIAGNOSTIC PROCEDURE FOR INTAKE DOOR MOTOR (PASSENGER)

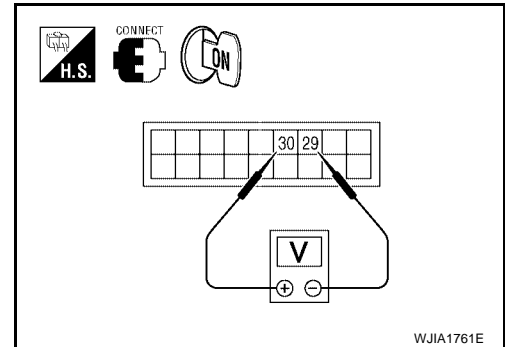
### 1. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Check voltage between front air control harness connector M50 terminal 29 and terminal 30 while placing the HVAC system into self-diagnostic mode.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M50	30	29	Self-diagnostic mode	Battery voltage

#### OK or NG

- OK >> GO TO 3.  
 NG >> GO TO 2.



### 2. CHECK INTAKE DOOR MOTOR (PASSENGER) CIRCUITS FOR SHORT TO GROUND

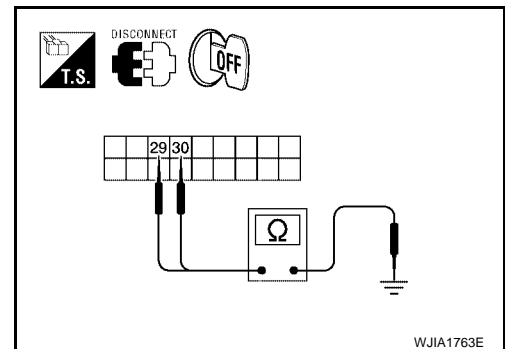
1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M50 terminal 29, 30 and ground.

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

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

#### OK or NG

- OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#) .  
 NG >> Repair or replace harness as necessary.



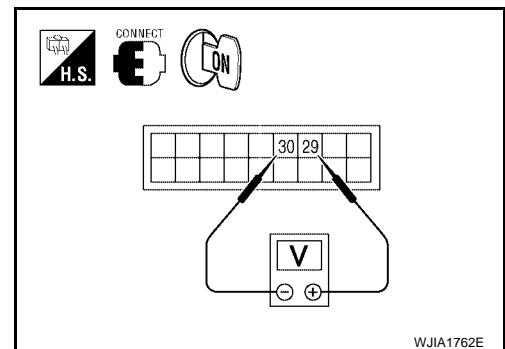
### 3. CHECK FRONT AIR CONTROL FOR GROUND AND POWER

1. Press the "PREV" button to back out of self-diagnostic mode.
2. Check voltage between front air control harness connector M50 terminal 29 and terminal 30 while placing the HVAC system into self-diagnostic mode.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M50	29	30	Self-diagnostic mode	Battery voltage

#### OK or NG

- OK >> GO TO 4.  
 NG >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#) .



# TROUBLE DIAGNOSIS

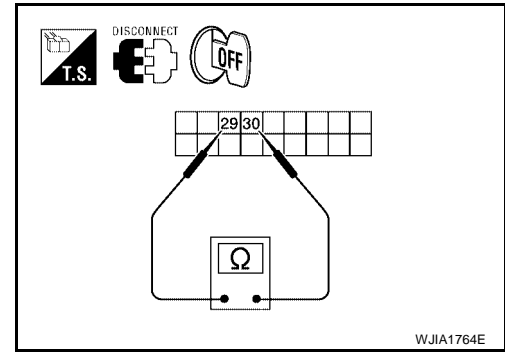
## 4. CHECK INTAKE DOOR MOTOR (PASSENGER) AND CIRCUITS FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M50 terminal 29 and terminal 30.

**Continuity should exist.**

OK or NG

- OK >> Replace intake door motor (passenger). Refer to [MTC-140, "PASSENGER SIDE"](#).
- NG >> GO TO 5.



## 5. CHECK INTAKE DOOR MOTOR (PASSENGER) CIRCUITS FOR OPEN

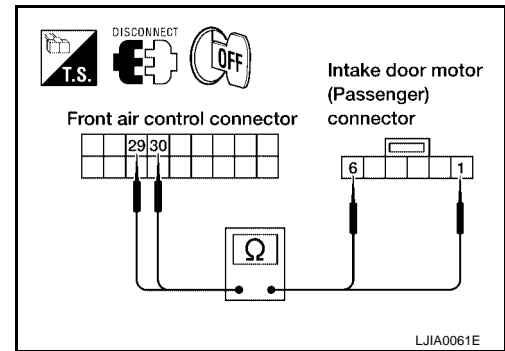
1. Disconnect the intake door motor (passenger) harness connector.
2. Check continuity between front air control harness connector M50 terminal 29, 30 and the intake door motor (passenger) harness connector terminal 1, 6.

**29 - 1 : Continuity should exist.**

**30 - 6 : Continuity should exist.**

OK or NG

- OK >> Replace intake door motor (passenger). Refer to [MTC-140, "PASSENGER SIDE"](#).
- NG >> Repair or replace harness as necessary.



# TROUBLE DIAGNOSIS

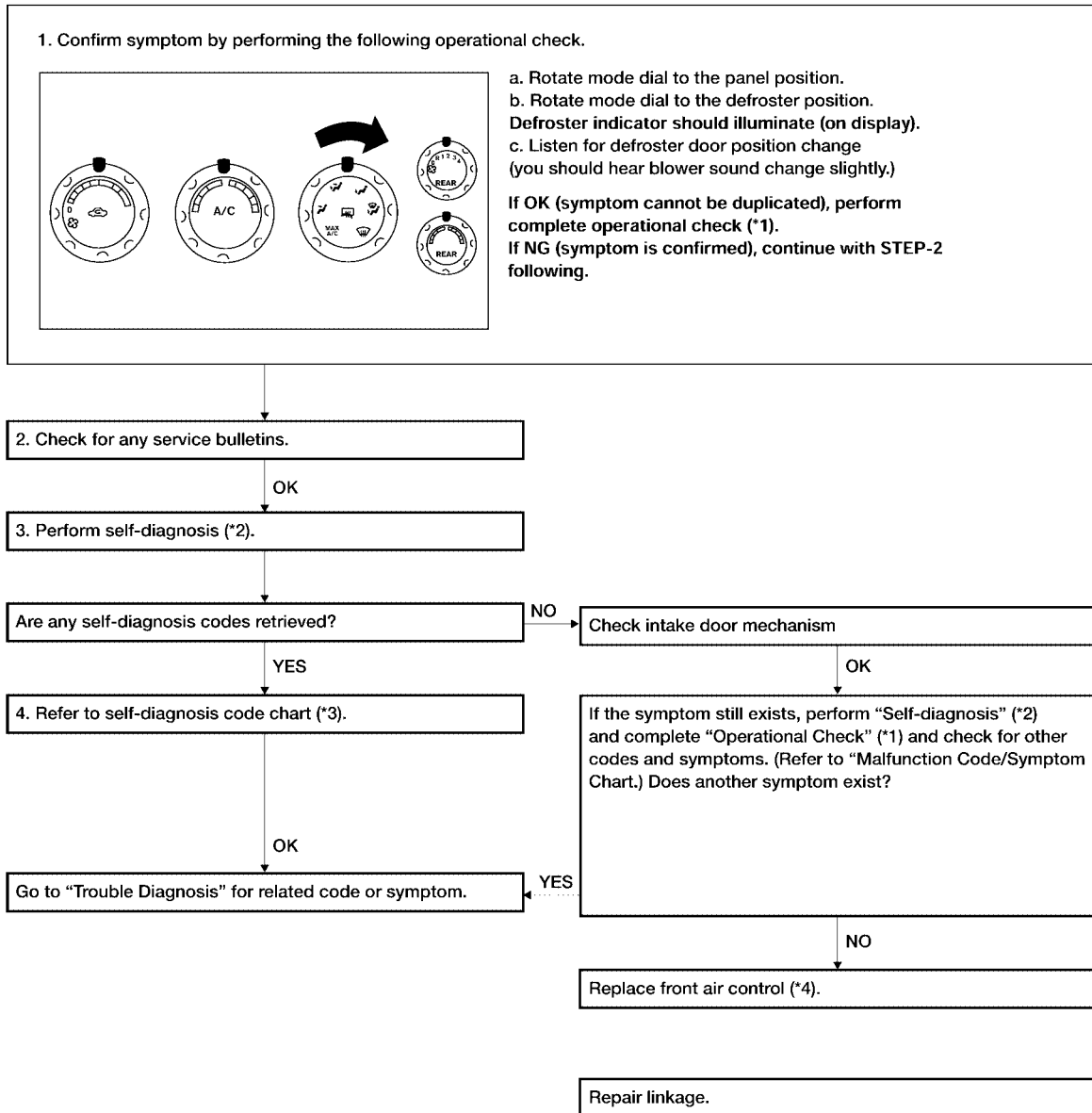
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## Defroster Door Motor Circuit

### SYMPTOM:

- Defroster door does not change.
- Defroster door 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"](#)

\*4 [ATC-139, "FRONT AIR CONTROL"](#)

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# TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

### Component Parts

Defroster door control system components are:

- Front air control
- Defroster door motor

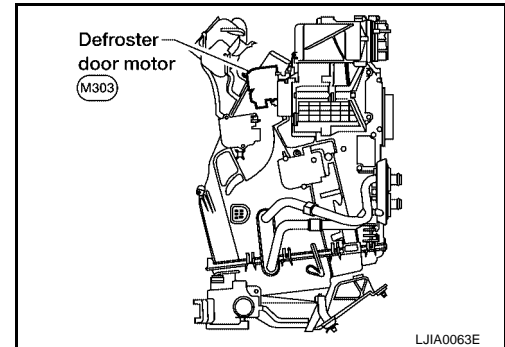
### System Operation

The front air control determines defroster door position based on the position of the mode switch. When the mode switch is in the defroster position, the defroster door motor rotates directing air to the defroster ducts. When any mode other than defroster is selected, the defroster motor rotates in the opposite direction closing off air flow to the defroster ducts.

## COMPONENT DESCRIPTION

### Defroster door motor

The defroster door motor is attached to the front heater & cooling unit. The front air control sends a voltage to rotate to the defroster door directing the air flow either to the defroster ducts, or to the floor ducts, depending on which way the voltage and ground are applied to the motor leads. Motor rotation is conveyed to a lever which activates the defroster door.



## DIAGNOSTIC PROCEDURE FOR DEFROSTER DOOR MOTOR

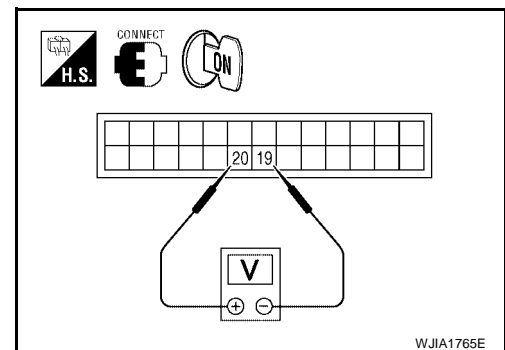
### 1. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Check voltage between front air control harness connector M49 terminal 19 and terminal 20 while placing the HVAC system into self-diagnostic mode.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	20	19	Self-diagnostic mode	Battery voltage

#### OK or NG

- OK >> GO TO 3.  
NG >> GO TO 2.



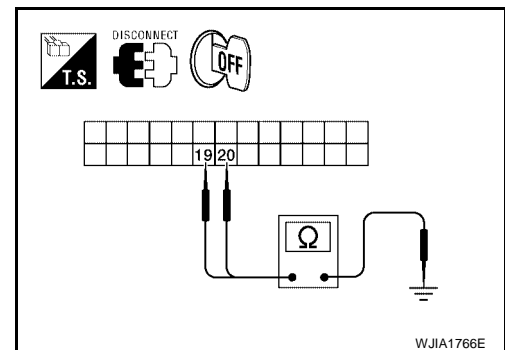
### 2. CHECK DEFROSTER DOOR MOTOR CIRCUITS FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 20, 19 and ground.

- 19 - Ground : Continuity should not exist.**  
**20 - Ground : Continuity should not exist.**

#### OK or NG

- OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).  
NG >> Repair or replace harness as necessary.



# TROUBLE DIAGNOSIS

## 3. CHECK FRONT AIR CONTROL FOR GROUND AND POWER

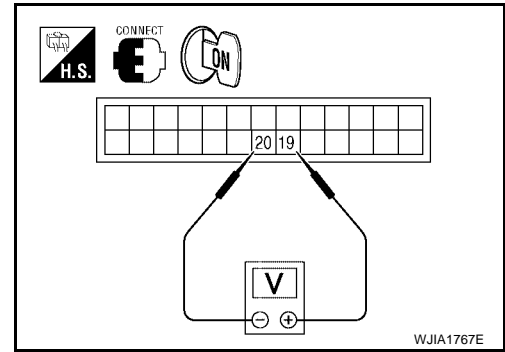
1. Press the "PREV" button to back out of self-diagnostic mode.
2. Check voltage between front air control harness connector M49 terminal 20 and terminal 19 while placing the HVAC system into self-diagnostic mode.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	19	20	Self-diagnostic mode	Battery voltage

### OK or NG

OK >> GO TO 4.

NG >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#) .



## 4. CHECK DEFROSTER DOOR MOTOR AND CIRCUITS FOR OPEN

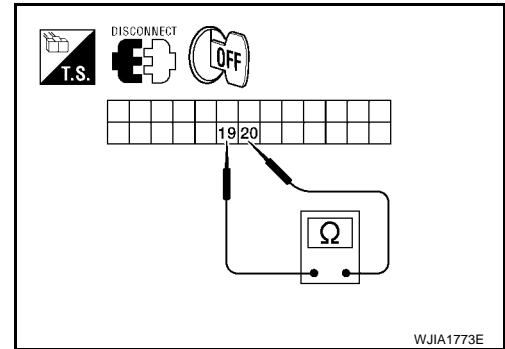
1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 19 and terminal 20.

Continuity should exist.

### OK or NG

OK >> Replace defroster door motor. Refer to [MTC-137, "DEFROSTER DOOR MOTOR"](#) .

NG >> GO TO 5.



## 5. CHECK DEFROSTER DOOR MOTOR CIRCUITS FOR OPEN

1. Disconnect the defroster door motor harness connector.
2. Check continuity between front air control harness connector M49 terminal 19, 20 and the defroster door motor harness connector terminal 1, 6.

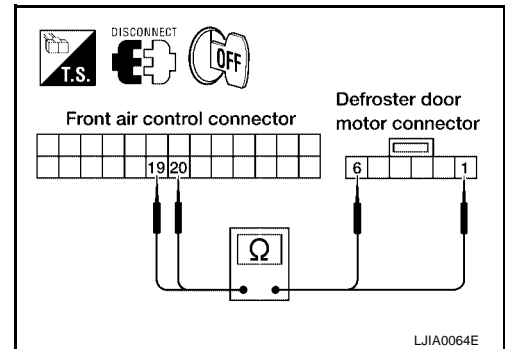
19 - 1 : Continuity should exist.

20 - 6 : Continuity should exist.

### OK or NG

OK >> Replace defroster door motor. Refer to [MTC-137, "DEFROSTER DOOR MOTOR"](#) .

NG >> Repair or replace harness as necessary.



# TROUBLE DIAGNOSIS

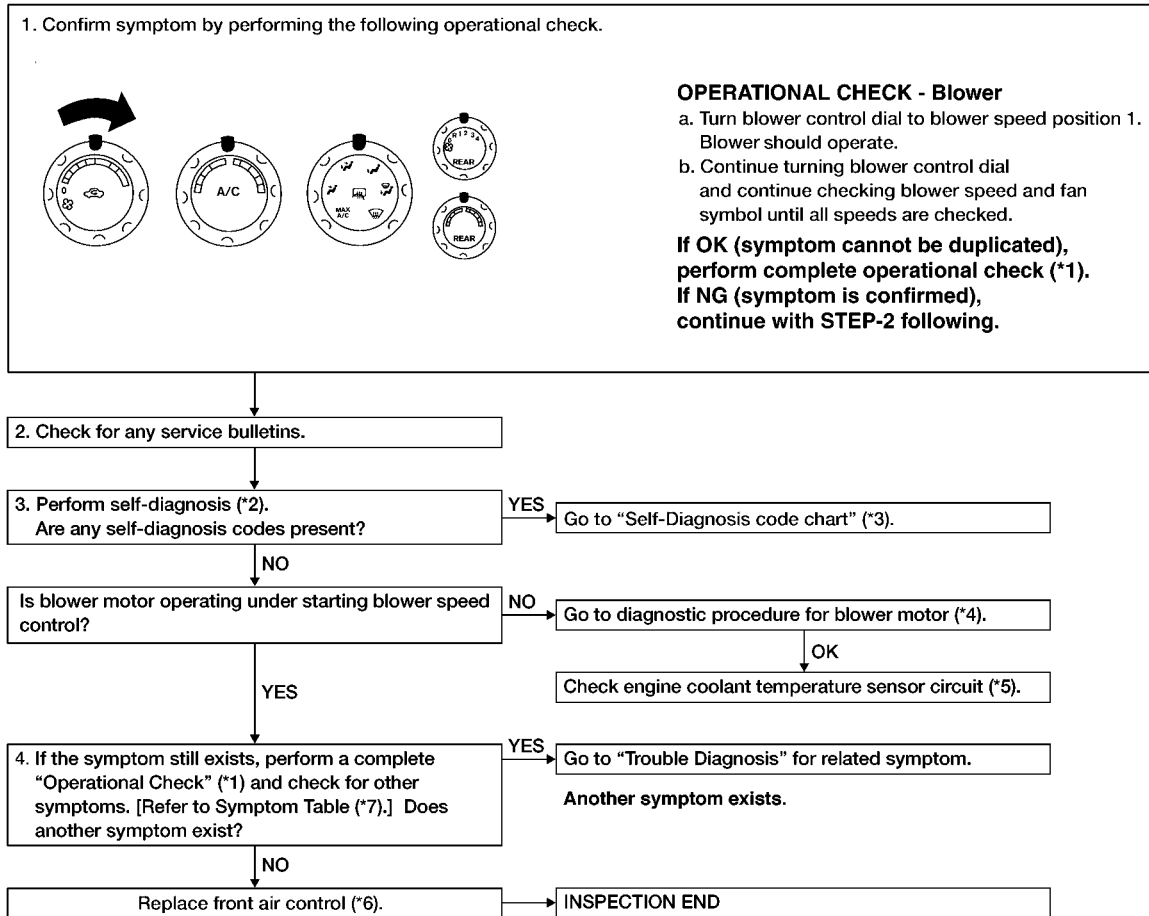
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## Front Blower Motor Circuit

SYMPTOM:

- Blower motor operation is malfunctioning.

### 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-82. "DIAGNOSTIC PROCEDURE FOR BLOWER MOTOR"](#)

\*5 [EC-216. "DTC P0117, P0118 ECT SENSOR"](#)

\*6 [MTC-125. "CONTROL UNIT"](#)

\*7 [MTC-33. "SYMPTOM TABLE"](#)

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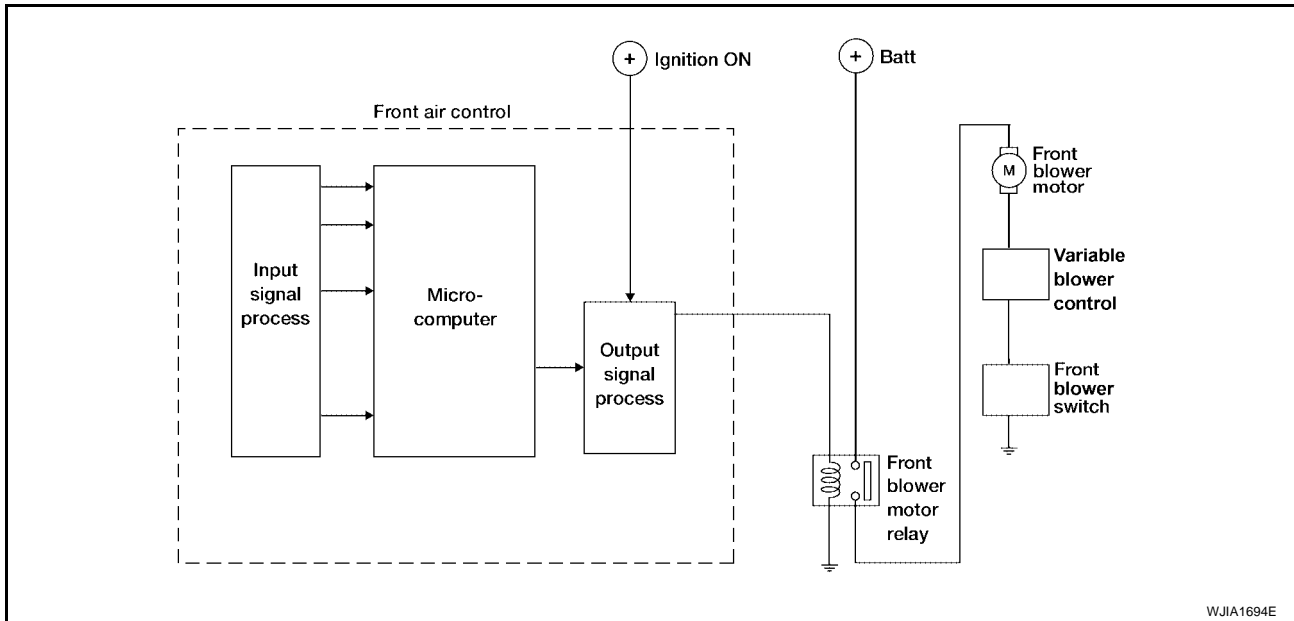
# TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

### Component Parts

- Front air control
- Front blower switch
- Variable blower control
- Front blower motor
- Front blower motor relay

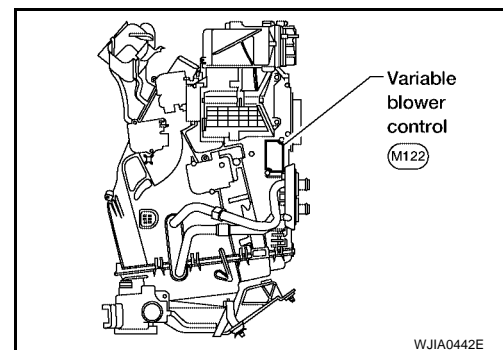
### System Operation



## COMPONENT DESCRIPTION

### Variable Blower Control

The variable blower control is located on the cooling unit. The variable blower control receives a gate voltage from the front air control to steplessly maintain the blower fan motor voltage in the 0 to 5 volt range (approx.).



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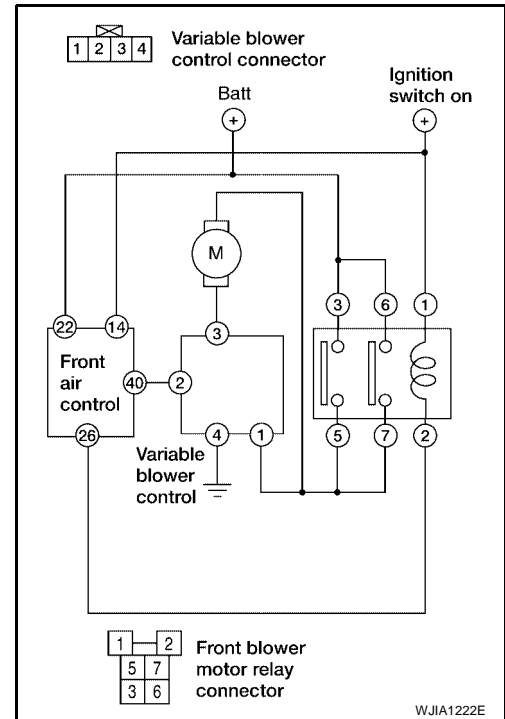
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# TROUBLE DIAGNOSIS

## DIAGNOSTIC PROCEDURE FOR BLOWER MOTOR

SYMPTOM: Blower motor operation is malfunctioning under starting fan speed control.



### 1. CHECK FUSES

Check 20A fuses [No. 28 and 30 (Located in the fuse and fusible link box)]. For fuse layout. Refer to [PG-75. "FUSE AND FUSIBLE LINK BOX"](#).

**Fuses are good.**

OK or NG

- OK >> GO TO 2.
- NG >> GO TO 10.

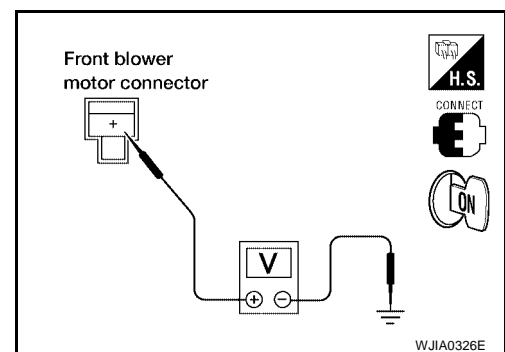
### 2. CHECK FRONT BLOWER MOTOR POWER SUPPLY CIRCUIT

1. Disconnect front blower motor connector.
2. Press the mode switch to select any mode except off.
3. Set fan switch to high.
4. Check voltage between front blower motor harness connector M62 terminal + (W/L) and ground.

**Battery voltage should exist.**

OK or NG

- OK >> GO TO 12.
- NG >> GO TO 3.



# TROUBLE DIAGNOSIS

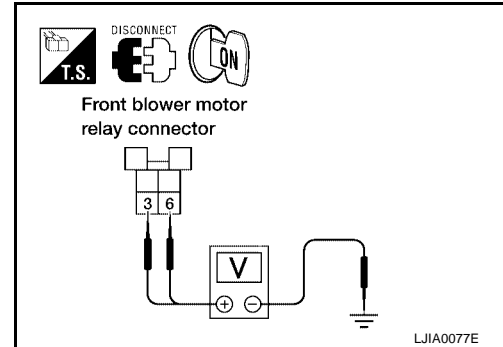
## 3. CHECK FRONT BLOWER MOTOR RELAY (SWITCH SIDE) POWER SUPPLY CIRCUIT

1. Disconnect front blower motor relay connector.
2. Check voltage between front blower motor relay harness connector H-2 terminals 3 (L) and 6 (L/W) and ground.

**Battery voltage should exist.**

OK or NG

- OK >> GO TO 4.  
NG >> Repair harness or connector.



## 4. CHECK FRONT BLOWER MOTOR RELAY

Refer to [ATC-93, "Front Blower Motor Relay"](#).

OK or NG

- OK >> GO TO 5.  
NG >> Replace front blower motor relay.

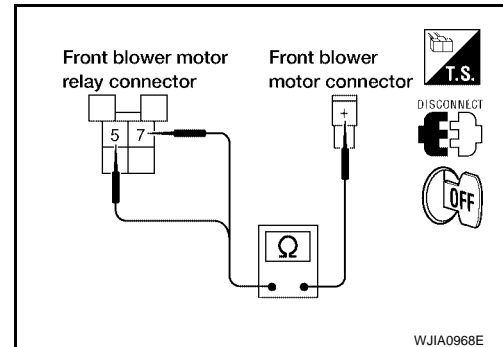
## 5. CHECK FRONT BLOWER MOTOR RELAY (SWITCH SIDE) CIRCUIT FOR OPEN

Check continuity between front blower motor relay harness connector H-2 terminals 5 (W/L) and 7 (W/L) and front blower motor harness connector M62 terminal + (W/L).

**Continuity should exist.**

OK or NG

- OK >> GO TO 6.  
NG >> Repair harness or connector.



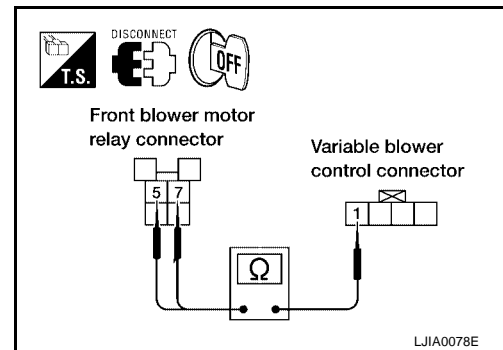
## 6. CHECK VARIABLE BLOWER CONTROL POWER SUPPLY CIRCUIT FOR OPEN

1. Disconnect variable blower control harness connector.
2. Check continuity between front blower motor relay harness connector H-2 terminals 5 (W/L) and 7 (W/L) and variable blower control harness connector M122 terminal 1 (W/L).

**Continuity should exist.**

OK or NG

- OK >> GO TO 7.  
NG >> Repair harness or connector.



# TROUBLE DIAGNOSIS

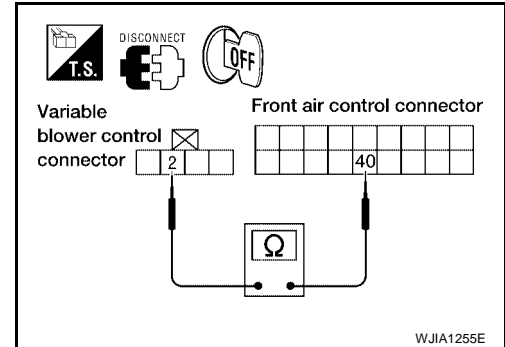
## 7. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT

1. Disconnect front air control connector.
2. Check continuity between front air control connector M50 terminal 40 (O) and variable blower control connector M122 terminal 2 (O).

**Continuity should exist.**

OK or NG

- OK >> GO TO 8.  
NG >> Repair harness or connector.



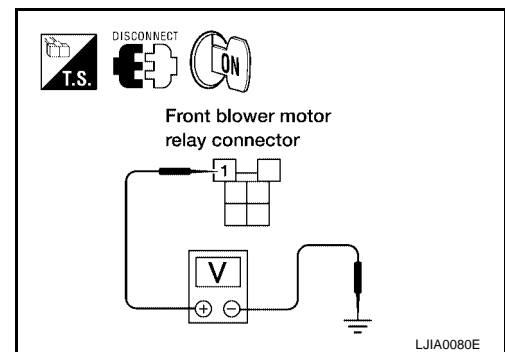
## 8. CHECK FRONT BLOWER MOTOR RELAY (COIL SIDE) POWER SUPPLY

Check voltage between front blower motor relay connector H-2 terminal 1 (G/Y) and ground.

**Battery voltage should exist.**

OK or NG

- OK >> GO TO 9.  
NG >> Repair harness or connector.



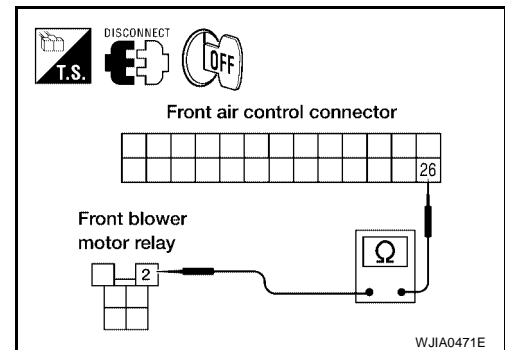
## 9. CHECK FRONT BLOWER MOTOR RELAY (COIL SIDE) GROUND CIRCUIT

Check continuity between front blower motor relay connector H-2 terminal 2 (G/B) and front air control harness connector M49 terminal 26 (G/B).

**Continuity should exist.**

OK or NG

- OK >> Replace front air control. Refer to [ATC-139, "FRONT AIR CONTROL"](#).
- NG >> Repair harness or connector.



## 10. REPLACE FUSES

1. Replace fuses.
2. Activate the front blower motor.
3. Does fuse blow?

Yes or No

- Yes >> GO TO 11.  
No >> Inspection End.

# TROUBLE DIAGNOSIS

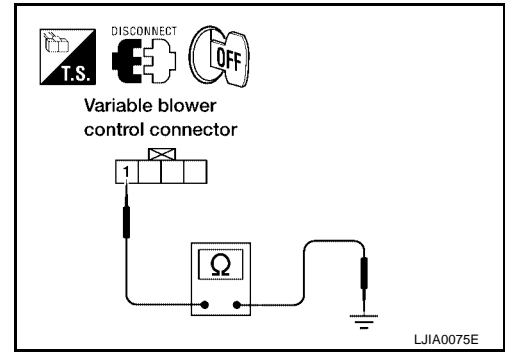
## 11. CHECK FRONT BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

1. Disconnect front blower motor harness connector.
2. Check continuity between variable blower control harness connector M122 terminal 1 (W/L) and ground.

**Continuity should not exist.**

OK or NG

- OK >> GO TO 12.  
NG >> Repair harness or connector.



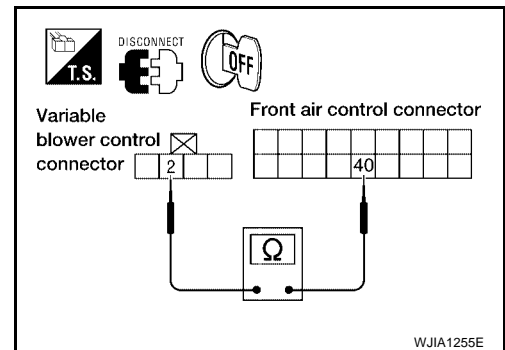
## 12. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT

1. Disconnect front air control connector
2. Check continuity between front air control connector M50 terminal 40 (O) and variable blower control connector M122 terminal 2 (O)

**Continuity should exist.**

OK or NG

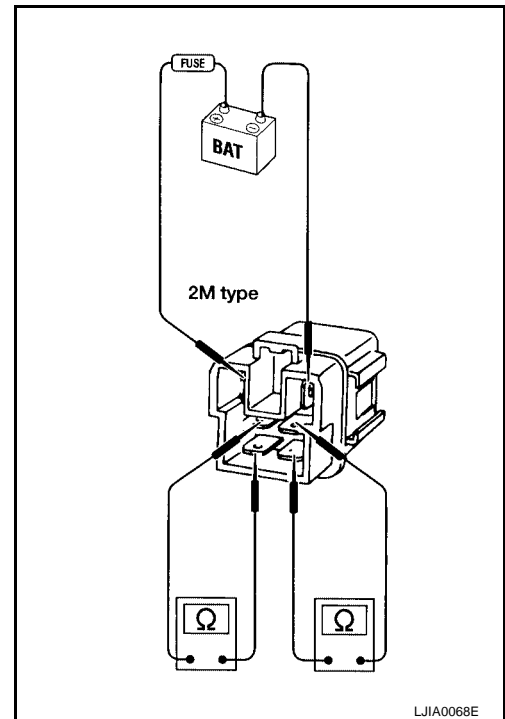
- OK >> Check blower motor, if OK replace variable blower control. Refer to [ATC-93, "Front Blower Motor"](#) .  
NG >> Repair harness or connector.



## COMPONENT INSPECTION

### Front Blower Motor Relay

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



### Front Blower Motor

Confirm smooth rotation of the blower motor.

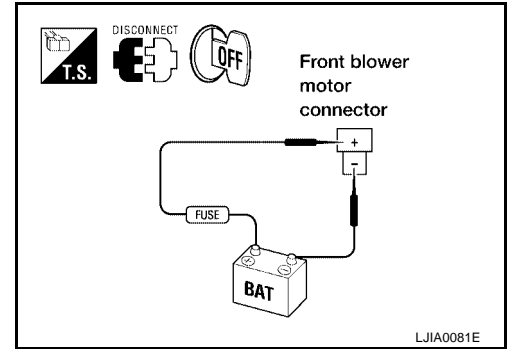
- Ensure that there are no foreign particles inside the blower unit.

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## TROUBLE DIAGNOSIS

- Apply 12 volts to terminal + and ground to terminal - and verify that the motor operates freely and quietly.



# TROUBLE DIAGNOSIS

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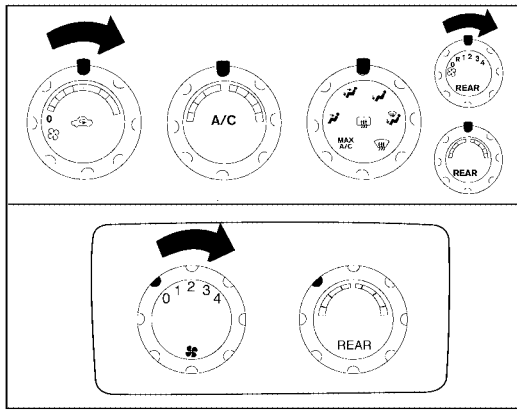
## Rear Blower Motor Circuit

SYMPTOM:

- Blower motor operation is malfunctioning.

### INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



#### OPERATIONAL CHECK – Rear blower motor

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

If OK (symptom cannot be duplicated), perform complete operational check (\*1).  
If NG (symptom is confirmed), continue with Step 2 following.

2. Check for any Service bulletins.

OK

3. Check rear blower switch (front) circuit. (\*2)

OK

4. If the symptom still exists, perform a complete "Operational Check" (\*1) and check for other symptoms. [Refer to "SYMPTOM TABLE", (\*3).]  
Does another symptom exist?

Yes

Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

No

INSPECTION END.

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

\*2 [MTC-96, "Rear Blower Switch \(Front\)"](#)

\*3 [MTC-33, "SYMPTOM TABLE"](#)

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# TROUBLE DIAGNOSIS

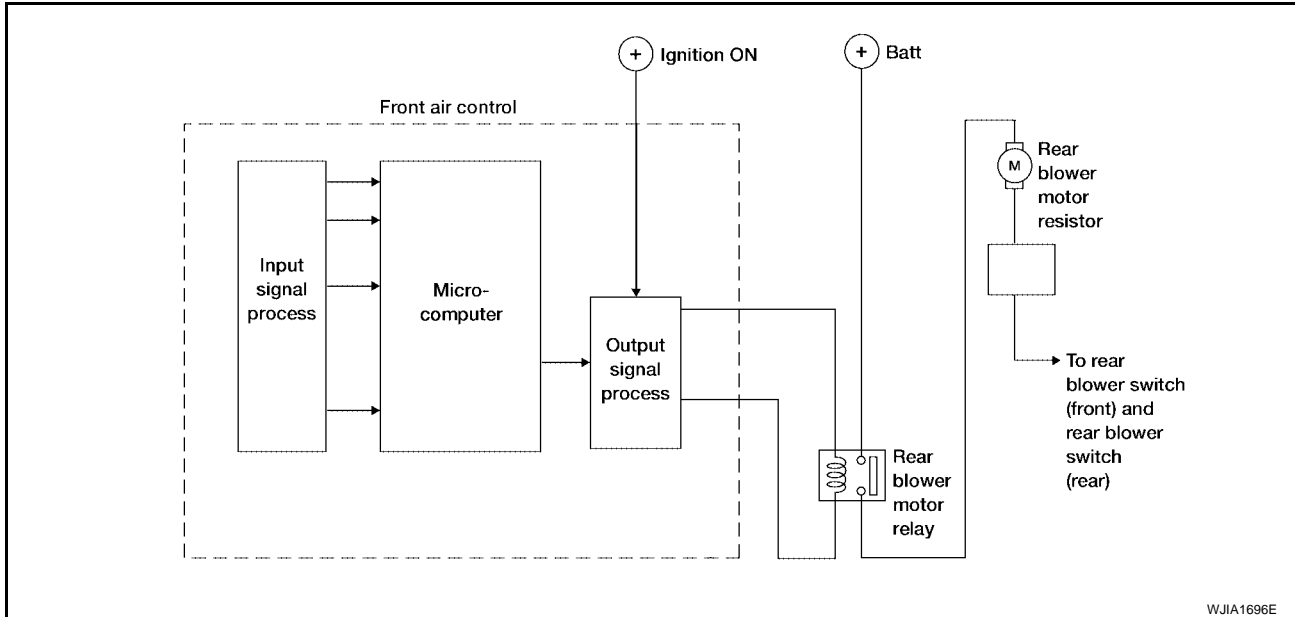
## SYSTEM DESCRIPTION

### Component Parts

Rear fan speed control system components are:

- Front air control
- Rear blower switch (front)
- Rear blower switch (rear)
- Rear blower motor resistor
- Rear blower motor
- Rear blower motor relay

### System Operation



### Rear Fan Control

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

## DIAGNOSTIC PROCEDURE FOR REAR BLOWER MOTOR

### Rear Blower Switch (Rear) Circuit

SYMPTOM:

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

### 1. CHECK REAR BLOWER MOTOR OPERATION

Blower motor rotates normally when rear blower switch (front) is set at 1 - 4 speed.

OK or NG

OK >> GO TO 2.

NG >> Refer to [MTC-90, "Trouble Diagnosis Procedure For Rear Blower Motor \(1 - 4 Speed\)"](#) .

### 2. CHECK REAR BLOWER SWITCH (FRONT)

Refer to [MTC-96, "Rear Blower Switch \(Front\)"](#) .

OK or NG

OK >> GO TO 3.

NG >> Replace rear blower switch (front). Refer to [MTC-125, "REAR AIR CONTROL"](#) .



# TROUBLE DIAGNOSIS

## 3. CHECK REAR BLOWER SWITCH (REAR)

Refer to [MTC-96, "Rear Blower Switch \(Rear\)"](#) .

OK or NG

OK >> GO TO 4.

NG >> Replace rear blower switch (rear). Refer to [MTC-125, "REAR AIR CONTROL"](#) .

## 4. CHECK CIRCUIT CONTINUITY

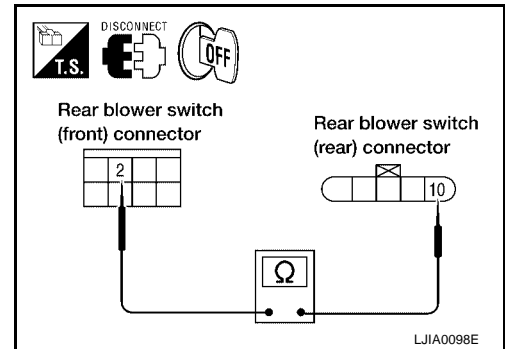
1. Disconnect rear blower switch (front) harness connector and rear blower switch (rear) harness connector.
2. Check continuity between rear blower switch (front) harness connector M52 terminal 2 (W) and rear blower switch (rear) harness connector B141 terminal 10 (W).

**Continuity should exist.**

OK or NG

OK >> Inspection End.

NG >> Repair harness or connector.



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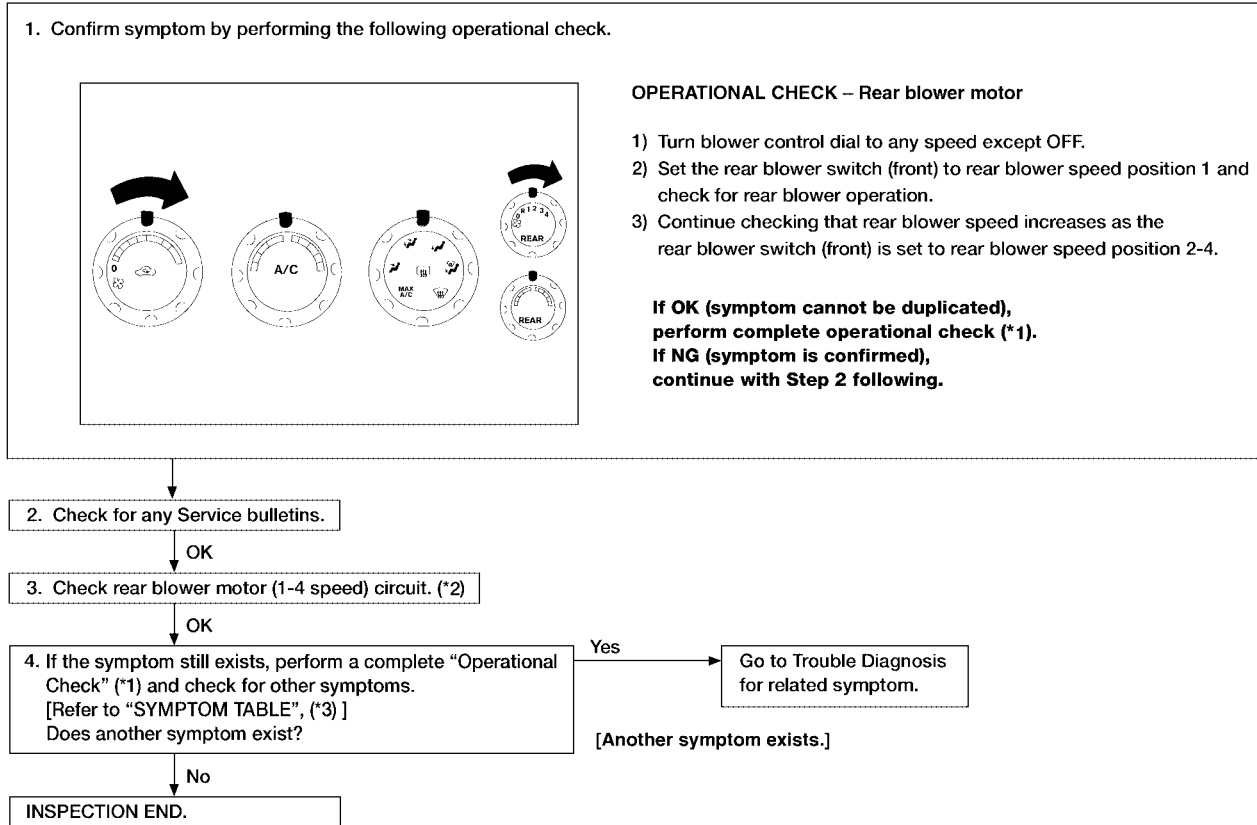
# TROUBLE DIAGNOSIS

## Trouble Diagnosis Procedure For Rear Blower Motor (1 - 4 Speed)

SYMPTOM:

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

### Inspection Flow



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

\*2 [MTC-90. "Trouble Diagnosis Procedure For Rear Blower Motor \(1 - 4 Speed\)"](#)

\*3 [MTC-33. "SYMPTOM TABLE"](#)

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# TROUBLE DIAGNOSIS

## 1. DIAGNOSTIC PROCEDURE

Blower motor rotates 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 18.

## 2. CHECK FUSES

Check 15A fuses [Nos. 10 and 11, located in the fuse block (J/B)]. Refer to [PG-74, "FUSE BLOCK-JUNCTION BOX \(J/B\)"](#).

OK or NG

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

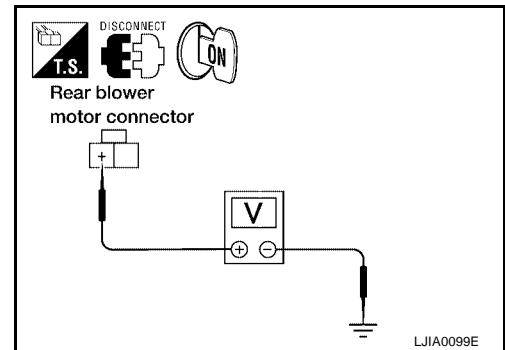
## 3. CHECK REAR BLOWER MOTOR POWER SUPPLY

1. Disconnect rear blower motor harness connector.
2. Select any rear blower speed except OFF.
3. Check voltage between rear blower motor harness connector B134 terminal + (L/R) and ground.

**Battery voltage should exist.**

OK or NG

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



## 4. CHECK REAR BLOWER MOTOR RELAY

Refer to [MTC-96, "Rear Blower Motor Relay"](#).

OK or NG

- OK >> GO TO 5.
- NG >> Replace rear blower motor relay.

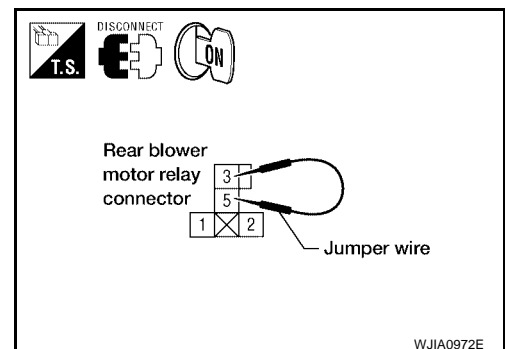
## 5. CHECK REAR BLOWER MOTOR POWER FROM RELAY TO REAR BLOWER MOTOR

1. Reconnect rear blower motor harness connector.
2. Disconnect rear blower motor relay.
3. Turn ignition switch ON and select any rear blower speed except OFF.
4. Set rear blower switch (front) to any position except OFF, REAR, or 4 - speed.
5. Momentarily (no more than 4 seconds), connect a jumper wire between rear blower motor relay connector J1 (harness side) terminals 3 and 5.

**Rear blower motor should rotate.**

OK or NG

- OK >> GO TO 6.
- NG >> GO TO 10.



# TROUBLE DIAGNOSIS

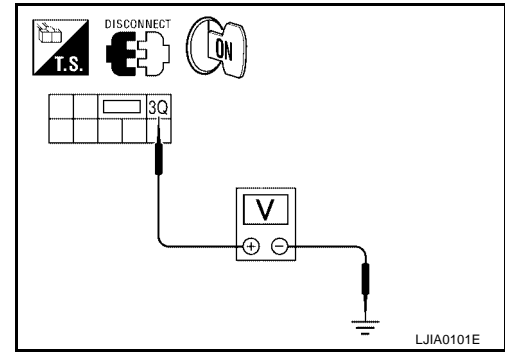
## 6. CHECK REAR BLOWER MOTOR RELAY (COIL SIDE) POWER SUPPLY CIRCUIT

1. Disconnect fuse block (J/B) harness connector.
2. Turn ignition switch ON.
3. Set rear blower switch (front) to any position except OFF, REAR, or 4 - speed.
4. Check voltage between fuse block (J/B) harness connector E30 terminal 3Q (W/G) and ground.

**Battery voltage should exist.**

OK or NG

- OK >> GO TO 7.  
NG >> GO TO 20.



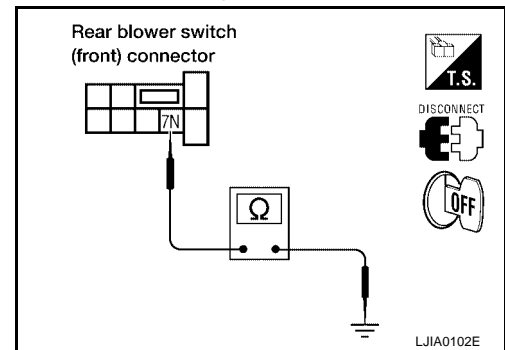
## 7. CHECK REAR BLOWER MOTOR RELAY (COIL SIDE) GROUND CIRCUIT

Check continuity between fuse block (J/B) harness connector M3 terminal 7N (B) and ground.

**Continuity should exist.**

OK or NG

- OK >> Replace fuse block (J/B).  
NG >> Repair harness or connector.



## 8. REPLACE FUSE

Refer to [PG-74, "FUSE BLOCK-JUNCTION BOX \(J/B\)"](#)

Fuse should not open when rear blower motor is activated.

OK or NG

- OK >> Inspection End.  
NG >> GO TO 9.

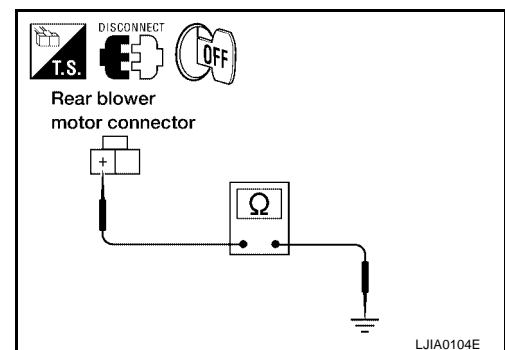
## 9. CHECK REAR BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

1. Disconnect battery cables and rear blower motor harness connector.
2. Check continuity between rear blower motor harness connector B134 terminal + (L/R) and ground.

**Continuity should not exist.**

OK or NG

- OK >> Check rear blower motor. Refer to [MTC-97, "Rear Blower Motor"](#).  
NG >> Repair harness or connector.



# TROUBLE DIAGNOSIS

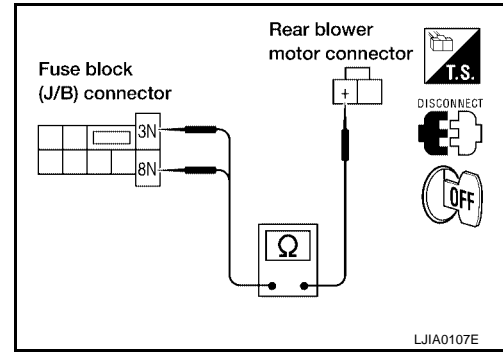
## 10. CHECK REAR BLOWER MOTOR RELAY (SWITCH SIDE) POWER SUPPLY CIRCUIT

1. Disconnect fuse block (J/B) and rear blower motor harness connectors.
2. Check continuity between fuse block (J/B) harness connector M3 terminal 3N (L/R) and 8N (L/R) and rear blower motor harness connector B134 terminal + (L/R).

Continuity should exist.

OK or NG

- OK >> GO TO 20.  
 NG >> Repair harness or connector.



## 11. CHECK REAR BLOWER MOTOR

Refer to [MTC-97, "Rear Blower Motor"](#) .

OK or NG

- OK >> GO TO 12.  
 NG >> Replace rear blower motor. Refer to [MTC-128, "REAR BLOWER MOTOR"](#) .

## 12. CHECK REAR BLOWER SWITCH (FRONT)

Refer to [MTC-96, "Rear Blower Switch \(Front\)"](#) .

OK or NG

- OK >> GO TO 15.  
 NG >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#) .

## 13. CHECK REAR BLOWER MOTOR RESISTOR

Refer to [MTC-97, "Rear Blower Motor Resistor"](#) .

OK or NG

- OK >> GO TO 14.  
 NG >> Replace rear blower motor resistor. Refer to [MTC-146, "Removal and Installation"](#) .

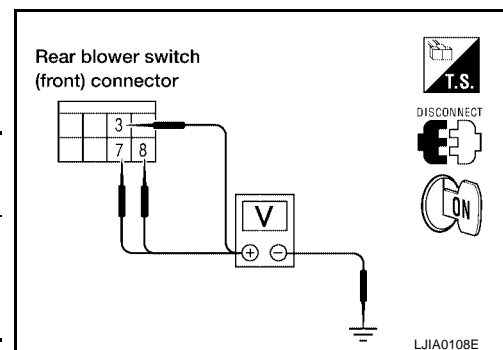
## 14. CHECK REAR BLOWER SWITCH (FRONT) CIRCUIT

1. Disconnect rear blower switch (front).
2. Reconnect rear blower motor resistor harness connector.
3. Check voltage between each rear blower switch (front) connector M52 terminals 3 (LG), 7 (LG/B), and 8 (G), and ground.

Terminal No.		Voltage (Approx.)
+	-	
3	Ground	12V
7		
8		

OK or NG

- OK >> GO TO 17.  
 NG >> GO TO 16.



# TROUBLE DIAGNOSIS

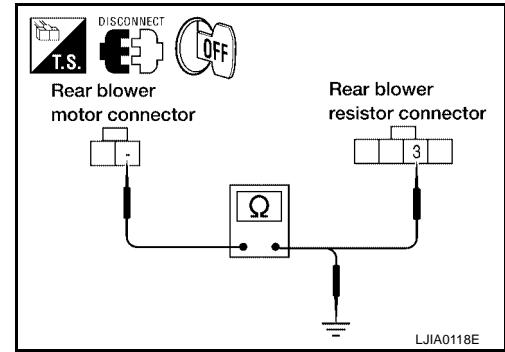
## 15. CHECK REAR BLOWER MOTOR GROUND CIRCUIT TO REAR BLOWER MOTOR RESISTOR

1. Disconnect rear blower motor and rear blower motor resistor harness connector.
2. Check continuity between rear blower motor connector B134 terminal - (L/B) and rear blower motor resistor harness connector B133 terminal 3 (L/B).

Continuity should exist.

3. Check continuity between rear blower motor connector B134 terminal - (L/B) and ground.

Continuity should not exist.



OK or NG

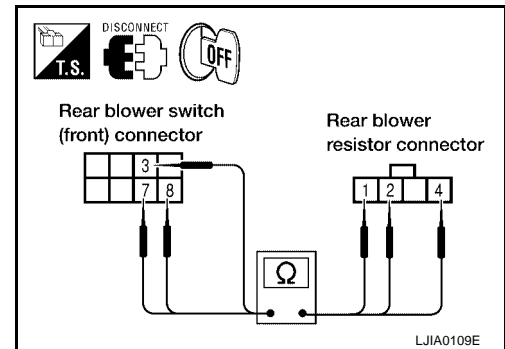
OK >> GO TO 16.

NG >> Repair harness or connector.

## 16. CHECK REAR BLOWER SWITCH (FRONT) CIRCUIT

1. Disconnect rear blower resistor harness connector.
2. Check continuity between rear blower switch (front) connector M52 terminals 3 (LG), 7 (LG/B), and 8 (G), and rear blower motor resistor connector B133 terminals 1 (LG), 4 (LG/B), and 2 (G).

Terminal No.		Continuity
Rear blower switch (front)	Rear blower motor resistor	
3	1	Should exist
7	4	
8	2	



OK or NG

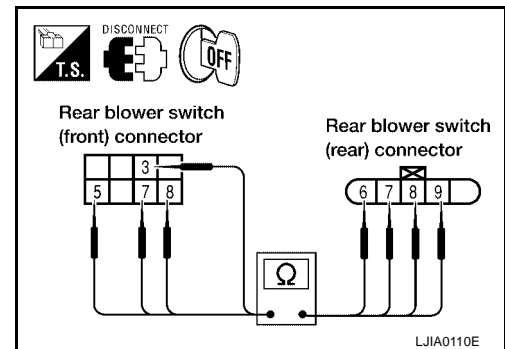
OK >> Inspection End.

NG >> Repair harness or connector.

## 17. CHECK REAR BLOWER SWITCH (FRONT) CIRCUIT

1. Disconnect rear blower resistor and rear blower switch (rear) harness connectors.
2. Check continuity between rear blower switch (front) connector M52 terminals 3 (LG), 5 (L/B), 7 (LG/B), and 8 (G), and rear blower switch (rear) connector B141 terminals 9 (LG), 6 (L/B), 8 (LG/B), and 7 (G).

Terminal No.		Continuity
Rear blower switch (front)	Rear blower switch (rear)	
3	9	Should exist
5	6	
7	8	
8	7	



OK or NG

OK >> GO TO 18.

NG >> Repair harness or connector.

# TROUBLE DIAGNOSIS

## 18. CHECK REAR BLOWER SWITCH (FRONT)

Refer to [MTC-96, "Rear Blower Switch \(Front\)"](#) .

OK or NG

OK >> GO TO 19.

NG >> Replace rear blower switch (front). Refer to [MTC-125, "FRONT AIR CONTROL"](#) .

## 19. CHECK REAR BLOWER SWITCH (REAR)

Refer to [MTC-96, "Rear Blower Switch \(Rear\)"](#) .

OK or NG

OK >> Inspection End.

NG >> Replace rear blower switch (rear). Refer to [MTC-125, "REAR AIR CONTROL"](#) .

## 20. CHECK CIRCUIT BETWEEN FRONT AIR CONTROL AND FUSE BLOCK (J/B) [REAR BLOWER MOTOR RELAY (COIL SIDE) POWER]

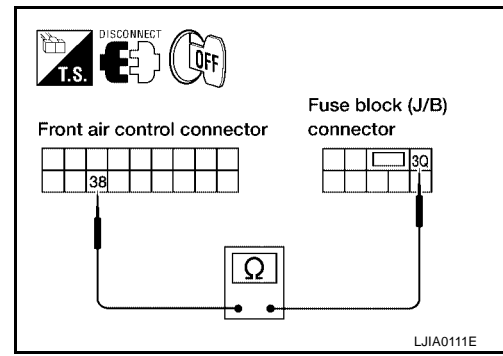
1. Disconnect front air control and fuse block (J/B) connectors.
2. Check continuity between front air control harness connector M50 terminal 38 (W/G) and fuse block (J/B) connector E30 terminal 3Q (W/G).

**Continuity should exist.**

OK or NG

OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#) .

NG >> Repair harness or connector.



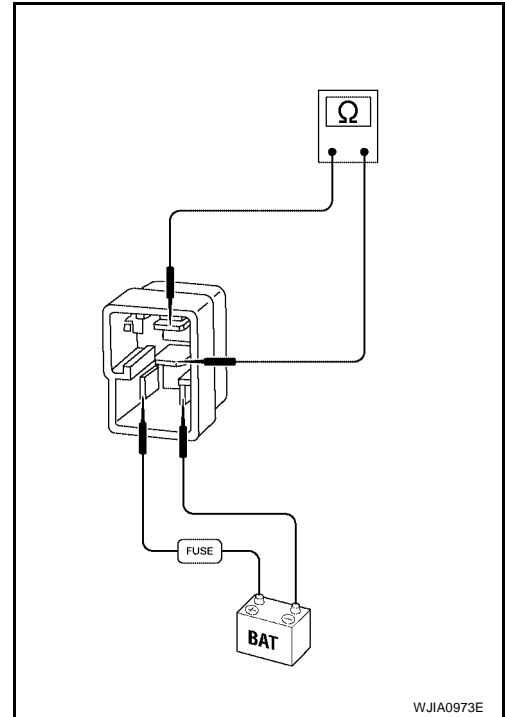
A  
B  
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I  
K  
L  
M

# TROUBLE DIAGNOSIS

## COMPONENT INSPECTION

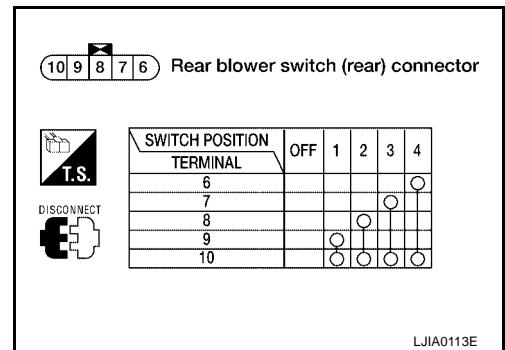
### Rear Blower Motor Relay

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



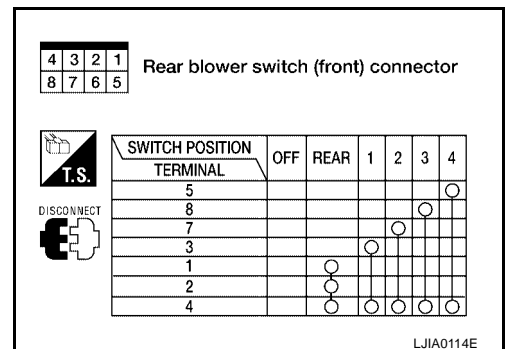
### Rear Blower Switch (Rear)

Check continuity between terminals at each switch position.



### Rear Blower Switch (Front)

Check continuity between terminals at each switch position.

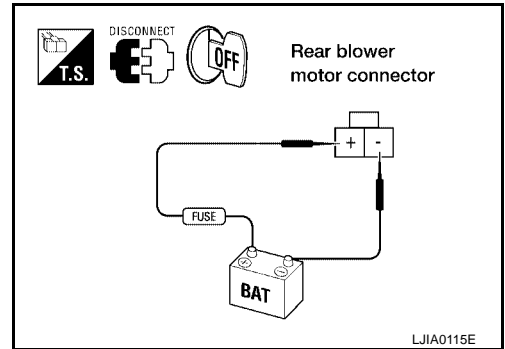




# TROUBLE DIAGNOSIS

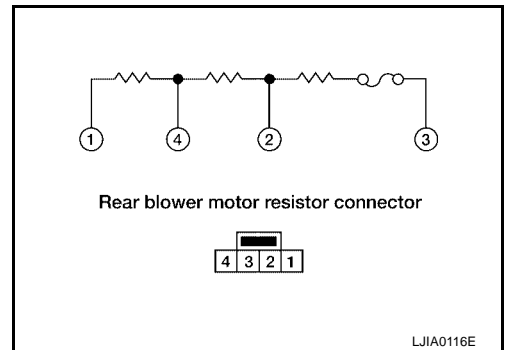
## Rear Blower Motor

Check that there are no foreign particles inside the intake unit.  
Apply 12 volts to terminal + and ground to terminal - and ensure that the blower motor rotates freely and quietly.



## Rear Blower Motor Resistor

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



A  
B  
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G  
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I  
K  
L  
M

MTC

# TROUBLE DIAGNOSIS

EJS001SO

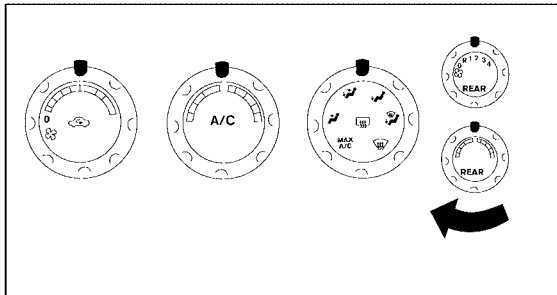
## Rear Air Control Circuit

### SYMPTOM:

- Temperature cannot be adjusted from the rear air control.

### INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



#### OPERATIONAL CHECK

##### Temperature increase

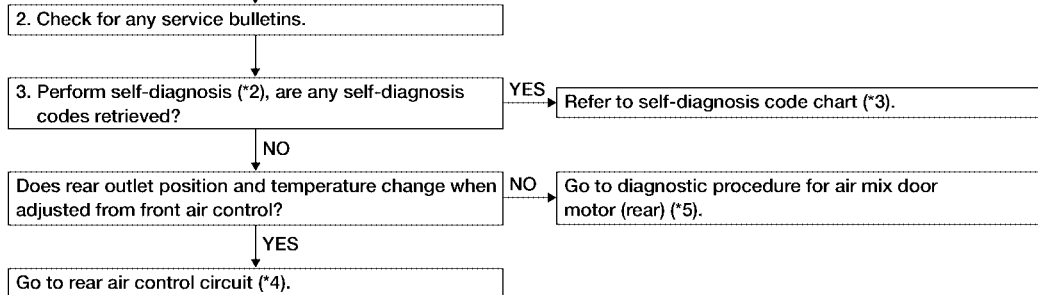
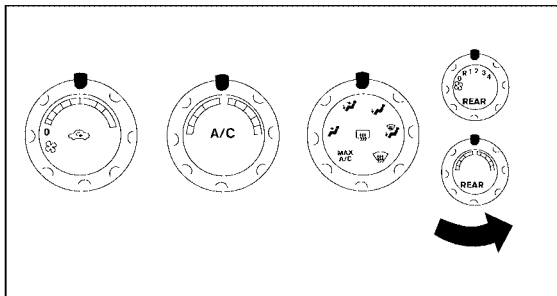
- Turn the temperature dial clockwise.
- Check for hot air at rear floor discharge air outlets.

##### Temperature decrease

- Turn the temperature dial counterclockwise.
- Check for cold air at rear vent discharge air outlets.

If OK (symptom cannot be duplicated), perform complete operational check (\*1).

If NG (symptom is confirmed), continue with STEP-2 following.



WJIA1226E

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

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

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

\*4 [MTC-98. "Rear Air Control Circuit".](#)

\*5 [MTC-68. "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(REAR\)".](#)

# TROUBLE DIAGNOSIS

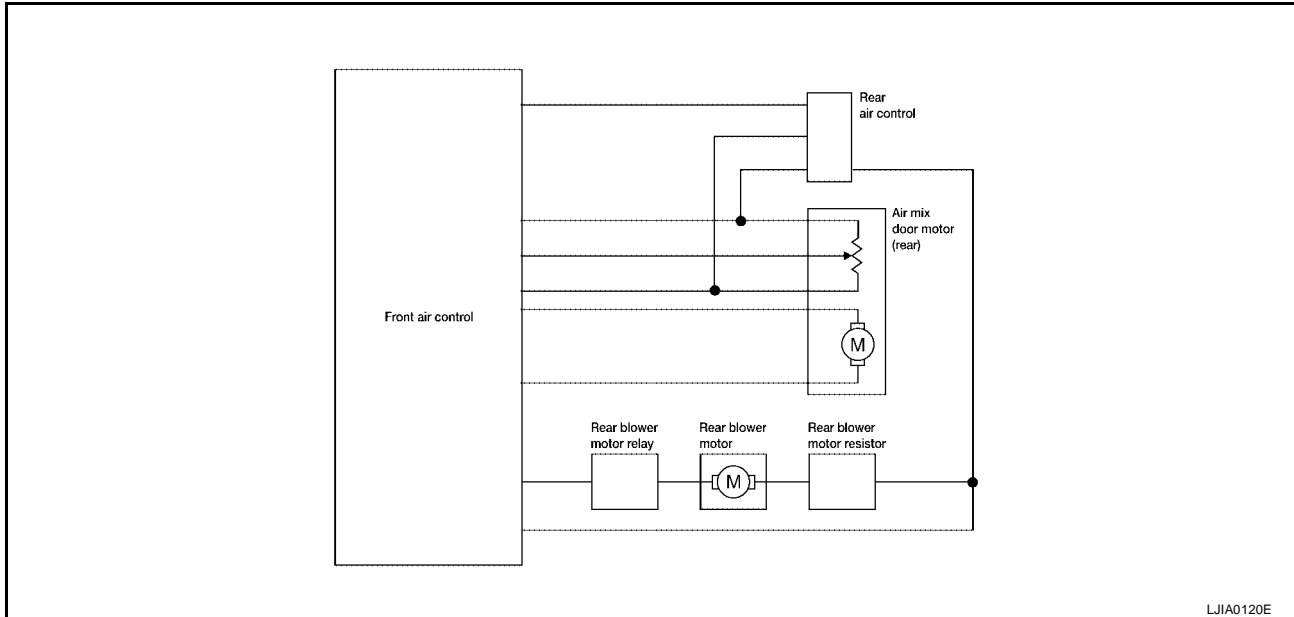
## SYSTEM DESCRIPTION

### Component Parts

Rear air control system components are:

- Front air control
- Rear air control
- Air mix door motor (rear)
- Rear blower motor relay
- Rear blower motor resistor
- Rear blower motor

### System Operation



### Rear Air Control

When the rear blower switch (front) (integral to the front air control) is in the REAR position the rear blower motor speeds and the rear temperature/mode are controlled by the rear blower switch (rear) and the rear temperature switch (rear) (both integral to the rear air control).

### DIAGNOSTIC PROCEDURE FOR REAR AIR CONTROL

SYMPTOM:

- Blower motor operation is malfunctioning. Refer to [MTC-87, "Rear Blower Motor Circuit"](#).
- Temperature/mode operation is malfunctioning.

#### 1. CHECK OPERATION FROM FRONT AIR CONTROL

Does rear temperature/mode operate normally from front air control?

Yes or No

Yes >> GO TO 2.

No >> Refer to [MTC-68, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(REAR\)"](#).

# TROUBLE DIAGNOSIS

## 2. CHECK CIRCUIT BETWEEN REAR AIR CONTROL AND FRONT AIR CONTROL FOR OPEN OR SHORT

1. Disconnect front air control and rear air control connectors.
2. Check continuity between front air control harness connector M50 terminal 33 (V) and rear air control harness connector B142 terminal 5 (V).

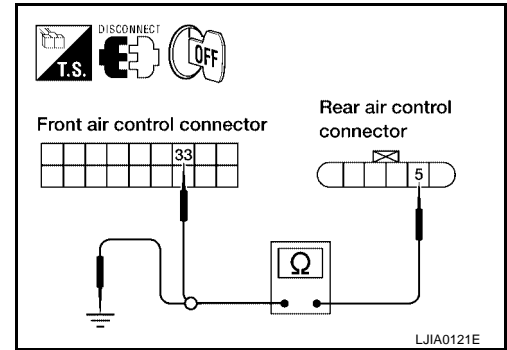
**Continuity should exist.**

3. Check continuity between rear air control harness connector B142 terminal 5 (V) and ground.

**Continuity should not exist.**

OK or NG

- OK >> GO TO 3.  
NG >> Repair harness or connector.



## 3. CHECK CIRCUIT BETWEEN REAR AIR CONTROL AND AIR MIX DOOR MOTOR (REAR) FOR OPEN OR SHORT

1. Disconnect air mix door motor (rear) connectors.
2. Check continuity between rear air control harness connector B142 terminal 2 (Y) and 4 (W/G) and air mix door motor (rear) harness connector B146 terminal 2 (Y) and 3 (W/G).

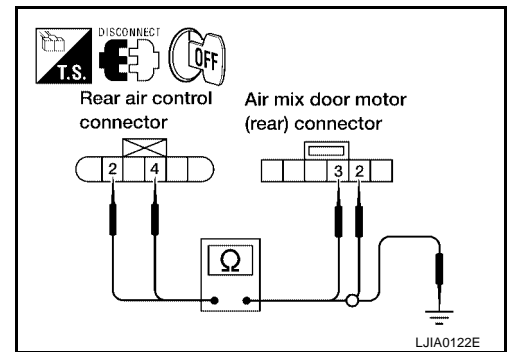
**Continuity should exist.**

3. Check continuity between rear air control harness connector B142 terminals 2 (Y) and 4 (W/G) and ground.

**Continuity should not exist.**

OK or NG

- OK >> Replace rear air control. Refer to [MTC-125, "REAR AIR CONTROL"](#) .  
NG >> Repair harness or connector.



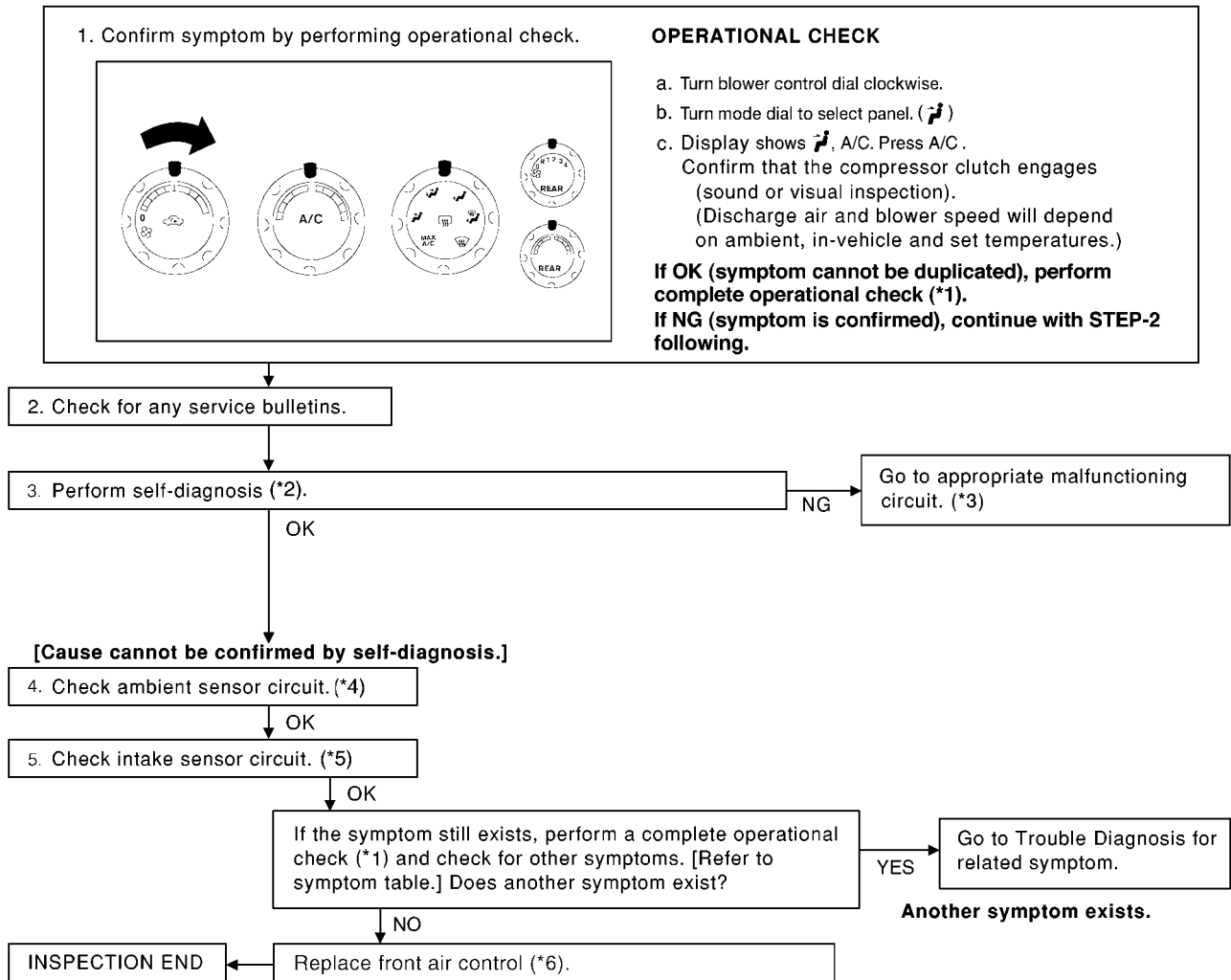
# TROUBLE DIAGNOSIS

EJS001SP

## Magnet Clutch Circuit

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"](#)

\*4 [MTC-120, "Ambient Sensor Circuit"](#)

\*5 [MTC-122, "Intake Sensor Circuit"](#)

\*6 [MTC-125, "CONTROL UNIT"](#)

WJIA1697E

# TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

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

### Low Temperature Protection Control

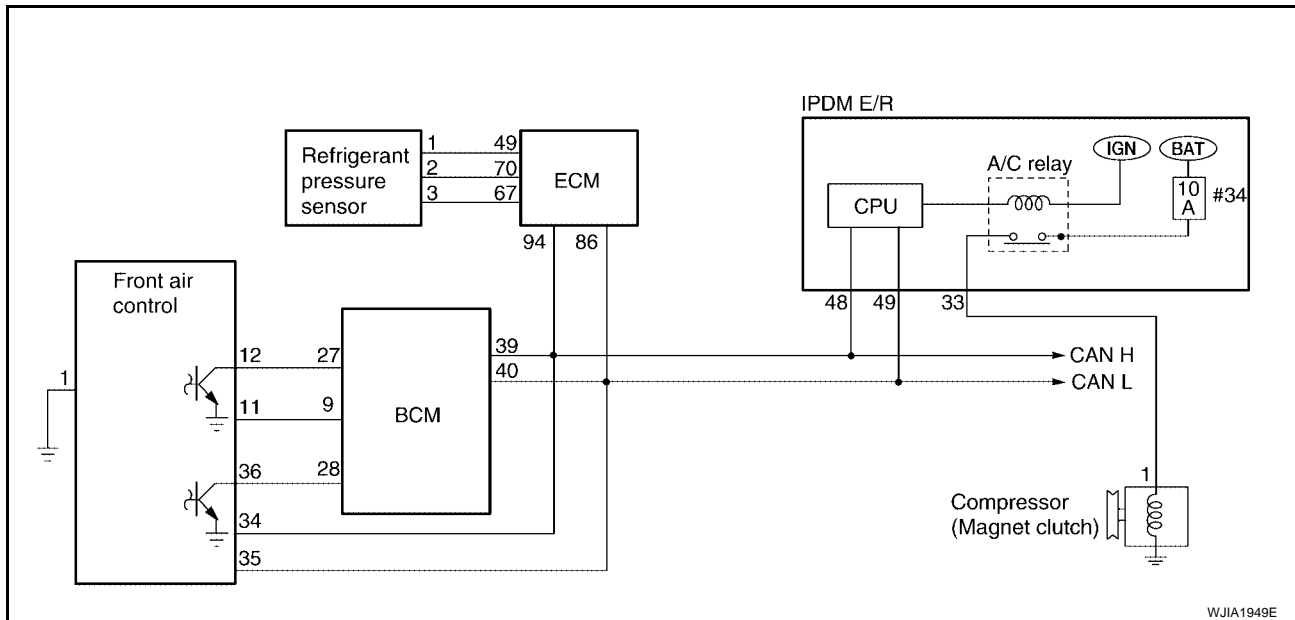
The front air control will turn the compressor ON or OFF as determined by a signal detected by the intake sensor and the ambient sensor.

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 intake temperature C (°F)	Compressor OFF intake temperature C (°F)
0 (32)	2.5 (37)	2.0 (36)
10 (50)	2.5 (37)	2.0 (36)
20 (68)	2.5 (37)	1.5 (35)
30 (86)	2.0 (36)	1.0 (34)
40 (104)	2.0 (36)	1.0 (34)
50 (122)	2.0 (36)	1.0 (34)

## 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-51, "A/C System Self-diagnosis Function"](#) .

OK or NG

OK >> GO TO 2.

NG >> Malfunctioning intake sensor. Refer to [MTC-122, "Intake Sensor Circuit"](#) .

# TROUBLE DIAGNOSIS

## 2. PERFORM AUTO ACTIVE TEST

Refer to [PG-22, "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. 33, located in IPDM E/R), and GO TO 3.

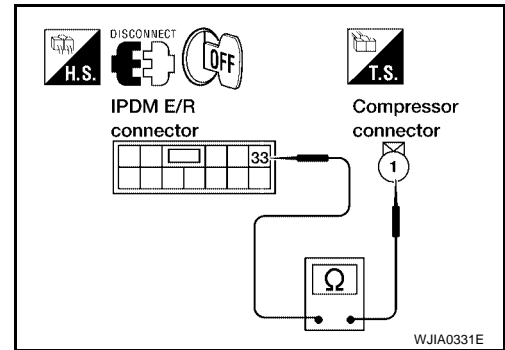
## 3. CHECK CIRCUIT CONTINUITY BETWEEN IPDM E/R AND COMPRESSOR

- Turn ignition switch OFF.
- Disconnect IPDM E/R connector and compressor (magnet clutch) connector.
- Check continuity between IPDM E/R harness connector E124 terminal 33 (Y/B) and compressor harness connector F3 terminal 1 (Y/B).

**33 – 1 : Continuity should exist.**

OK or NG

- OK >> GO TO 4.  
NG >> Repair harness or connector.

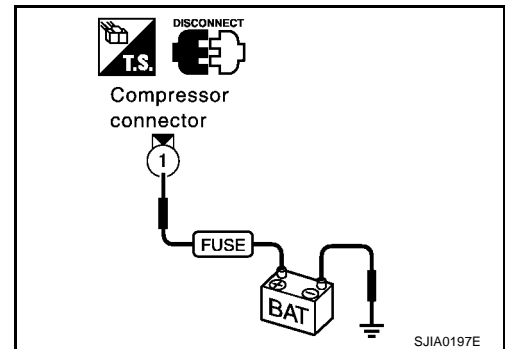


## 4. CHECK MAGNET CLUTCH CIRCUIT

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

OK or NG

- OK >> Replace IPDM E/R. Refer to [PG-29, "Removal and Installation of IPDM E/R"](#) .
- NG >> Replace magnet clutch. Refer to [MTC-157, "Removal and Installation for Compressor Clutch"](#) .



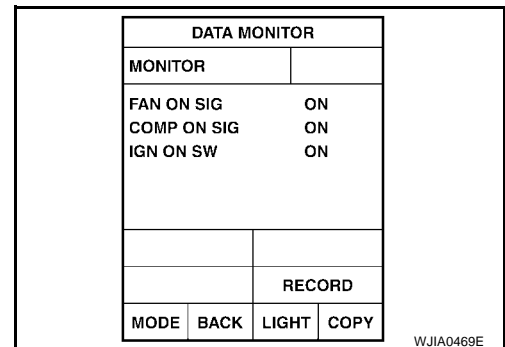
## 5. CHECK BCM INPUT (COMPRESSOR ON) SIGNAL

Check compressor ON/OFF signal. Refer to [MTC-31, "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.



# TROUBLE DIAGNOSIS

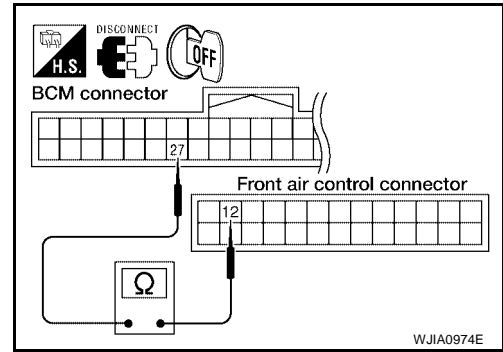
## 6. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect BCM connector and front air control connector.
3. Check continuity between BCM harness connector M18 terminal 27 (L/R) and front air control harness connector M49 terminal 12 (L/R).

**Continuity should exist.**

OK or NG

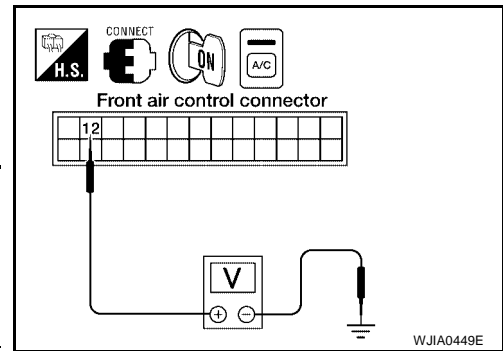
- OK >> GO TO 7.  
 NG >> Repair harness or connector.



## 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 M49 terminal 12 (L/R) and ground.

Terminals		(-)	Condition	Voltage (Approx.)
(+)				
Front air control connector	Terminal No. (Wire color)			
M49	12 (L/R)	Ground	A/C switch: ON	0V
			A/C switch: OFF	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.  
 NG-2 >> If the voltage is approx. 0V when A/C switch is OFF, replace BCM.

## 8. CHECK REFRIGERANT PRESSURE SENSOR

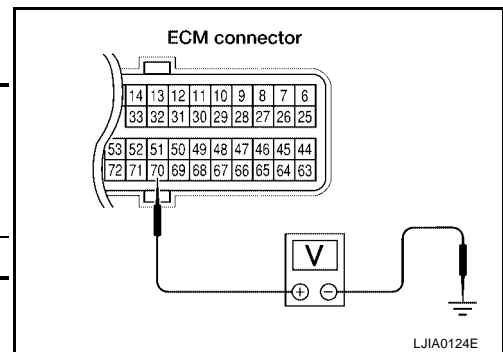
WITH CONSULT-II

1. Start engine.
2. Check voltage of refrigerant pressure sensor. Refer to [MTC-31, "CONSULT-II Function \(BCM\)"](#).

WITHOUT CONSULT-II

1. Start engine.
2. Check voltage between ECM harness connector F54 terminal 70 (W) and ground.

Terminals		(-)	Condition	Voltage (Approx.)
(+)				
ECM connector	Terminal No. (Wire color)			
F54	70 (W)	Ground	A/C switch: ON	3.6 - 3.88V



OK or NG

- OK >> ●  WITH CONSULT-II GO TO 9.  
 ●  WITHOUT CONSULT-II GO TO 10.  
 NG >> Refer to [EC-726, "REFRIGERANT PRESSURE SENSOR"](#).



# TROUBLE DIAGNOSIS

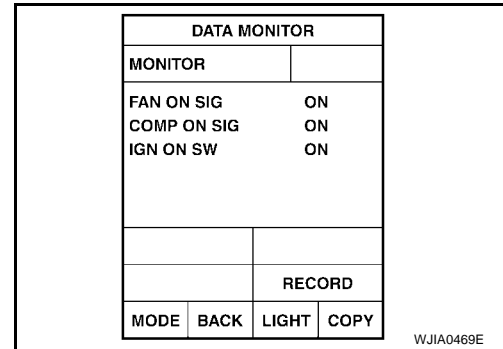
## 9. CHECK BCM INPUT (FAN ON) SIGNAL

Check FAN ON/OFF signal. Refer to [MTC-31, "CONSULT-II Function \(BCM\)"](#).

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

OK or NG

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



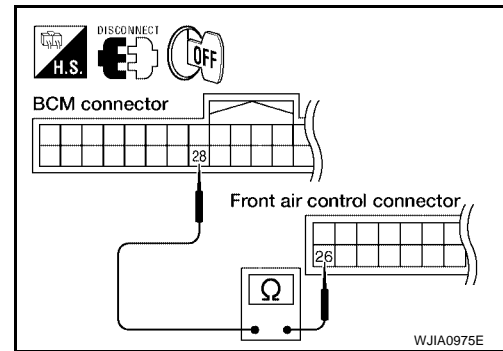
## 10. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND FRONT AIR CONTROL

- Turn ignition switch OFF.
- Disconnect BCM connector and front air control connector.
- Check continuity between BCM harness connector M18 terminal 28 (G/B) and front air control harness connector M49 terminal 26 (G/B).

**Continuity should exist.**

OK or NG

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



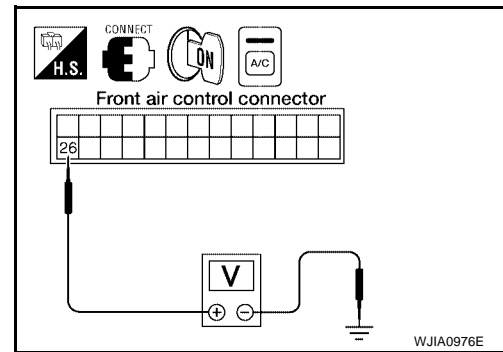
## 11. CHECK VOLTAGE FOR FRONT AIR CONTROL (FAN ON SIGNAL)

- Reconnect BCM connector and front air control connector.
- Turn ignition switch ON.
- Check voltage between front air control harness connector M49 terminal 26 (G/B) and ground.

Terminals		(-)	Condition	Voltage (Approx.)
(+)	Terminal No. (Wire color)			
Front air control connector				
M49	26 (G/B)	Ground	A/C switch: ON Blower motor operates	0V
			A/C switch: OFF	5V

OK or NG

OK >> GO TO 12.  
 NG-1 >> If the voltage is approx. 5V when blower motor is ON, replace front air control.  
 NG-2 >> If the voltage is approx. 0V when blower motor is OFF, replace BCM. Refer to [BCS-19, "Removal and Installation of BCM"](#).



# TROUBLE DIAGNOSIS

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## 12. CHECK CAN COMMUNICATION

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Check CAN communication. Refer to [MTC-30, "CAN Communication System Description"](#) .

- BCM – ECM
- ECM – IPDM E/R
- ECM – Front air control

OK or NG

- OK >> Inspection End.  
NG >> Repair or replace malfunctioning part(s).

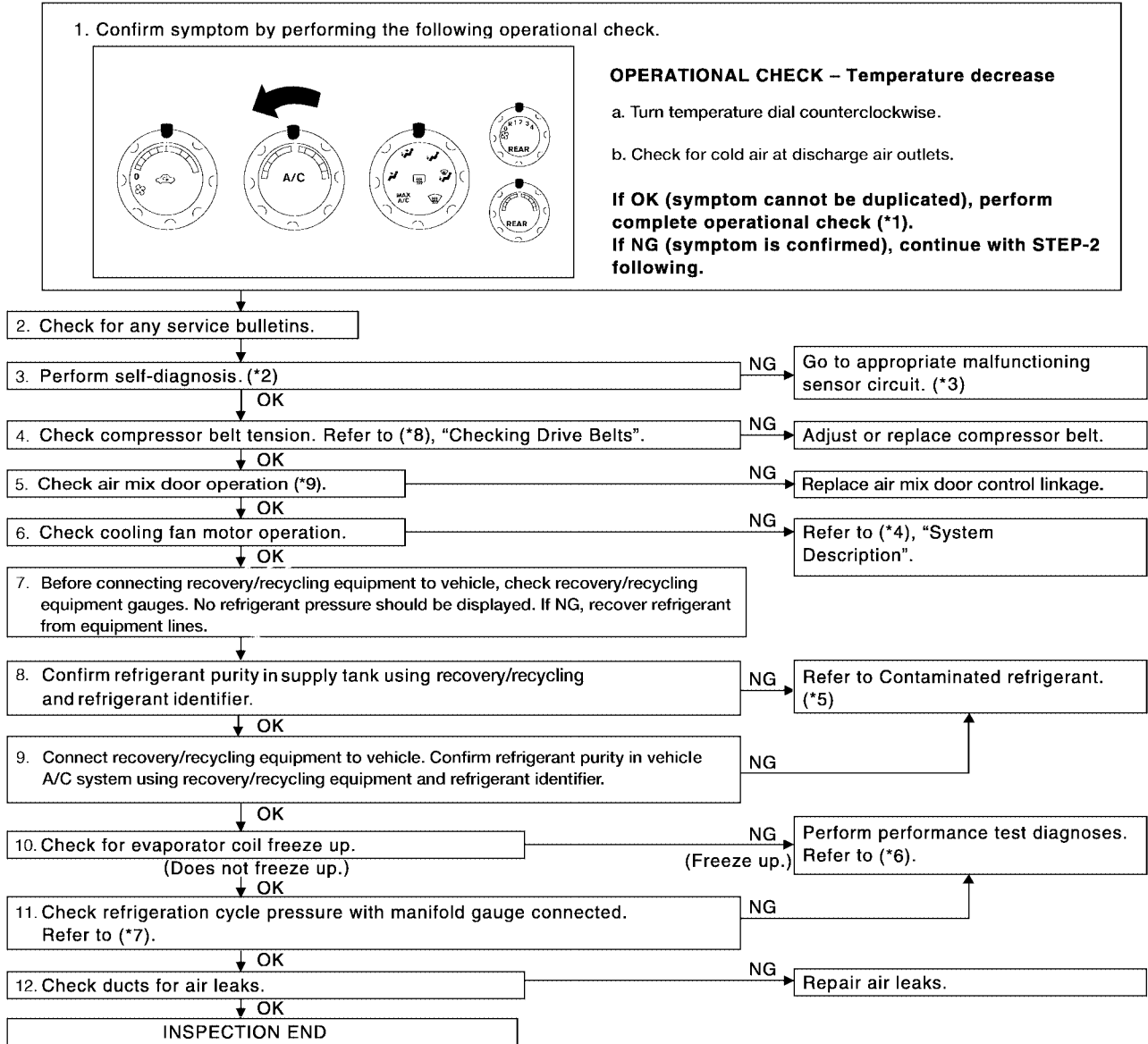
# TROUBLE DIAGNOSIS

EJS001SQ

## Insufficient Cooling

SYMPTOM: Insufficient cooling

### INSPECTION FLOW



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

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

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

\*4 [EC-508, "DTC P1217 ENGINE OVER TEMPERATURE"](#)

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

\*6 [.MTC-108, "PERFORMANCE TEST DIAGNOSES"](#)

\*7 [MTC-110, "Test Reading"](#)

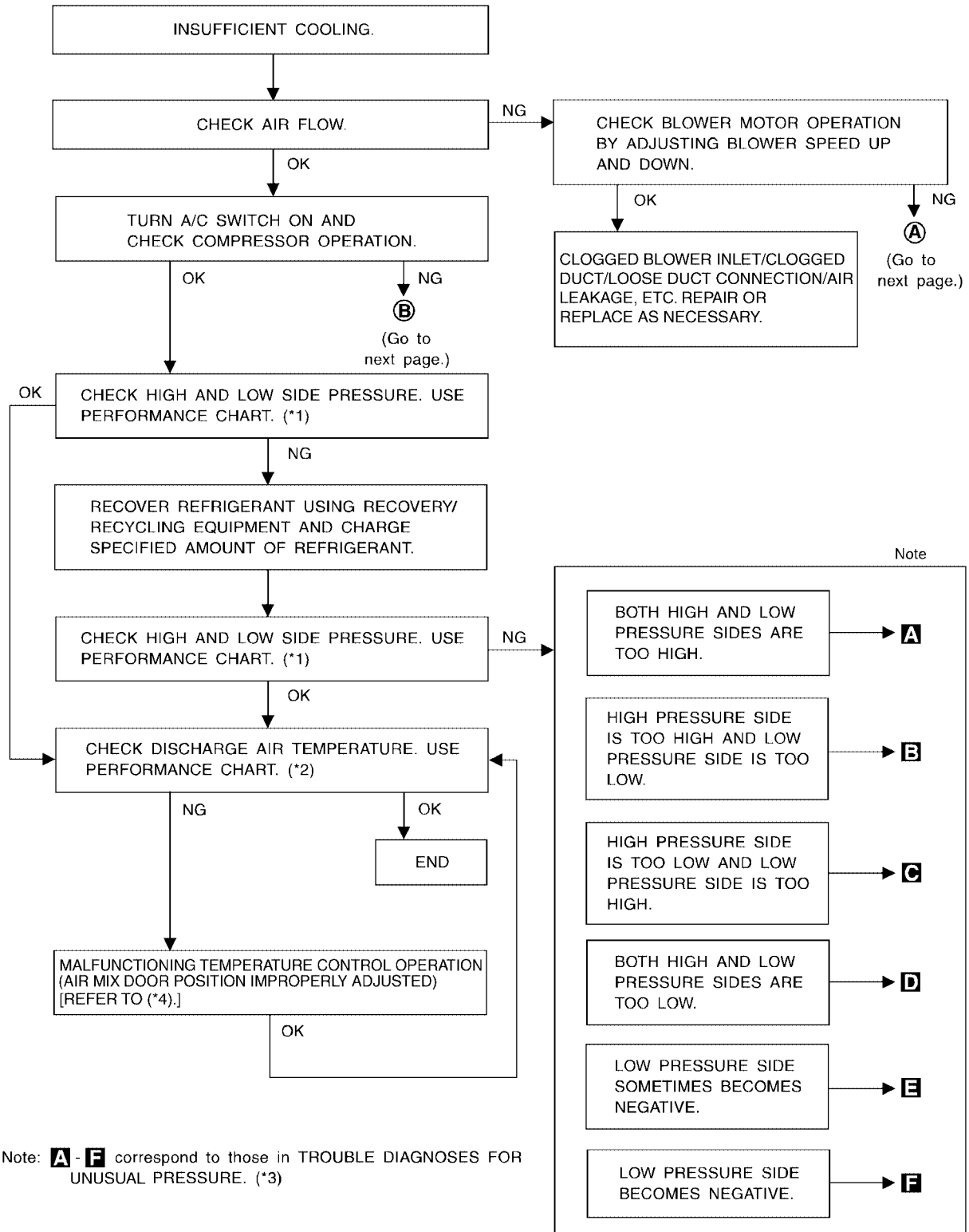
\*8 [MA-12, "CHECKING DRIVE BELTS"](#)

\*9 [MTC-63, "Air Mix Door Motor Circuit"](#)

WJIA1699E

# TROUBLE DIAGNOSIS

## PERFORMANCE TEST DIAGNOSES



WJIA0533E

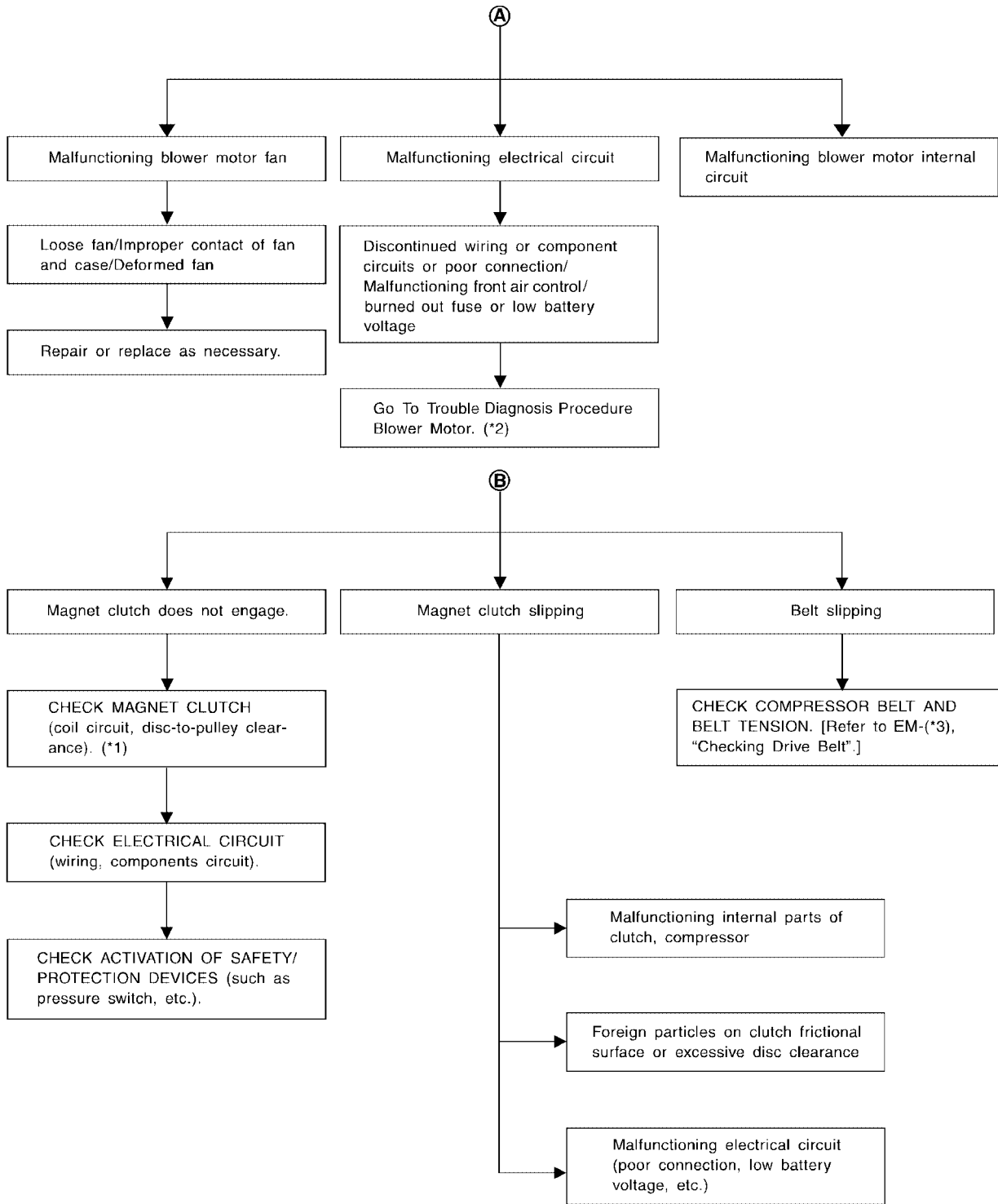
\*1 [MTC-110, "PERFORMANCE CHART"](#).

\*2 [MTC-110, "PERFORMANCE CHART"](#).

\*3 [MTC-111, "Trouble Diagnoses for Unusual Pressure"](#).

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

# TROUBLE DIAGNOSIS



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

\*1 [MTC-157, "Removal and Installation for Compressor Clutch".](#)

\*2 [MTC-80, "Front Blower Motor Circuit".](#)

\*3 [EM-14, "Checking Drive Belts".](#)




WJIA0534E

# 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
Windows	Open
Hood	Open
TEMP.	Max. COLD
Mode switch	 (Ventilation) set
Recirculation (REC) switch	 (Recirculation) set
 Fan (blower) speed (FR and RR)	Max. speed set
Engine speed	Idle speed
RR system	ON

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 °C (°F)
Relative humidity %	Air temperature °C (°F)	
50-70	25 (77)	9.7 - 13.7 (49 - 57)
	30 (86)	12.6 - 16.6 (55 - 62)
	35 (95)	14.9 - 19.9 (59 - 68)
	40 (104)	17.3 - 23.3 (63 - 74)

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

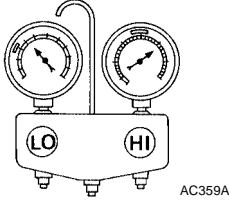
Ambient air		High-pressure (Discharge side) kPa (kg/cm <sup>2</sup> , psi)	Low-pressure (Suction side) kPa (kg/cm <sup>2</sup> , psi)
Relative humidity %	Air temperature °C (°F)		
50-70	25 (77)	1,059 - 1,294 (10.8 - 13.2, 153.6 - 187.7)	216 - 255 (2.2 - 2.6, 31.3 - 37.0)
	30 (86)	1,206 - 1,481 (12.3 - 15.1, 174.9 - 214.8)	255 - 304 (2.6 - 3.1, 37.0 - 44.1)
	35 (95)	1,393 - 1,706 (14.2 - 17.4, 202.0 - 247.5)	275 - 343 (2.8 - 3.5, 39.8 - 49.8)
	40 (104)	1,510 - 1,844 (15.4 - 18.8, 219.0 - 267.4)	343 - 422 (3.5 - 4.3, 49.8 - 61.2)

# TROUBLE DIAGNOSIS

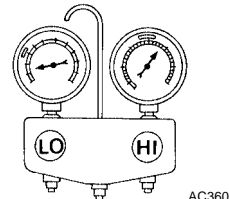
## TROUBLE DIAGNOSES FOR UNUSUAL PRESSURE

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

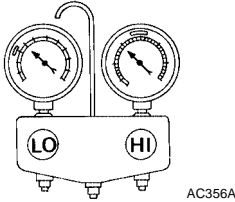
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Both high- and low-pressure sides are too high.</p>  <p style="text-align: right; font-size: small;">AC359A</p>	Pressure is reduced soon after water is splashed on condenser.	Excessive refrigerant charge in refrigeration cycle.	Reduce refrigerant until specified pressure is obtained.
	Air suction by cooling fan is insufficient.	Insufficient condenser cooling performance. ↓ 1. Condenser fins are clogged. 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>	Poor heat exchange in condenser. (After compressor operation stops, high-pressure decreases too slowly.) ↓ Air in refrigeration cycle.	Evacuate repeatedly and recharge system.
	Engine tends to overheat.	Engine cooling systems malfunction.	Check and repair 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> ↓ Improper expansion valve adjustment.	Replace expansion valve.

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

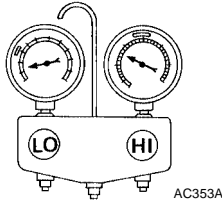
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>High-pressure side is too high and low-pressure side is too low.</p>  <p style="text-align: right; font-size: small;">AC360A</p>	Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot.	High-pressure 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
High-pressure side is too low and low-pressure side is too high. 	High- and low-pressure sides become equal soon after compressor operation stops.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.
	No temperature difference between high- and low-pressure sides.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.

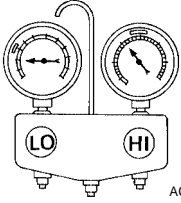
## Both High- and Low-pressure Sides are Too Low

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Both high- and low-pressure sides are too low. 	<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. ↓ Leaking fittings or components.	Check refrigerant system for leaks. Refer to <a href="#">MTC-170, "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. ↓ 1. Improper expansion valve adjustment. 2. Malfunctioning expansion valve. 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-122, "Intake Sensor Circuit"</a>.</li> <li>Replace compressor.</li> </ul>

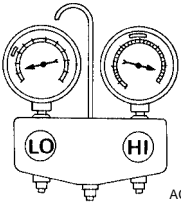


# TROUBLE DIAGNOSIS

## Low-pressure Side Sometimes Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Low-pressure side sometimes becomes negative.</p>  <p style="text-align: right; font-size: small;">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 style="text-align: right; font-size: small;">AC362A</p>	<p>Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.</p>	<p>High-pressure side is closed and refrigerant does not flow.</p> <p>↓</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>

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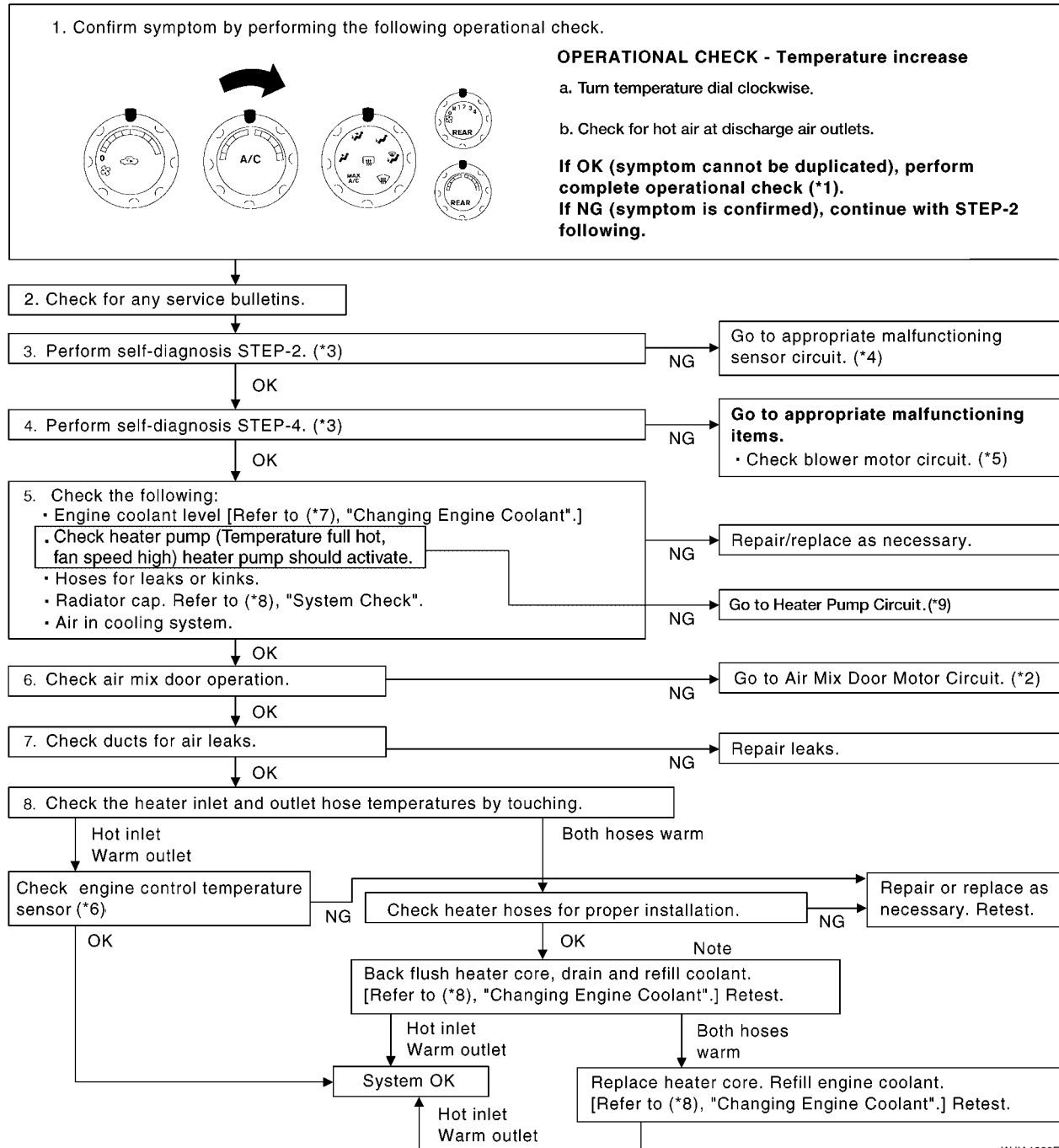
# TROUBLE DIAGNOSIS

EJS001SR

## Insufficient Heating

SYMPTOM: Insufficient heating

### INSPECTION FLOW



WJIA1900E

\*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-80, "Front Blower Motor Circuit"](#).

\*6 [EC-216, "DTC P0117, P0118 ECT SENSOR"](#).

\*7 [MA-14, "Changing Engine Coolant"](#).

\*8 [CO-8, "CHECKING RADIATOR CAP"](#).

\*9 [MTC-115, "Heater Pump Circuit"](#)

# TROUBLE DIAGNOSIS

## Heater Pump Circuit SYSTEM DESCRIPTION

EJS004WB

### Component Parts

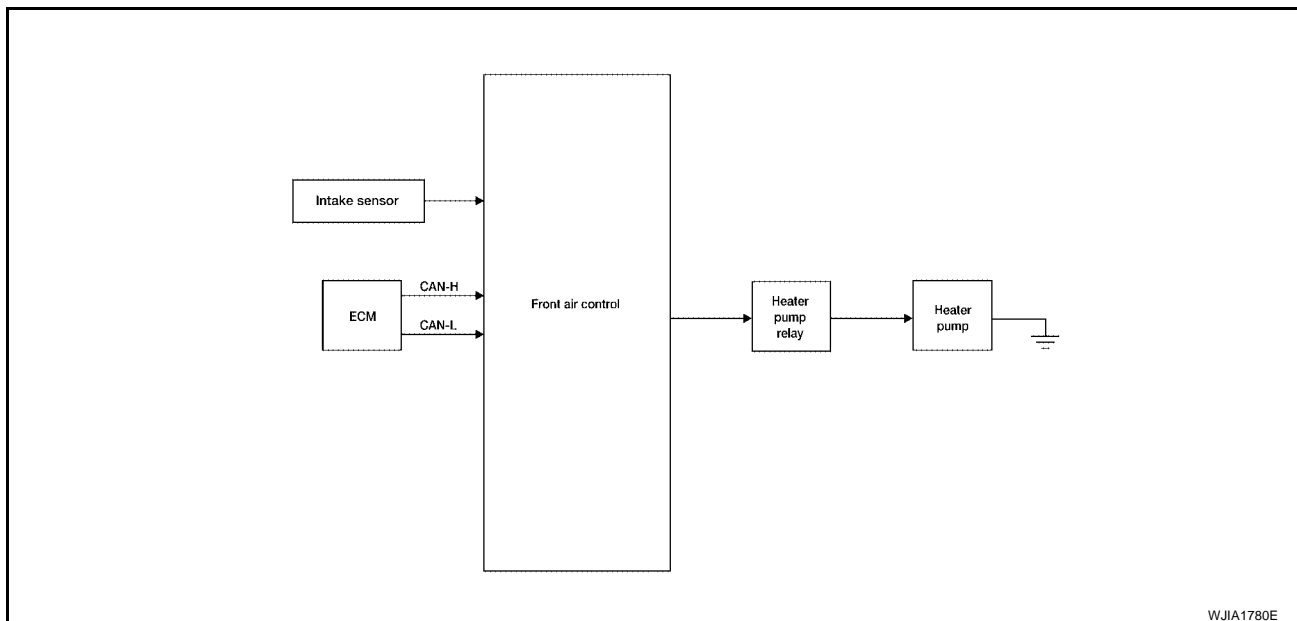
Heater pump control system components are:

- Front air control
- Heater pump relay
- Heater pump
- Intake sensor

### System Operation

The heater pump improves heater performance specifically at idle conditions. It is designed to operate in either of the following 2 situations:

1. Front blower motor set to maximum speed and temperature control dial set to full hot or
2. Engine coolant temperature (signal via CAN communication) minus heater core outlet temperature (intake sensor input to front air control) is greater than 20° C (68° F). If the difference is less than 16° C (61° F), the heater pump will not operate unless the conditions in item No. 1 above are met.



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# TROUBLE DIAGNOSIS

## DIAGNOSTIC PROCEDURE FOR HEATER PUMP CIRCUIT

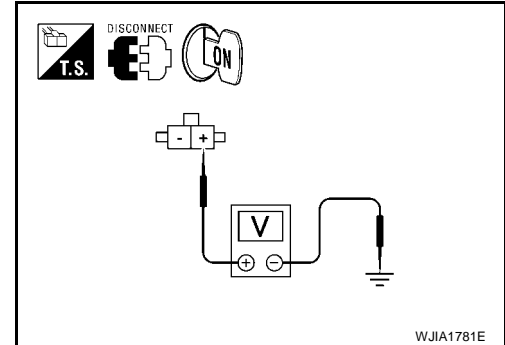
### 1. CHECK POWER SUPPLY TO HEATER PUMP

1. Disconnect heater pump connector.
2. Turn ignition switch ON.
3. Set front blower motor to maximum speed.
4. Turn temperature control dial to full hot.
5. Check voltage between heater pump harness connector E127 terminal (+) and ground.

**(+) - Ground** : **Battery voltage**

OK or NG

- OK >> GO TO 2.  
NG >> GO TO 3.



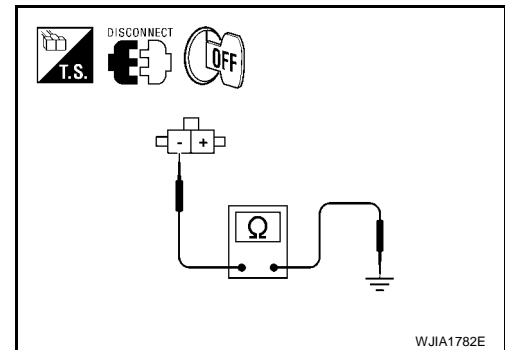
### 2. CHECK HEATER PUMP GROUND

1. Turn ignition switch OFF.
2. Check continuity between heater pump harness connector E127 terminal (-) and ground.

**(-) - Ground** : **Continuity should exist.**

OK or NG

- OK >> Replace heater pump. Refer to [MTC-136, "HEATER PUMP"](#).  
NG >> Repair harness or connector.



### 3. CHECK HEATER PUMP RELAY

1. Turn ignition switch OFF.
2. Check heater pump relay. Refer to [MTC-117, "Heater Pump Relay"](#).

OK or NG

- OK >> GO TO 4.  
NG >> Replace heater pump relay.

### 4. CHECK RELAY POWER SUPPLY

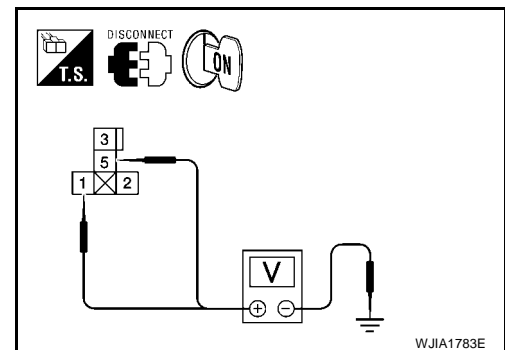
1. Turn ignition switch ON.
2. Check voltage between heater pump relay harness connector E128 terminals 1, 5 and ground.

**1 - Ground** : **Battery voltage**

**5 - Ground** : **Battery voltage**

OK or NG

- OK >> GO TO 5.  
NG >> Repair harness or connector.



# TROUBLE DIAGNOSIS

## 5. CHECK HEATER PUMP MOTOR POWER CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between heater pump relay harness connector (A) E128 terminal 3 and heater pump harness connector (B) E127 terminal (+).

**3 - (+) : Continuity should exist.**

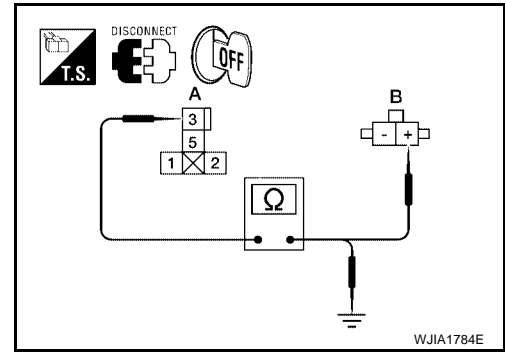
3. Check continuity between heater pump relay harness connector (A) E128 terminal 3 and ground.

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

OK or NG

OK >> GO TO 6.

NG >> Repair harness or connector.



## 6. CHECK CIRCUIT BETWEEN HEATER PUMP RELAY AND FRONT AIR CONTROL

1. Disconnect front air control connector.
2. Check continuity between front air control harness connector (A) M49 terminal 10 and heater pump relay harness connector (B) E128 terminal 2.

**2 - 10 : Continuity should exist.**

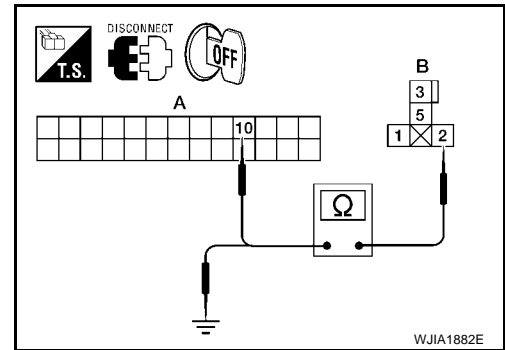
3. Check continuity between heater pump relay harness connector (B) E128 terminal 2 and ground.

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

OK or NG

OK >> Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#).

NG >> Repair harness or connector.



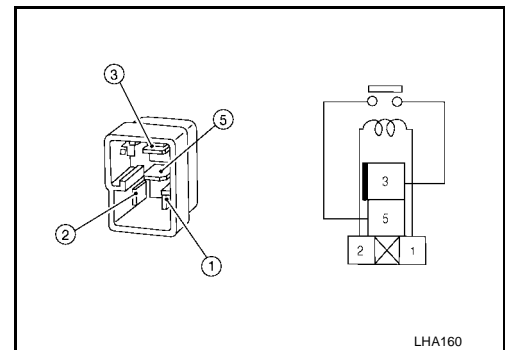
## COMPONENT INSPECTION

### Heater Pump Relay

Check continuity between terminals 3 and 5.

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

If NG, replace relay.



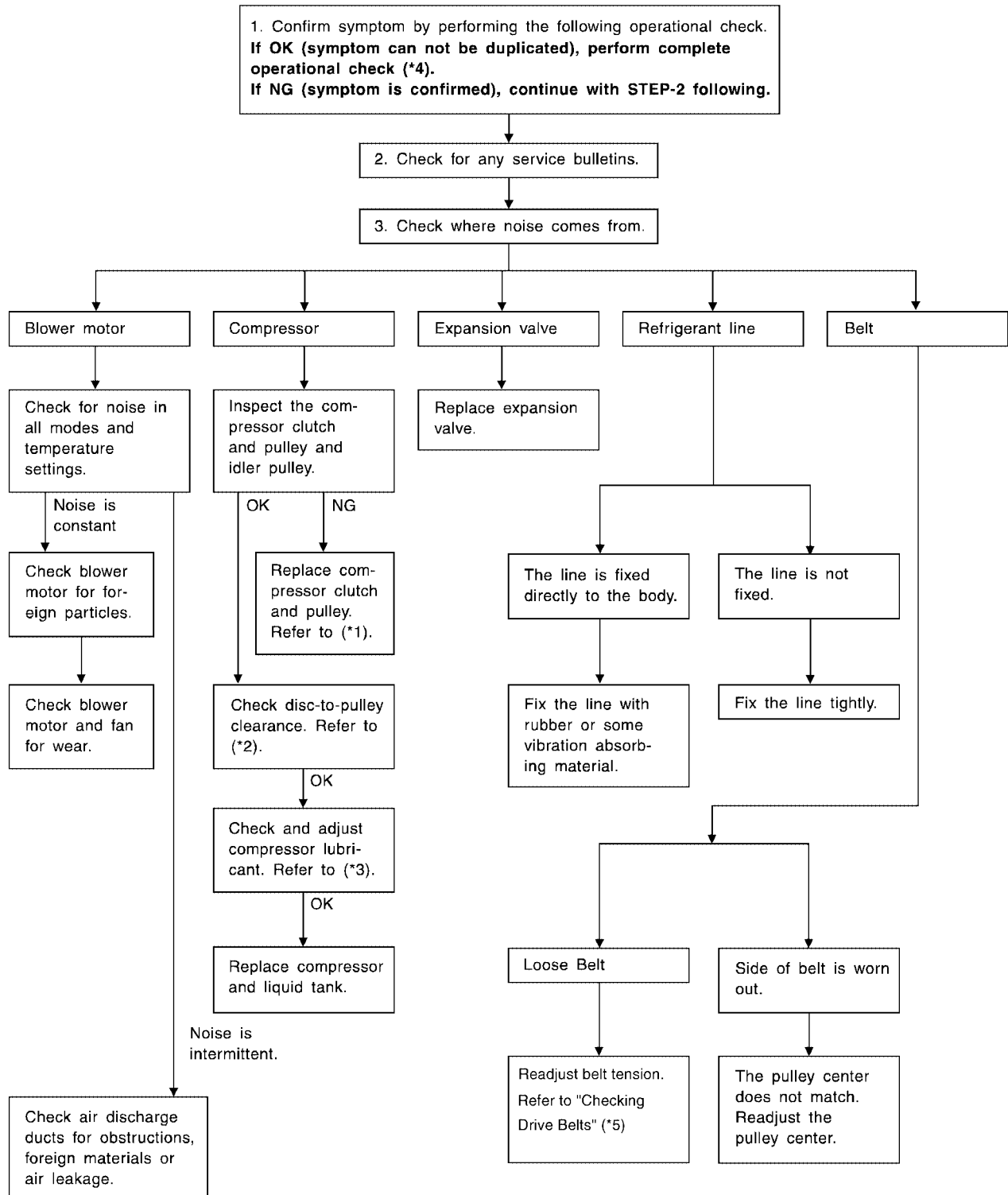
# TROUBLE DIAGNOSIS

EJS001SS

## Noise

SYMPTOM: Noise

### INSPECTION FLOW



# TROUBLE DIAGNOSIS

\*1 [MTC-157. "REMOVAL".](#)

\*2 [MTC-158. "INSTALLATION".](#)

\*3 [MTC-22. "Maintenance of Lubricant Quantity in Compressor".](#)

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

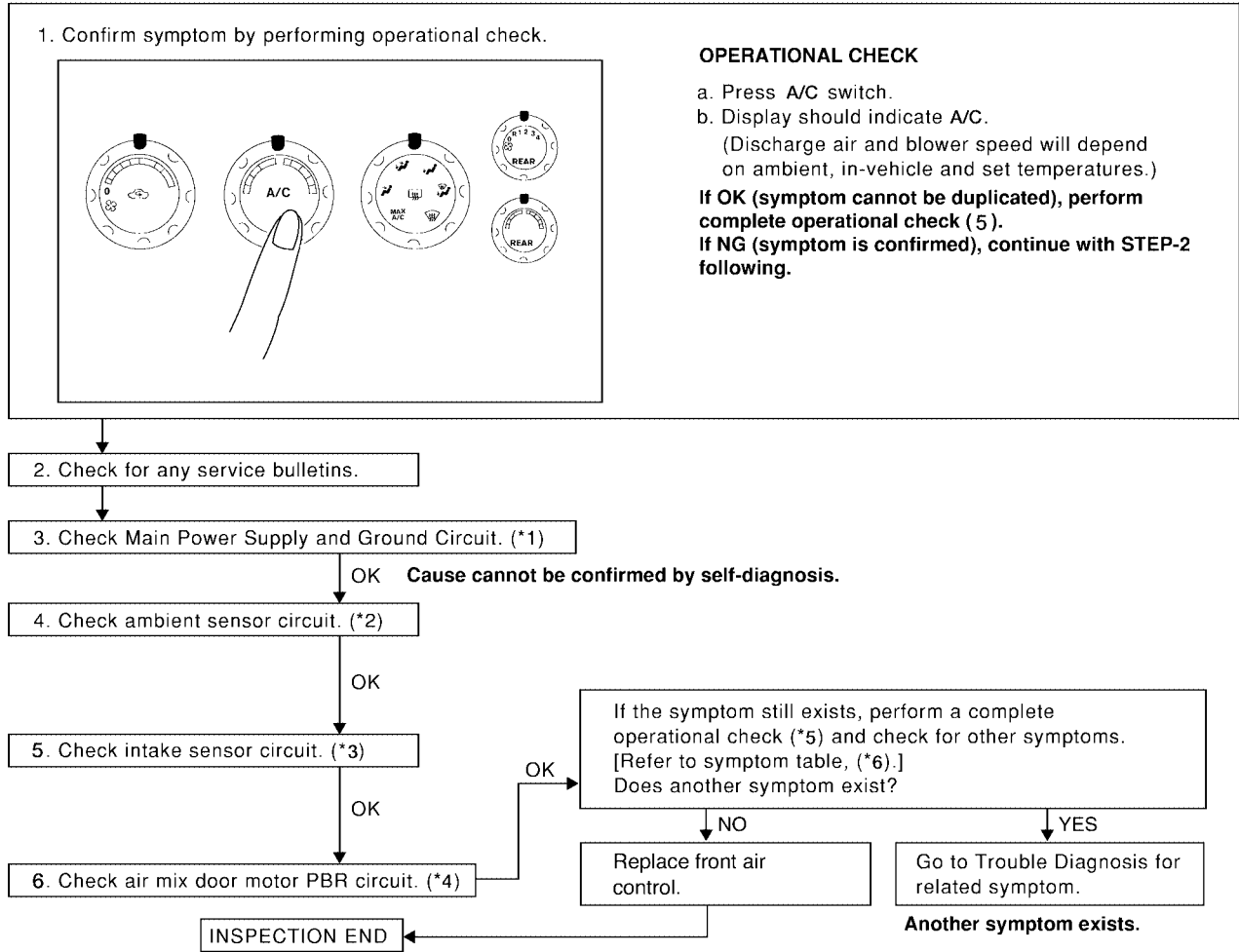
\*5 [EM-14. "Checking Drive Belts".](#)

## Self-diagnosis

EJS001ST

SYMPTOM: Self-diagnosis cannot be performed.

### INSPECTION FLOW



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

\*2 [MTC-120. "Ambient Sensor Circuit".](#)

3. [MTC-122. "Intake Sensor Circuit".](#)

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

\*5 [MTC-53. "Operational Check".](#)

\*6 [MTC-33. "SYMPTOM TABLE".](#)

WJIA1230E

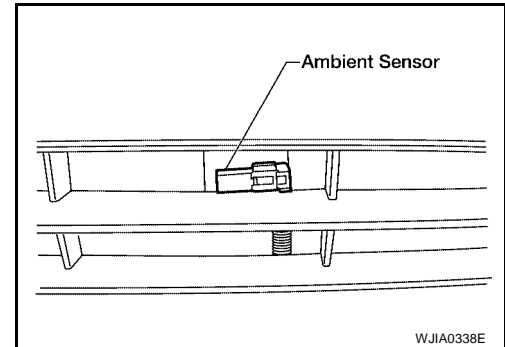
# TROUBLE DIAGNOSIS

EJS001SV

## Ambient Sensor Circuit COMPONENT DESCRIPTION

### Ambient Sensor

The ambient sensor is attached on the radiator core support (left side). It detects ambient temperature and converts it into a resistance value which is then input into the front air control.



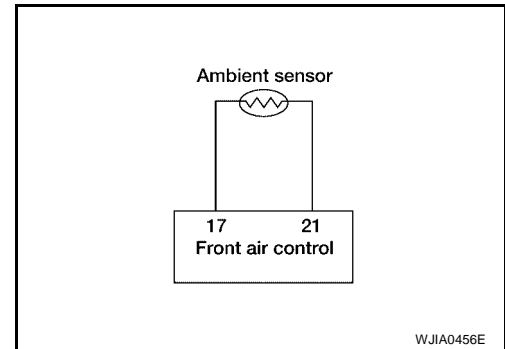
### AMBIENT TEMPERATURE INPUT PROCESS

The front air control includes a processing circuit for the ambient sensor input. However, when the temperature detected by the ambient sensor increases quickly, the processing circuit retards the front air control function. It only allows the front air control to recognize an ambient temperature increase of 0.33°C (0.6°F) per 100 seconds.

This prevents constant adjustments due to momentary conditions, such as stopping after high speed driving. Although the actual ambient temperature has not changed, the temperature detected by the ambient sensor will increase. This is because the heat from the engine compartment can radiate to the front grille area, location of the ambient sensor.

### DIAGNOSTIC PROCEDURE FOR AMBIENT SENSOR

SYMPTOM: Ambient sensor circuit is open or shorted. (40 or 41 is indicated on front air control As a result of conducting the front air control self-diagnosis)



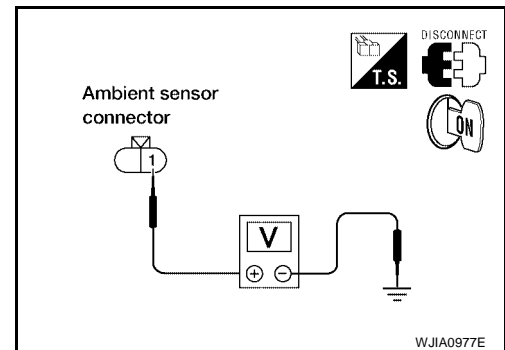
## 1. CHECK VOLTAGE BETWEEN AMBIENT SENSOR AND GROUND

1. Disconnect ambient sensor connector.
2. Turn ignition switch ON.
3. Check voltage between ambient sensor harness connector E1 terminal 1 (O/B) and ground.

**Approx. 5V**

OK or NG

- OK >> GO TO 2.  
NG >> GO TO 4.





# TROUBLE DIAGNOSIS

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

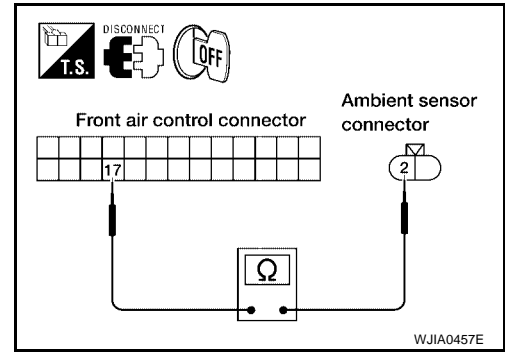
1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between ambient sensor harness connector E1 terminal 2 (GR/R) and front air control harness connector M49 terminal 17 (GR/R).

**Continuity should exist.**

OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.



## 3. CHECK AMBIENT SENSOR

Refer to [MTC-122, "Ambient Sensor"](#) .

OK or NG

OK >> 1. Replace front air control. Refer to [MTC-125, "FRONT AIR CONTROL"](#) .

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

NG >> 1. Replace ambient sensor.

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

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

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between ambient sensor harness connector E1 terminal 1 (O/B) and front air control harness connector M49 terminal 21 (O/B).

**Continuity should exist.**

4. Check continuity between ambient sensor harness connector E1 terminal 1 (O/B) and ground.

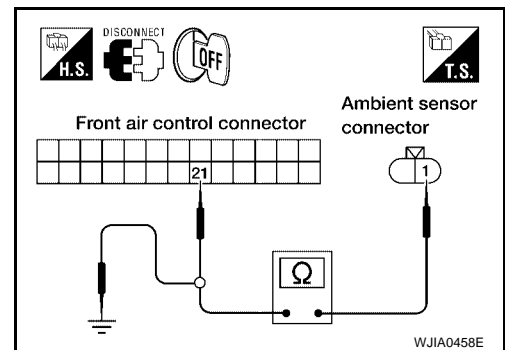
**Continuity should not exist.**

OK or NG

OK >> 1. Replace front air control. Refer to [MTC-125, "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.



# TROUBLE DIAGNOSIS

## COMPONENT INSPECTION

### Ambient Sensor

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

Temperature °C (°F)	Resistance kΩ
-15 (5)	12.73
-10 (14)	9.92
-5 (23)	7.80
0 (32)	6.19
5 (41)	4.95
10 (50)	3.99
15 (59)	3.24
20 (68)	2.65
25 (77)	2.19
30 (86)	1.81
35 (95)	1.51
40 (104)	1.27
45 (113)	1.07

If NG, replace ambient sensor.

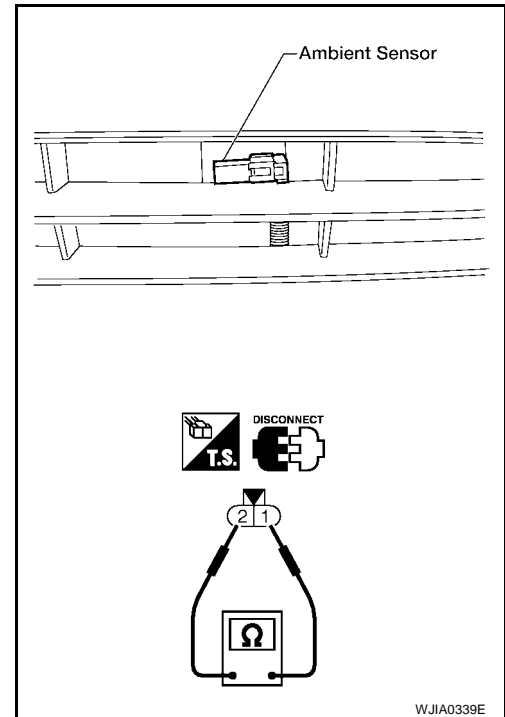
### Intake Sensor Circuit COMPONENT DESCRIPTION

#### 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.

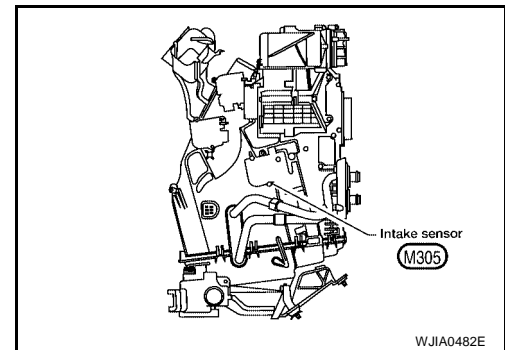
### DIAGNOSTIC PROCEDURE FOR INTAKE SENSOR

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

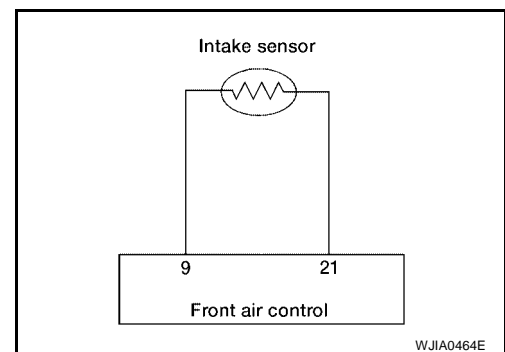


WJIA0339E

EJS001SY



WJIA0482E



WJIA0464E

# TROUBLE DIAGNOSIS

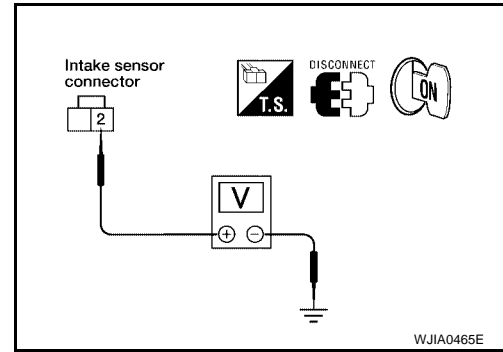
## 1. CHECK VOLTAGE BETWEEN INTAKE SENSOR AND GROUND

1. Disconnect intake sensor connector.
2. Turn ignition switch ON.
3. Check voltage between intake sensor harness connector M305 terminal 2 (R/W) and ground.

**Approx. 5V**

OK or NG

- OK >> GO TO 2.  
NG >> GO TO 4.



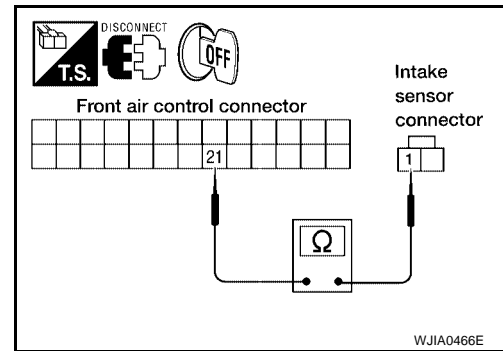
## 2. CHECK CIRCUIT CONTINUITY BETWEEN INTAKE SENSOR AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between intake sensor harness connector M305 terminal 1 (O/B) and front air control harness connector M49 terminal 21 (O/B).

**Continuity should exist.**

OK or NG

- OK >> GO TO 3.  
NG >> Repair harness or connector.



## 3. CHECK INTAKE SENSOR

Refer to [MTC-124, "Intake Sensor"](#) .

OK or NG

- OK >> 1. Replace front air control. Refer to [MTC-125, "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.

## 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 M305 terminal 2 (R/W) and front air control harness connector M49 terminal 9 (R/W).

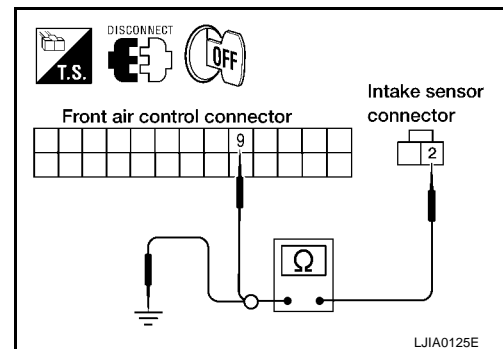
**Continuity should exist.**

4. Check continuity between intake sensor harness connector M305 terminal 2 (R/W) and ground.

**Continuity should not exist.**

OK or NG

- OK >> 1. Replace front air control. Refer to [MTC-125, "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.



# TROUBLE DIAGNOSIS

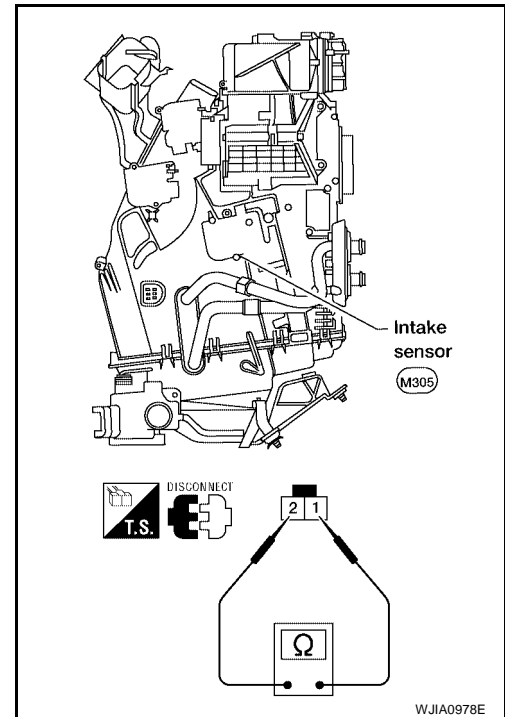
## COMPONENT INSPECTION

### 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.



# CONTROL UNIT

## CONTROL UNIT

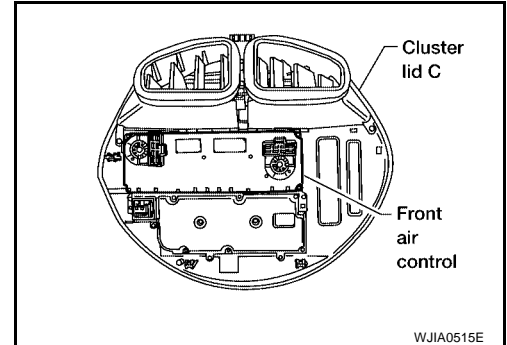
PF27500

### Removal and Installation FRONT AIR CONTROL

EJS001SZ

#### Removal

1. Remove the five control knobs from the control unit.
2. Remove cluster lid C, disconnect the front air control electrical connector. Refer to [IP-11, "Cluster Lid C"](#).
3. Remove the screws securing the front air control to cluster lid C.
4. Remove the front air control.



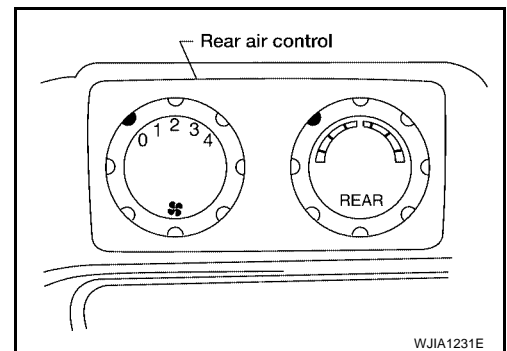
#### Installation

Installation is in the reverse order of removal.

### REAR AIR CONTROL

#### Removal

1. Remove the rear air control from the headliner, located over the sliding door, RH.
2. Disconnect the rear air control electrical connector and remove the rear air control.



#### Installation

Installation is in the reverse order of removal.

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# AMBIENT SENSOR

## AMBIENT SENSOR

PF2:27722

### Removal and Installation

EJS00170

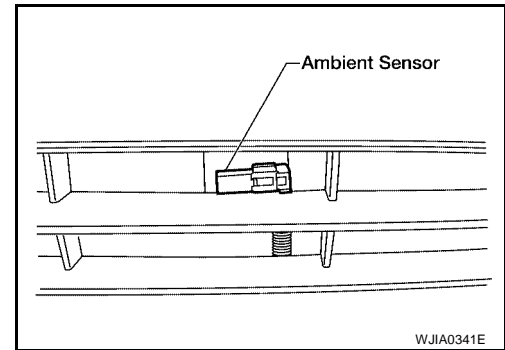
#### REMOVAL

1. Disconnect the ambient sensor connector.

**NOTE:**

The ambient sensor is located behind the front bumper opening, in front of the condenser.

2. Release the ambient sensor clip and then remove the ambient sensor.



#### INSTALLATION

Installation is in the reverse order of removal.

# INTAKE SENSOR

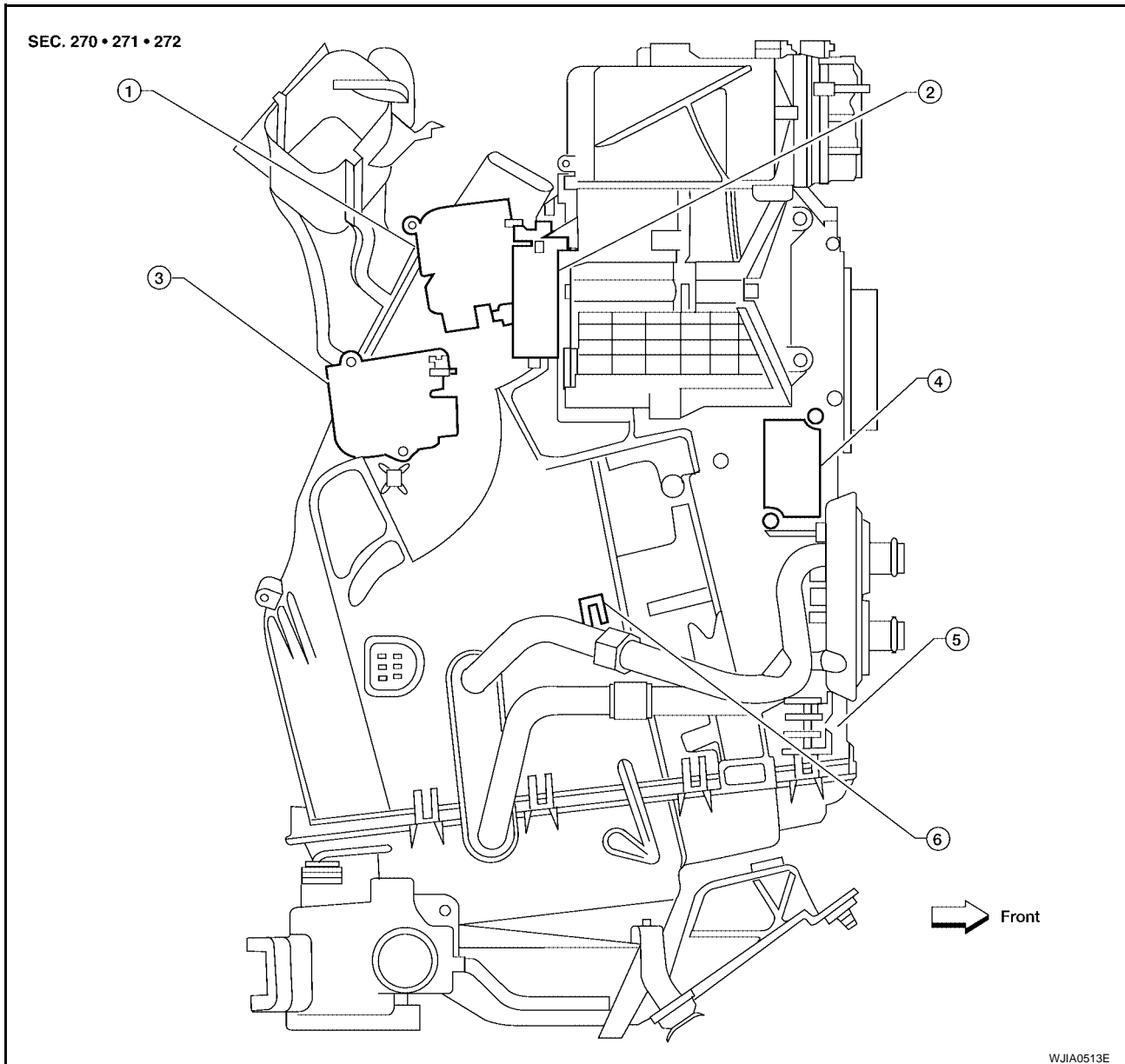
PF2:27723

EJS00173

## INTAKE SENSOR

### Removal and Installation

#### Intake Sensor



- |                            |   |                    |
|----------------------------|---|--------------------|
| 1. Defroster door motor    | 2. Intake door motor (passenger)          | 3. Mode door motor |
| 4. Variable blower control | 5. Front heater and cooling unit assembly | 6. Intake sensor   |

#### REMOVAL

1. Remove the instrument lower panel RH and glove box. Refer to [IP-13, "Instrument Lower Panel RH and Glove Box"](#).
2. Disconnect the intake sensor electrical connector.
3. Twist and pull the intake sensor to remove the intake sensor from the front heater and cooling unit assembly.

#### INSTALLATION

Installation is in the reverse order of removal.

# BLOWER MOTOR

PFP:27226

EJS001T4

## BLOWER MOTOR

### Removal and Installation FRONT BLOWER MOTOR

#### Removal

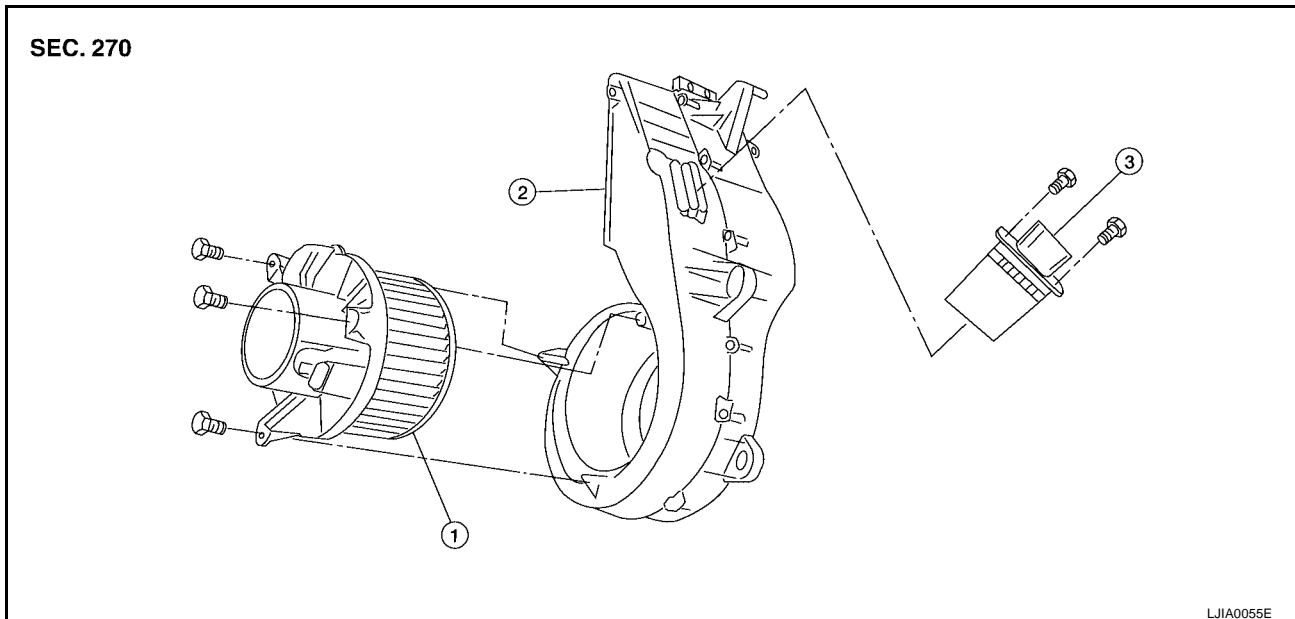
1. Remove the combination meter. Refer to [IP-12, "Combination Meter"](#).
2. Remove the defroster duct. Refer to [MTC-150, "DEFROSTER DUCT"](#).
3. Remove the front blower motor.

#### Installation

Installation is in the reverse order of removal.

### REAR BLOWER MOTOR

#### Rear Blower Motor



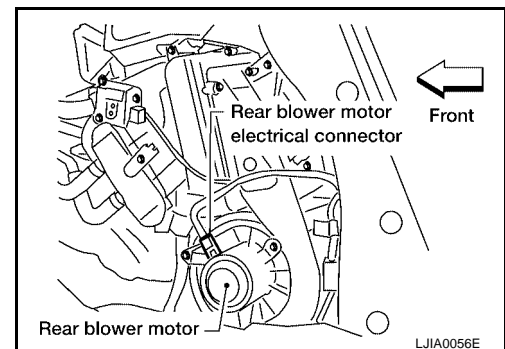
1. Rear blower motor

2. Rear blower motor case

3. Rear blower motor resistor

#### Removal

1. Remove the rear RH interior trim panel. Refer to [EI-34, "RIGHT SIDE AND REAR"](#).
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.



# IN-CABIN MICROFILTER

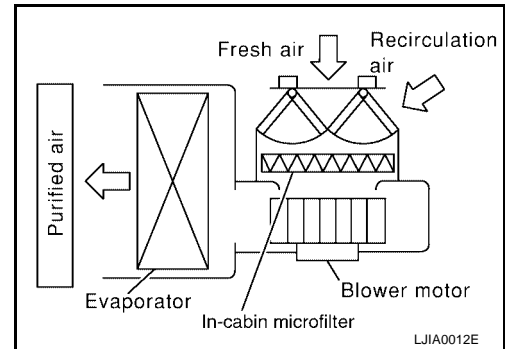
PFP:27277

## IN-CABIN MICROFILTER

### Removal and Installation FUNCTION

EJS001T5

The air inside the passenger compartment is filtered by the in-cabin microfilters when the heater or A/C controls are set on either the recirculation or fresh mode. The two in-cabin microfilters are located in the front heater and cooling unit assembly. The rear heater and cooling unit assembly only draws in air from the passenger compartment to recirculate into the passenger compartment, so the rear heater and cooling unit assembly is not equipped with in-cabin microfilters.



### REPLACEMENT TIMING

Replacement of the two in-cabin microfilters is recommended on a regular interval depending on the driving conditions. Refer to [MA-6, "PERIODIC MAINTENANCE"](#). It may also be necessary to replace the two in-cabin microfilters as part of a component replacement if the in-cabin microfilters are damaged.

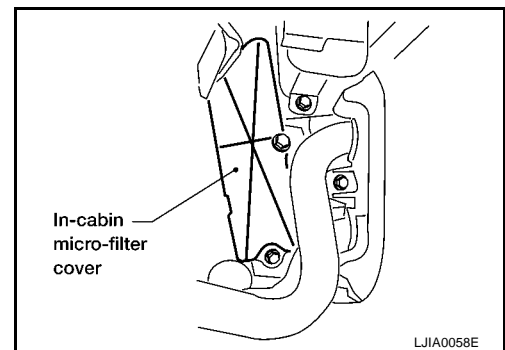
### REPLACEMENT PROCEDURES

1. Remove the glove box assembly. Refer to [IP-13, "Instrument Lower Panel RH and Glove Box"](#).
2. Remove the three screws and remove the in-cabin microfilter cover.
3. Remove the in-cabin microfilters from the front heater and cooling unit assembly.
4. Install the in-cabin microfilters, replacing the two in-cabin microfilters with new filters, into the front heater and cooling unit assembly.

#### **CAUTION:**

**When installing the two new in-cabin microfilters make sure that the filters are facing in the direction indicated by the direction arrow for the air flow. The direction arrow is printed on the side of the in-cabin microfilters.**

5. Install the in-cabin microfilter cover.
6. Install the glove box assembly. Refer to [IP-13, "Instrument Lower Panel RH and Glove Box"](#).



# HEATER & COOLING UNIT ASSEMBLY

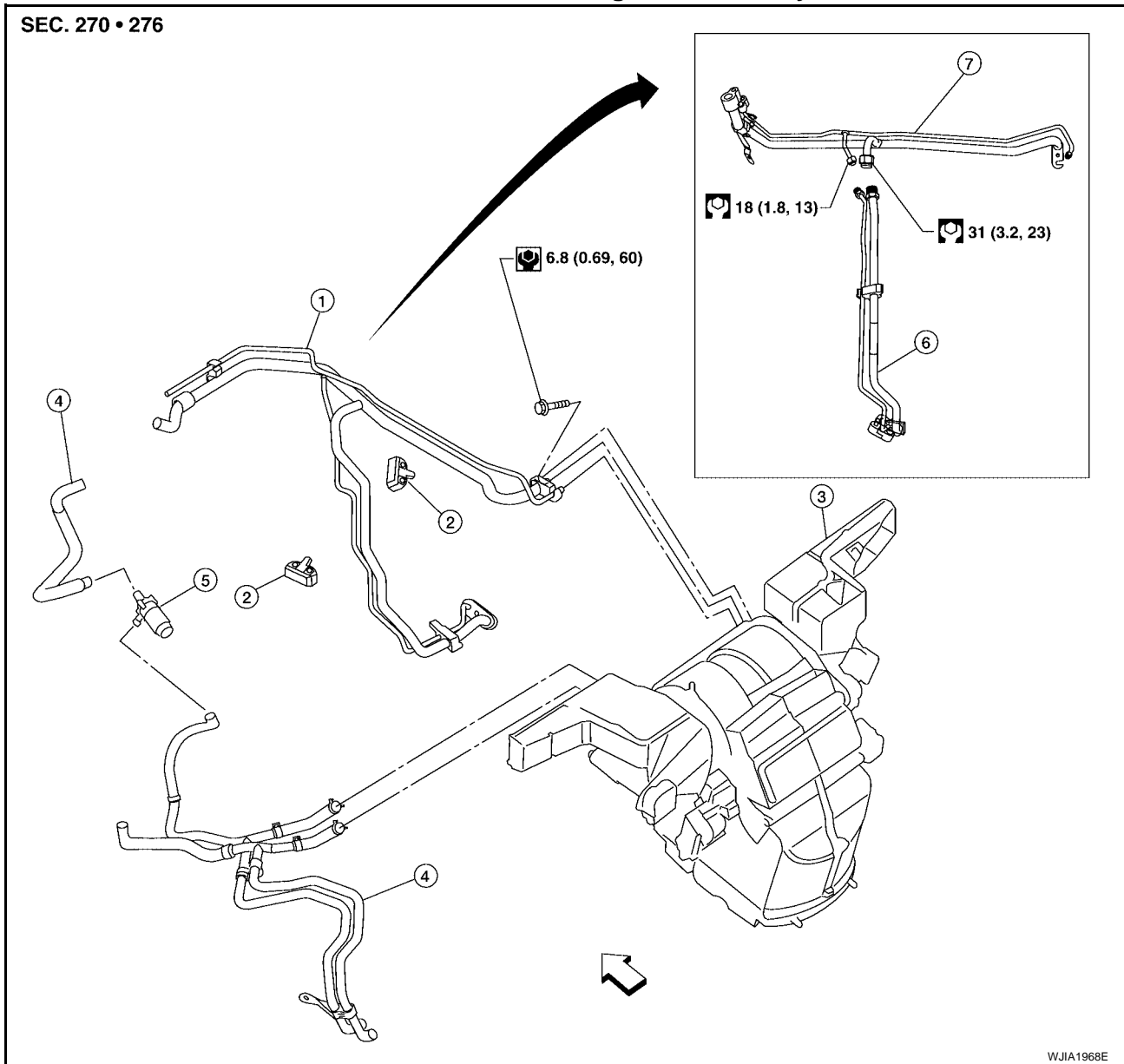
## HEATER & COOLING UNIT ASSEMBLY

PF2:27110

### Components

EJS001U3

### Front Heater and Cooling Unit Assembly



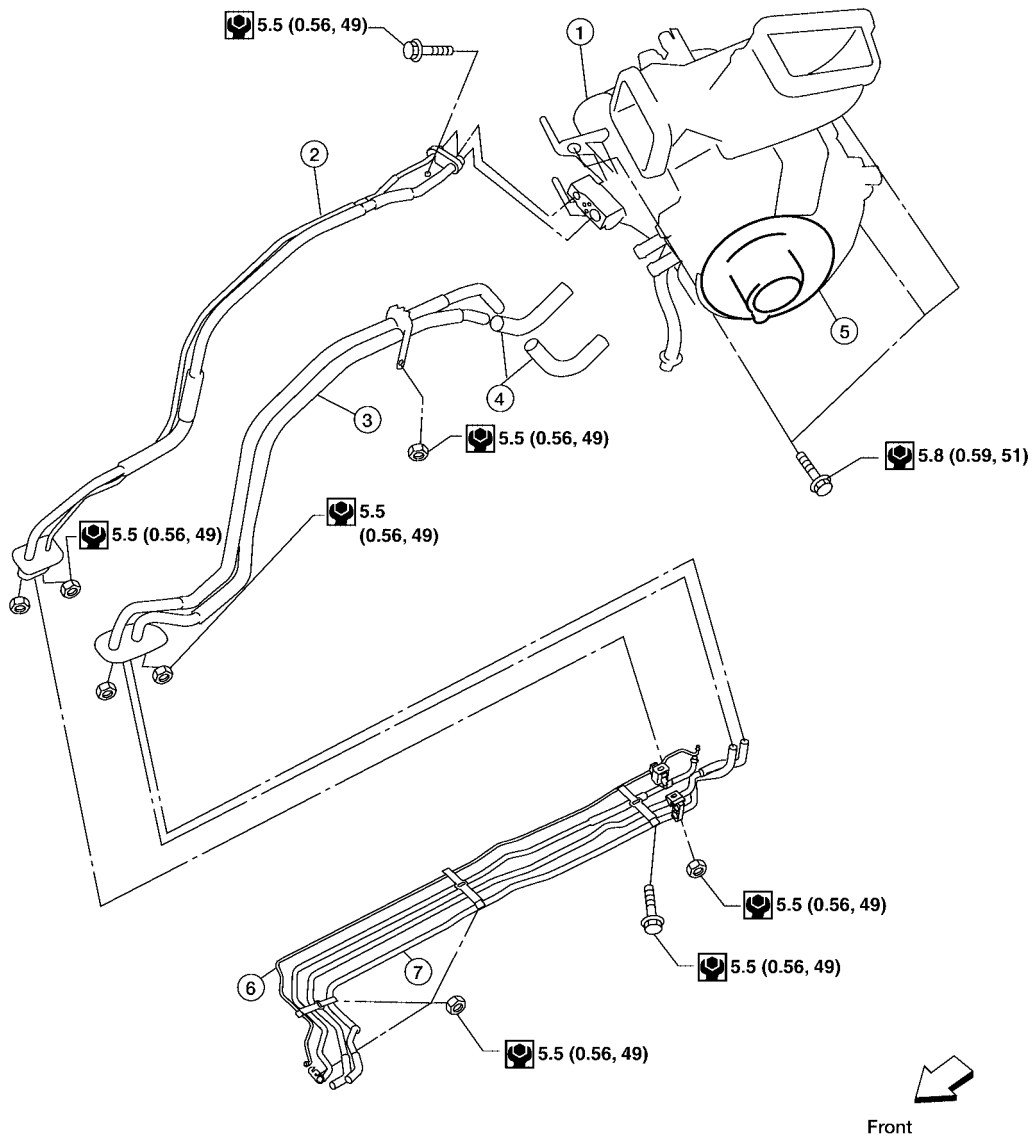
WJIA1968E

- |   |                                   |   |
|---|-----------------------------------|---|
| 1. High/low pressure pipe (production)      | 2. High/low pressure pipe bracket | 3. Front heater and cooling unit assembly   |
| 4. Front heater core pipe and hose assembly | 5. Heater pump                    | 6. High/low pressure pipe - lower (service) |
| 7. High/low pressure pipe - upper (service) | ← Front                           |   |

# HEATER & COOLING UNIT ASSEMBLY

## Rear Heater and Cooling Unit Assembly

SEC. 270 • 276



N·m (kg-m, in-lb)

- |  |                      |                              |
|--|----------------------|------------------------------|
| 1. Rear heater and cooling unit assembly | 2. Rear A/C pipes    | 3. Rear heater core pipes    |
| 4. Rear heater core hose                 | 5. Rear blower motor | 6. Underfloor rear A/C pipes |
| 7. Underfloor rear heater core pipes     |                      |                              |

LJIA0066E

## Removal and Installation FRONT HEATER AND COOLING UNIT ASSEMBLY

EJS00176

### Removal

1. Discharge the refrigerant from the A/C system. Refer to [MTC-152, "Discharging Refrigerant"](#).
2. Drain the coolant from the engine cooling system. Refer to [MA-14, "DRAINING ENGINE COOLANT"](#).
3. Remove the cowl top extension. Refer to [EI-19, "COWL TOP"](#).
4. Remove the exhaust system. Refer to [EX-3, "Removal and Installation"](#).
5. Disconnect the front heater hoses from the front heater core.
6. Disconnect the high/low pressure pipe from the front expansion valve.

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# HEATER & COOLING UNIT ASSEMBLY

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-9, "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-40, "Harness Layout"](#) .
11. Disconnect the steering member from each side of the vehicle body.
12. Remove the front 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 front heater and cooling unit assembly with it attached to the steering member.**

13. Remove the front 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 flexible hose and high pressure flexible hose with a new one, then apply compressor oil to it when installing it.
- After charging refrigerant, check for leaks.

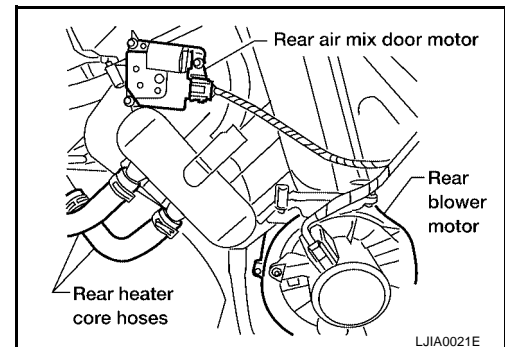
**NOTE:**

- Fill the engine cooling system with the specified coolant mixture. Refer to [MA-15, "REFILLING ENGINE COOLANT"](#) .
- Recharge the A/C system. Refer to [MTC-152, "Evacuating System and Charging Refrigerant"](#) .

## REAR HEATER AND COOLING UNIT ASSEMBLY

### Removal

1. Discharge the refrigerant from the A/C system. Refer to [MTC-152, "Discharging Refrigerant"](#) .
2. Drain the coolant from the engine cooling system. Refer to [MA-14, "DRAINING ENGINE COOLANT"](#) .
3. Disconnect the rear heater core hoses from the rear heater core.
4. Disconnect the rear A/C pipes from the rear expansion valve.
5. Remove the rear RH interior trim panel. Refer to [EI-32, "Removal and Installation"](#) .
6. Disconnect the following electrical connectors:
  - Rear blower motor
  - Rear blower motor resistor
  - Rear air mix door motor
7. Disconnect the ducts from the rear heater and cooling unit assembly.
8. Remove the rear heater and cooling unit assembly.



### 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, then apply compressor oil to it when installing it.
- After charging refrigerant, check for leaks.

**NOTE:**

- Fill the engine cooling system with the specified coolant mixture. Refer to [MA-15, "REFILLING ENGINE COOLANT"](#) .
- Recharge the A/C system. Refer to [MTC-152, "Evacuating System and Charging Refrigerant"](#) .

# HEATER CORE

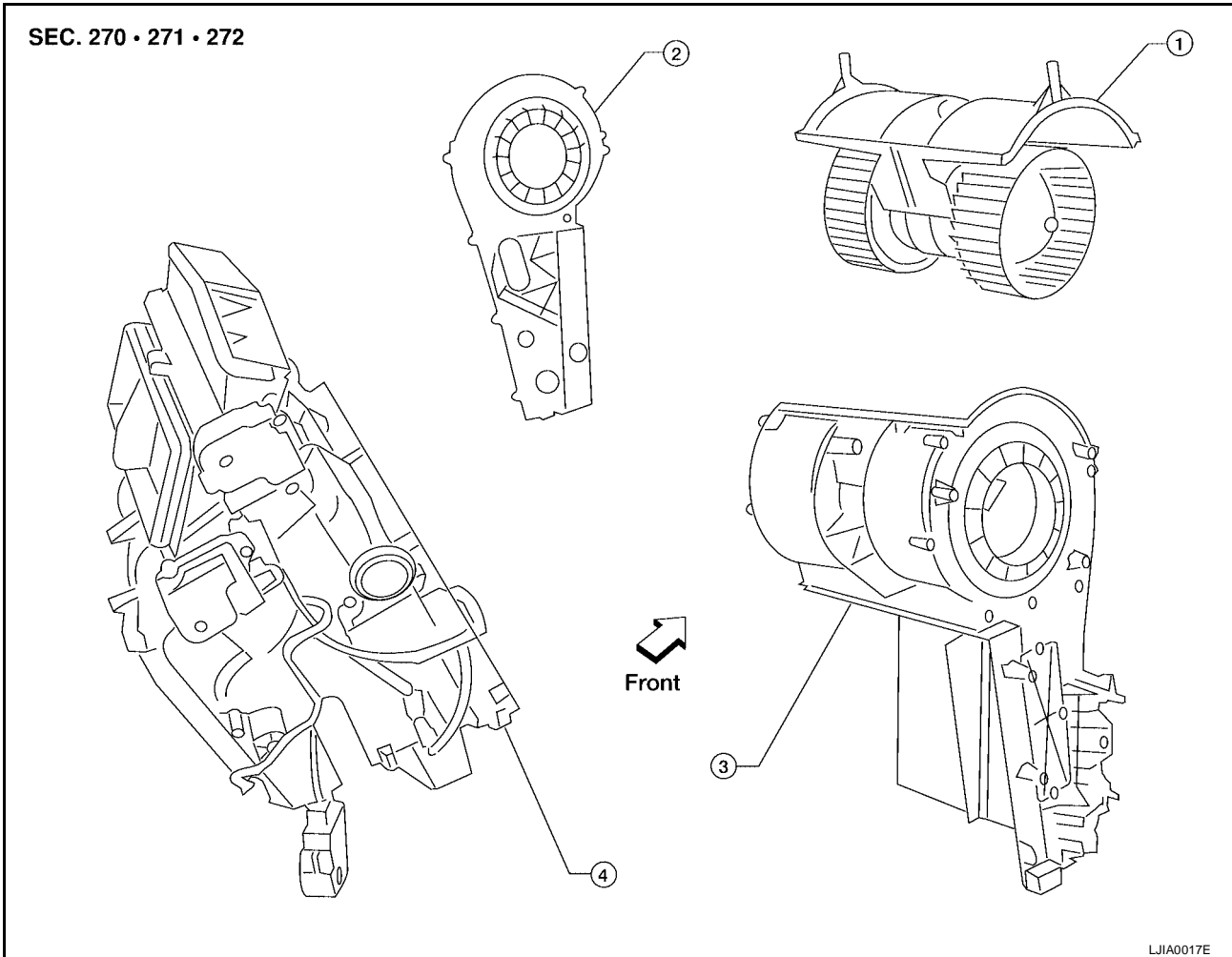
## HEATER CORE

PF27140

### Components

EJS001U4

#### Front Heater and Cooling Unit Assembly



1. Front blower motor

2. Blower motor side cover

3. Blower motor case

4. Heater core and evaporator case

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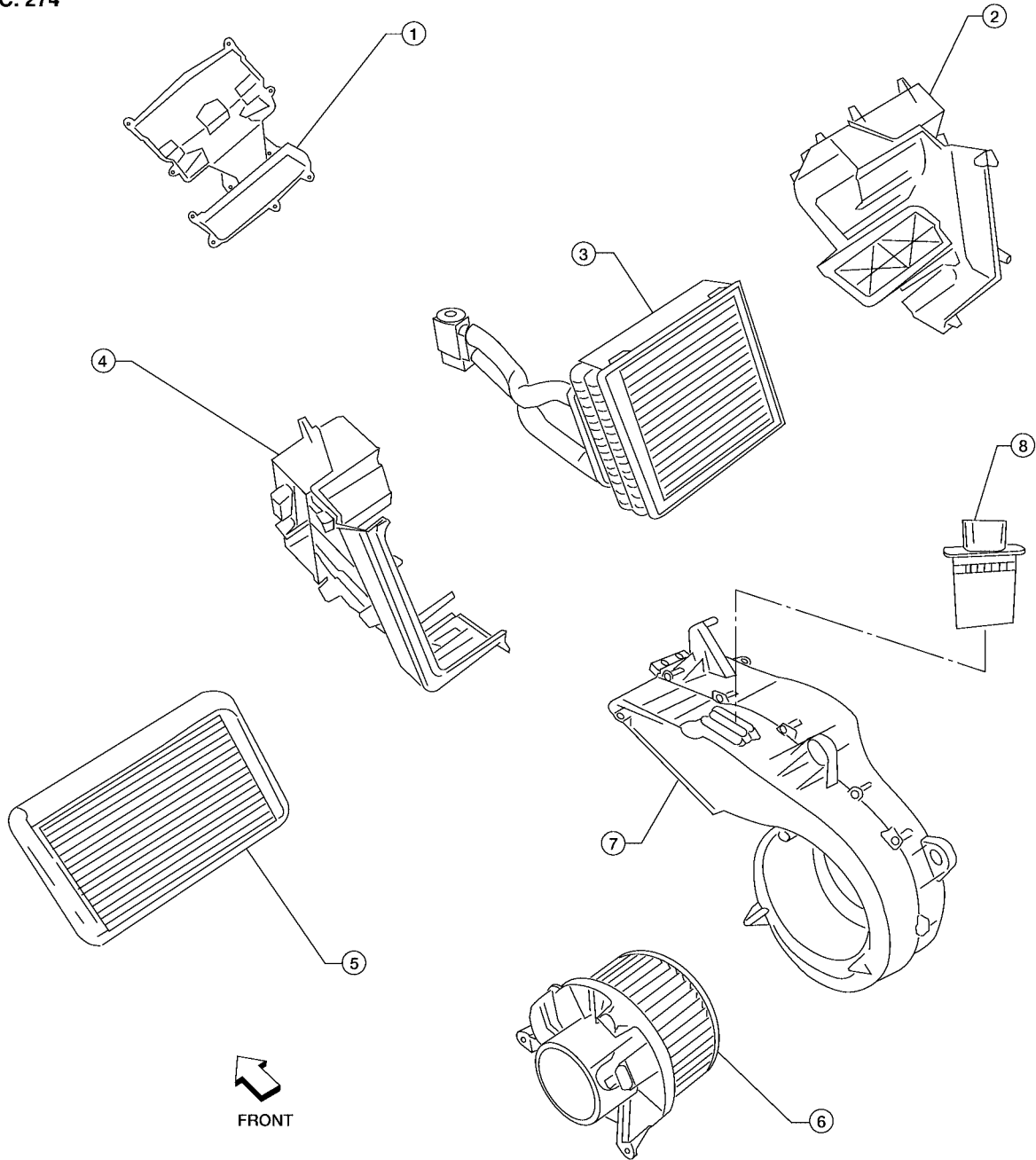
L

M

# HEATER CORE

## Rear Heater and Cooling Unit Assembly

SEC. 274



- |                      |                                    |                      |
|----------------------|------------------------------------|----------------------|
| 1. Front cover       | 2. Evaporator and heater core case | 3. Evaporator        |
| 4. Side cover        | 5. Heater core                     | 6. Rear blower motor |
| 7. Blower motor case | 8. Rear blower motor resistor      |                      |

LJIA0020E

## Removal and Installation FRONT HEATER CORE

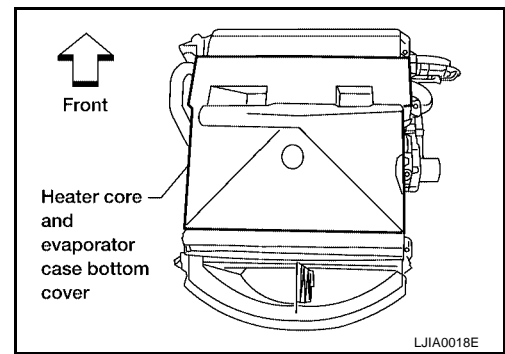
EJS00177

### Removal

1. Remove the front heater and cooling unit assembly. Refer to [MTC-131, "FRONT HEATER AND COOLING UNIT ASSEMBLY"](#).
2. Remove the blower motor side cover.
3. Remove the front blower motor.

# HEATER CORE

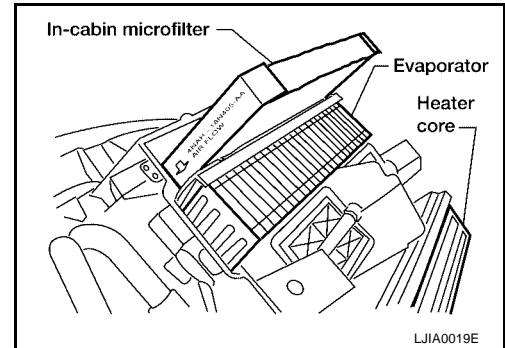
4. Remove heater core and evaporator case bottom cover.
5. Remove the blower motor case.



6. Remove the front heater core.

**NOTE:**

If the in-cabin microfilters are contaminated from coolant leaking from the heater core, replace the in-cabin microfilters with new ones before installing the new front heater core.



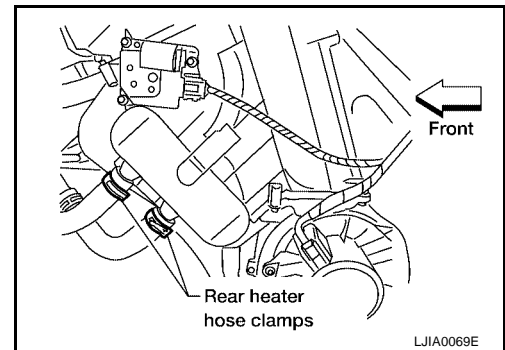
## Installation

Installation is in the reverse order of removal.

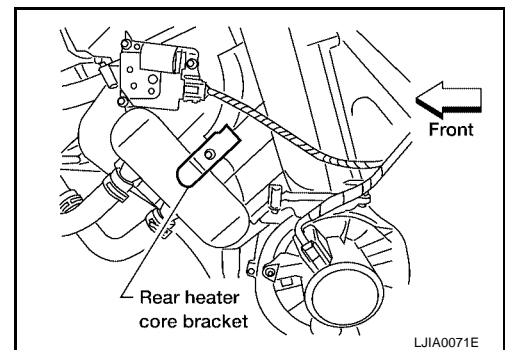
## REAR HEATER CORE

### Removal

1. Partially drain the engine cooling system. Refer to [MA-14, "DRAINING ENGINE COOLANT"](#).
2. Remove the rear RH interior trim panel. Refer to [EI-32, "Removal and Installation"](#).
3. Disconnect the rear heater core hoses from the rear heater core.



4. Remove the rear heater core bracket.
5. Remove the rear heater core.



## Installation

Installation is in the reverse order of removal.

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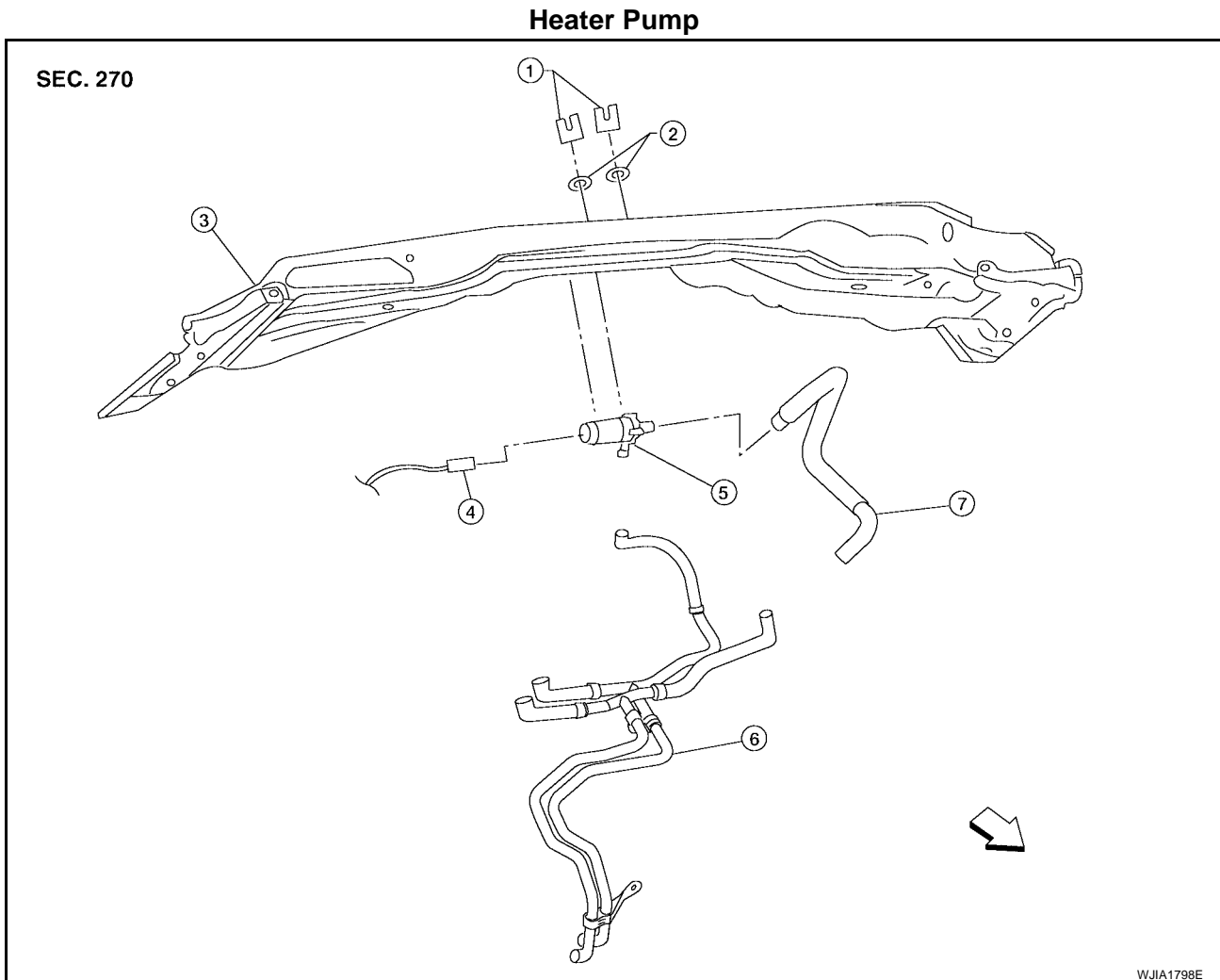
# HEATER PUMP

## HEATER PUMP

PFP:92264

### Removal and Installation

EJS00178



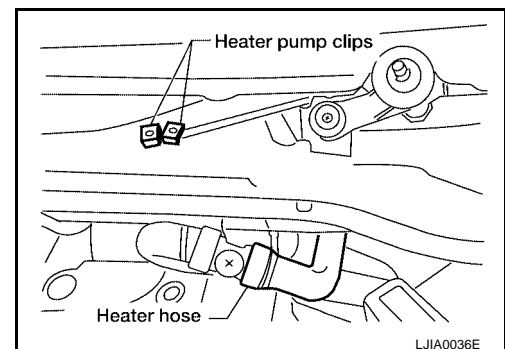
- |                                     |                    |   |
|-------------------------------------|--------------------|---|
| 1. Heater pump clips                | 2. Plastic washers | 3. Cowl top extension                       |
| 4. Heater pump electrical connector | 5. Heater pump     | 6. Front heater core pipe and hose assembly |
| 7. Heater hose                      | ← Front            |   |

### REMOVAL

1. Remove the cowl top. Refer to [EI-19, "COWL TOP"](#).
2. Partially drain the engine cooling system. Refer to [MA-14, "DRAINING ENGINE COOLANT"](#).
3. Remove the two heater pump clips and plastic washers securing the heater pump to the cowl top extension.
4. Disconnect the heater pump electrical connector and the two heater hoses, then remove the heater pump.

#### **CAUTION:**

**Do not disassemble the heater pump, replace the heater pump as an assembly.**



### INSTALLATION

Installation is in the reverse order of removal.

#### **CAUTION:**

**Do not disassemble the heater pump, replace the heater pump as an assembly.**



# DEFROSTER DOOR MOTOR

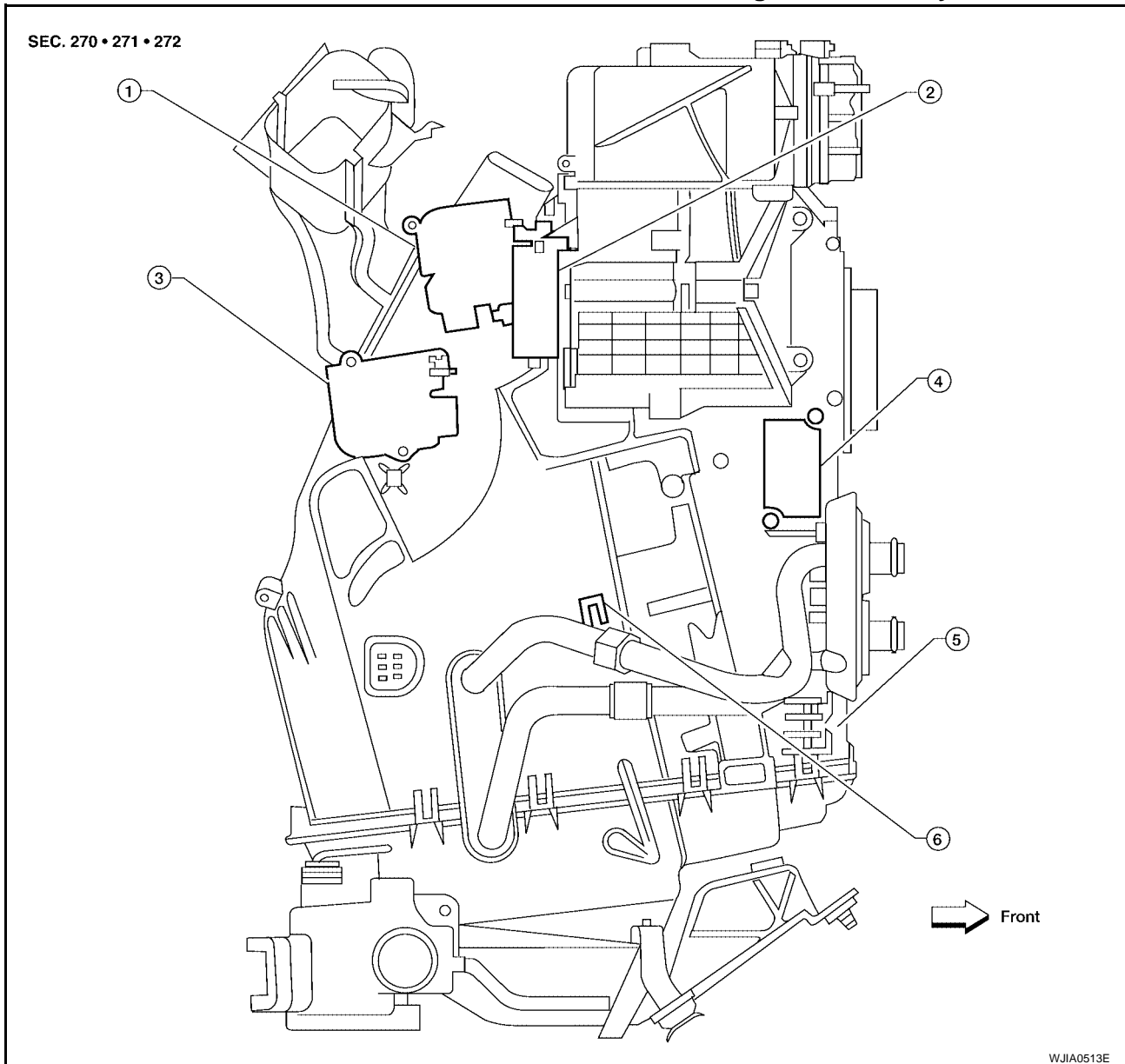
PF2:27733

EJS00179

## DEFROSTER DOOR MOTOR

### Removal and Installation

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



- |                            |   |                    |
|----------------------------|---|--------------------|
| 1. Defroster door motor    | 2. Intake door motor (passenger)          | 3. Mode door motor |
| 4. Variable blower control | 5. Front heater and cooling unit assembly | 6. Intake sensor   |

#### REMOVAL

1. Remove the front heater and cooling unit assembly. Refer to [MTC-131, "FRONT HEATER AND COOLING UNIT ASSEMBLY"](#).
2. Remove the steering member from the front heater and cooling unit assembly.
3. Disconnect the defroster door motor electrical connector.
4. Remove the two screws and remove the defroster door motor.

#### INSTALLATION

Installation is in the reverse order of removal.

# INTAKE DOOR MOTOR

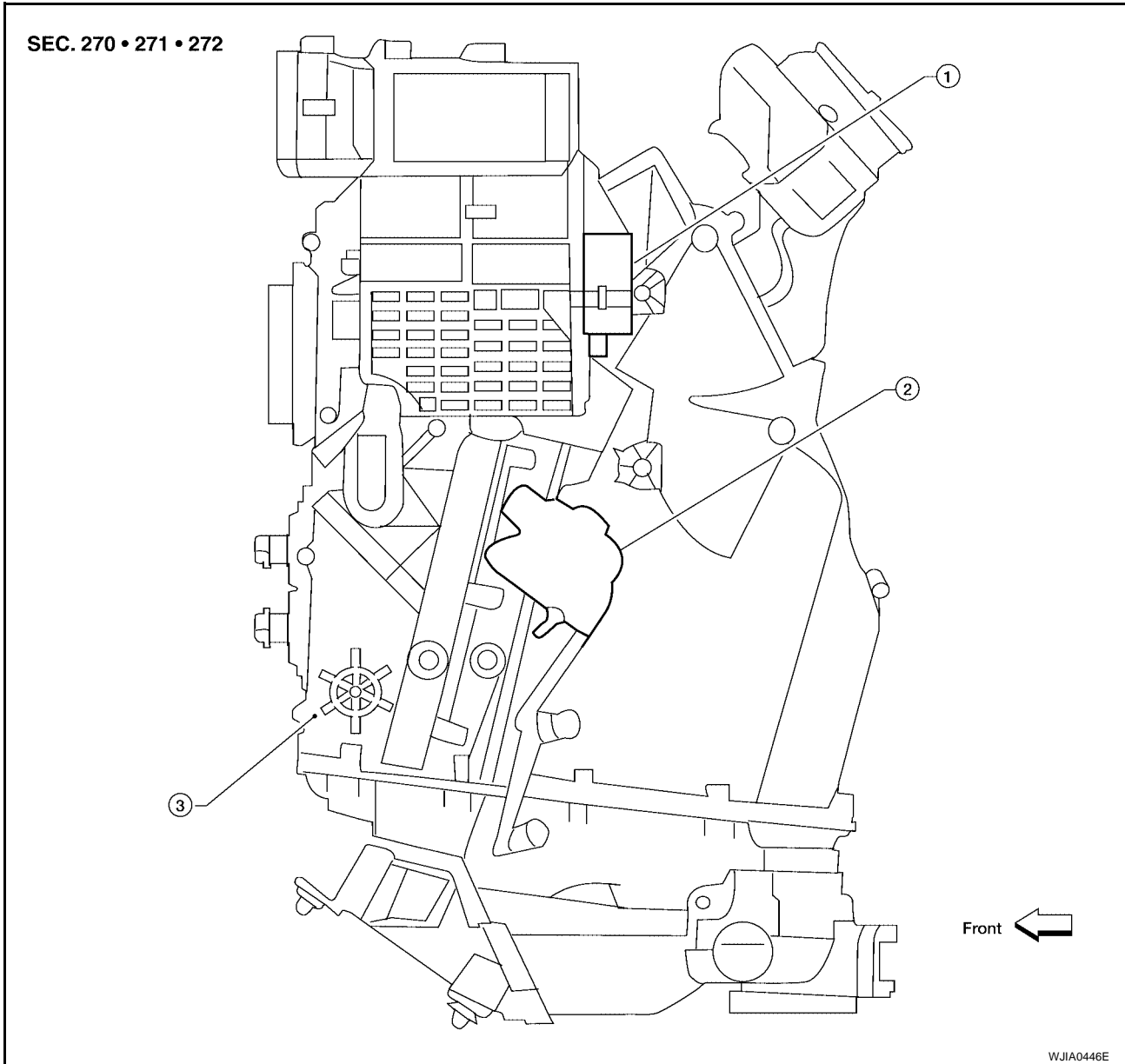
## INTAKE DOOR MOTOR

PFP:27730

### Components

EJS001U5

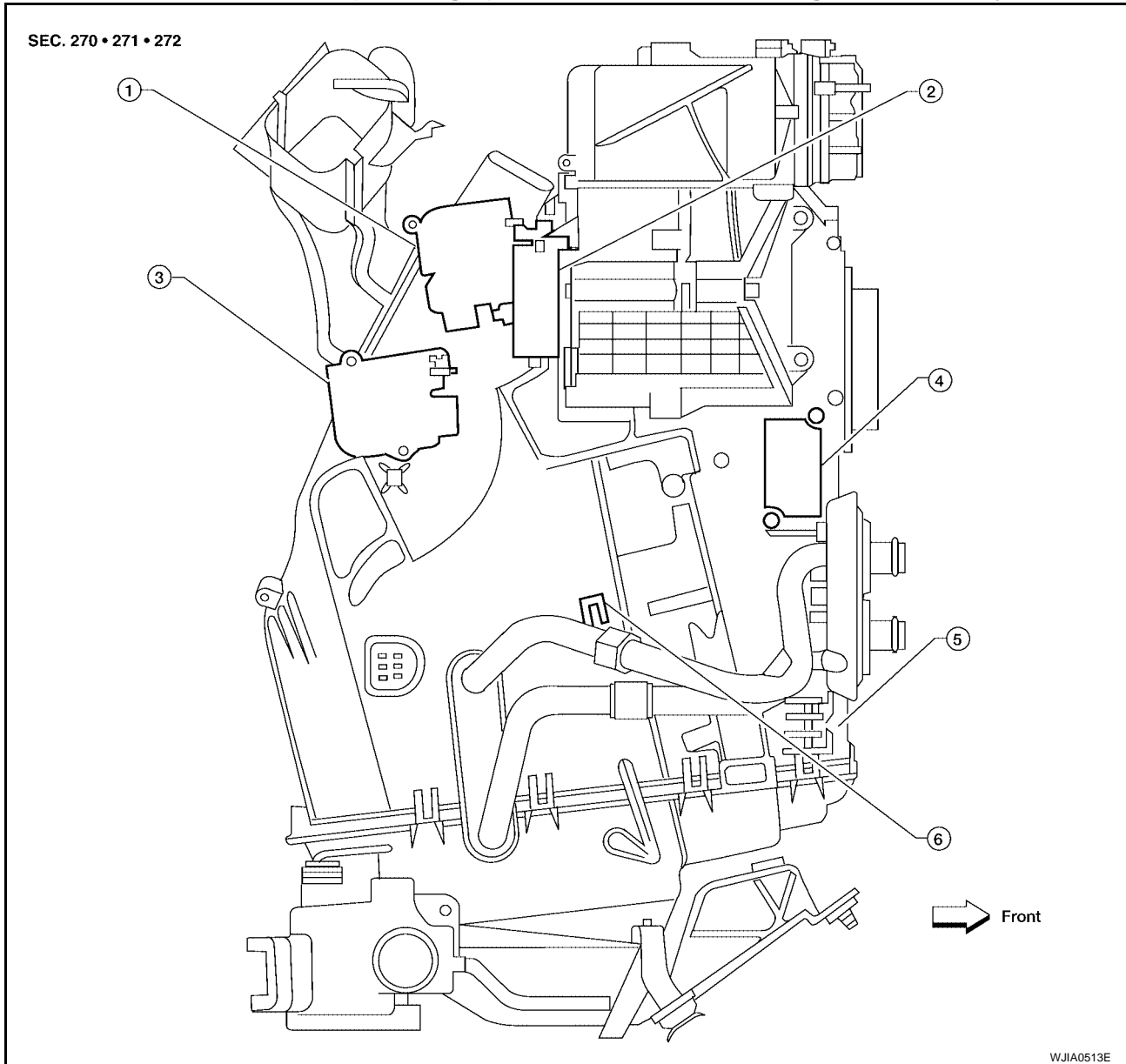
#### Intake Door Motor (Driver) - Front Heater and Cooling Unit Assembly



1. Intake door motor (driver)
2. Air mix door motor (front)
3. Front heater and cooling unit assembly

# INTAKE DOOR MOTOR

## Intake Door Motor (Passenger) - Front Heater and Cooling Unit Assembly



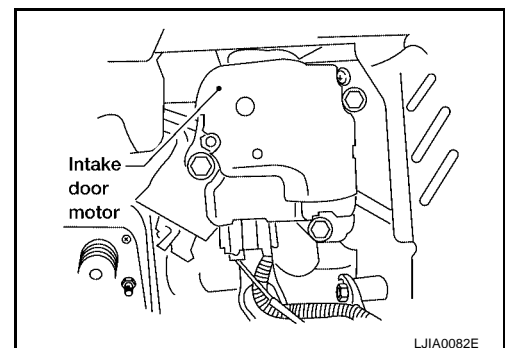
- |                            |   |                    |
|----------------------------|---|--------------------|
| 1. Defroster door motor    | 2. Intake door motor (passenger)          | 3. Mode door motor |
| 4. Variable blower control | 5. Front heater and cooling unit assembly | 6. Intake sensor   |

### Removal and Installation DRIVER SIDE

EJS0017A

#### Removal

1. Remove the lower driver instrument panel. Refer to [IP-12, "Instrument Lower Panel LH"](#) .
2. Remove the center console trim panel. Refer to [IP-10, "Removal and Installation"](#) .
3. Disconnect the intake door motor electrical connector.
4. Remove the three screws and remove the intake door motor.



# INTAKE DOOR MOTOR

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## Installation

Installation is in the reverse order of removal.

## PASSENGER SIDE

### Removal

1. Remove the front heater and cooling unit assembly. Refer to [MTC-131, "FRONT HEATER AND COOLING UNIT ASSEMBLY"](#).
2. Remove the steering member from the front heater and 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.

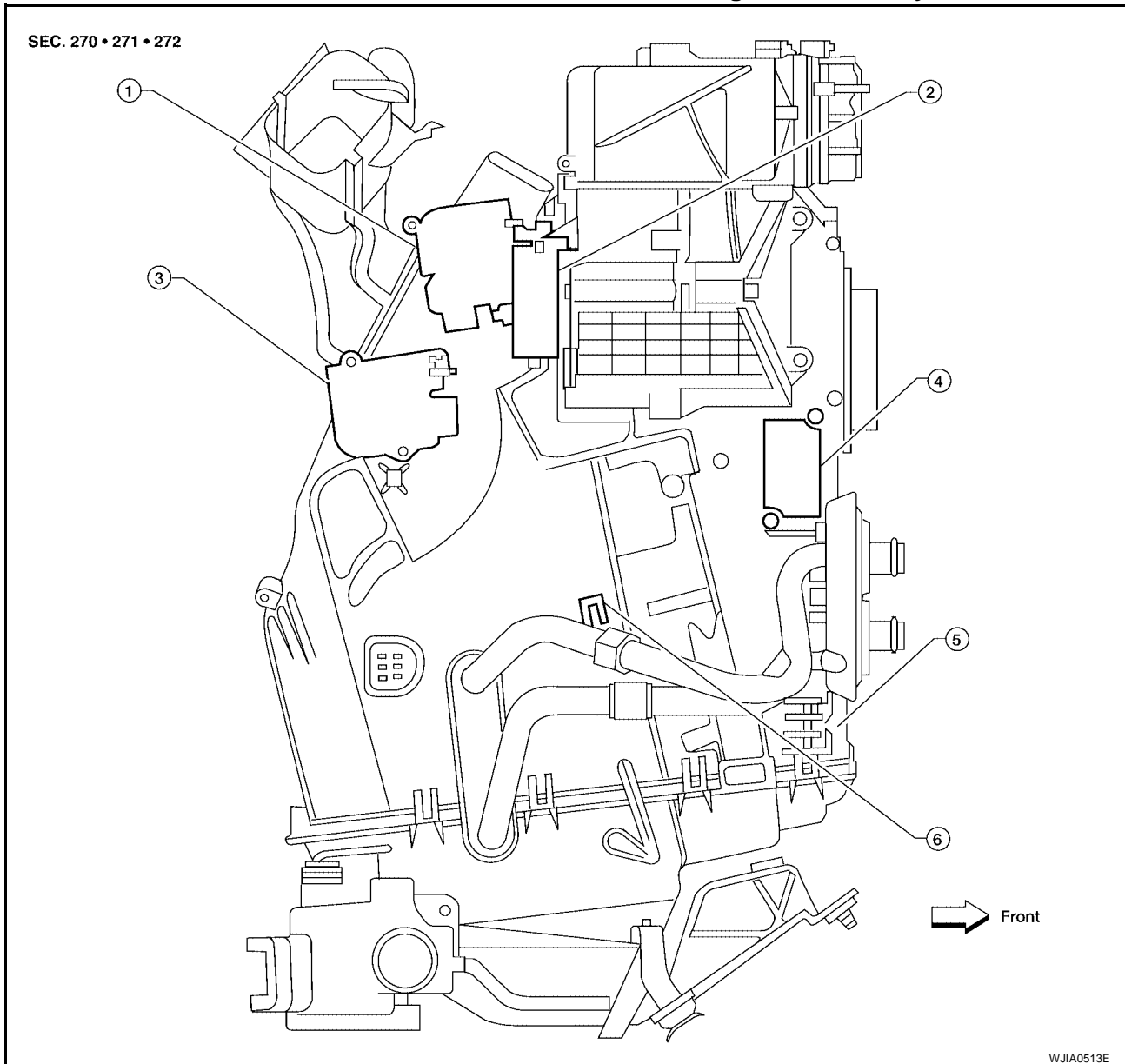
# MODE DOOR MOTOR

PF2:27731

EJS001TB

## MODE DOOR MOTOR Removal and Installation

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



- |                            |   |                    |
|----------------------------|---|--------------------|
| 1. Defroster door motor    | 2. Intake door motor (passenger)          | 3. Mode door motor |
| 4. Variable blower control | 5. Front heater and cooling unit assembly | 6. Intake sensor   |

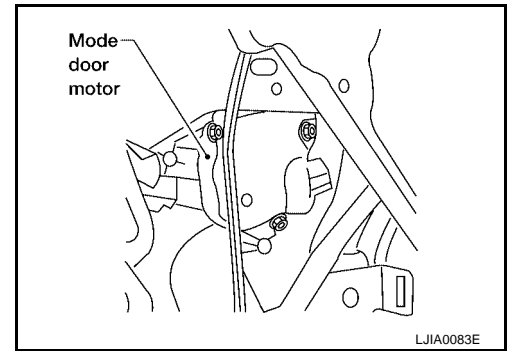
### REMOVAL

1. Remove the instrument lower panel RH and glove box. Refer to [IP-13, "Instrument Lower Panel RH and Glove Box"](#).
2. Remove the center console trim panel. Refer to [IP-10, "Removal and Installation"](#).

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## MODE DOOR MOTOR

3. Disconnect the mode door motor electrical connector.
4. Remove the three screws and remove the mode door motor.



### INSTALLATION

Installation is in the reverse order of removal.

# AIR MIX DOOR MOTOR

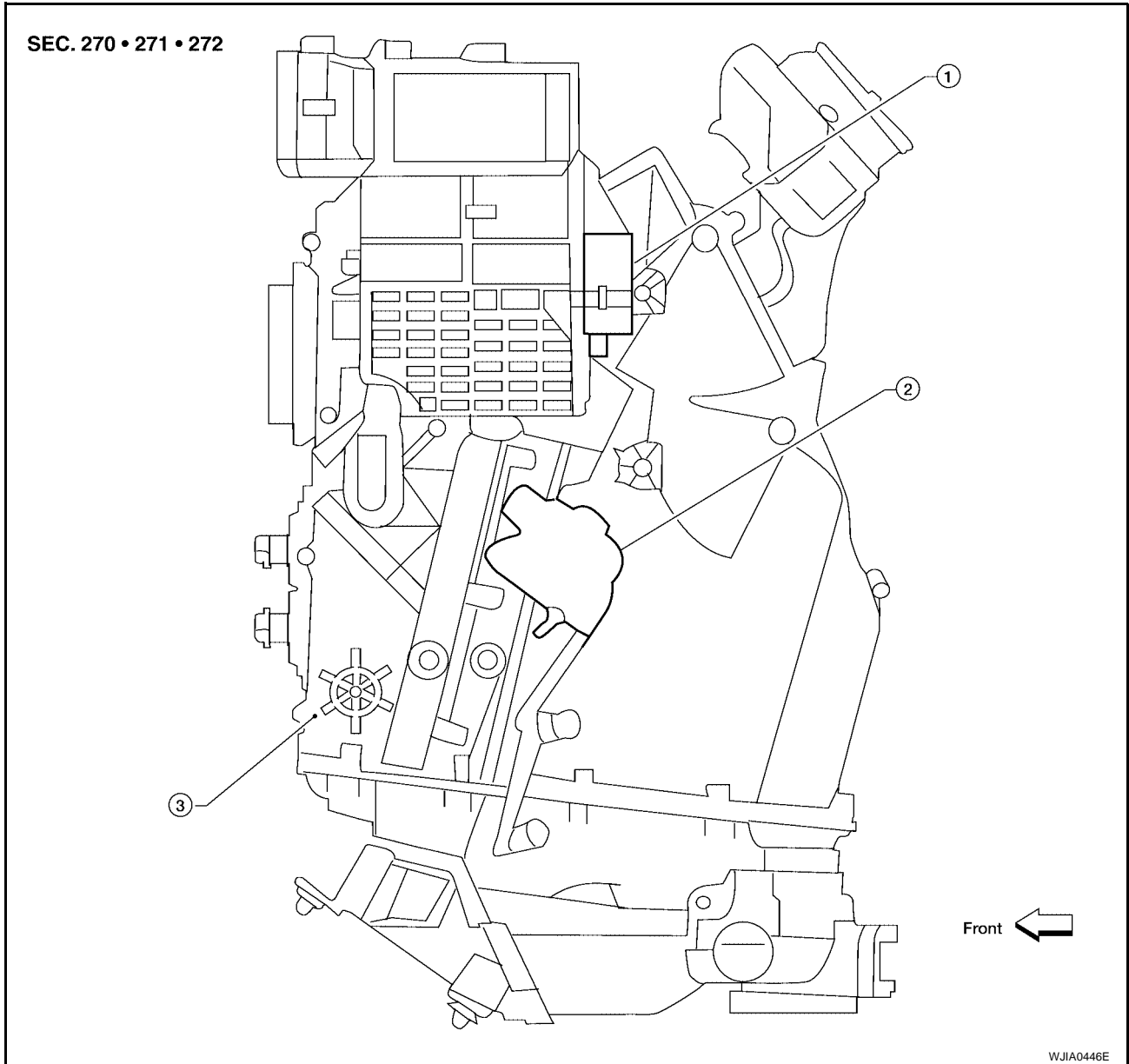
PF2:27732

EJS001U6

## AIR MIX DOOR MOTOR

### Components

#### Air Mix Door Motor (Front) - Front Heater and Cooling Unit Assembly



1. Intake door motor (driver)
2. Air mix door motor (front)
3. Front heater and cooling unit assembly

### Removal and Installation AIR MIX DOOR MOTOR (FRONT)

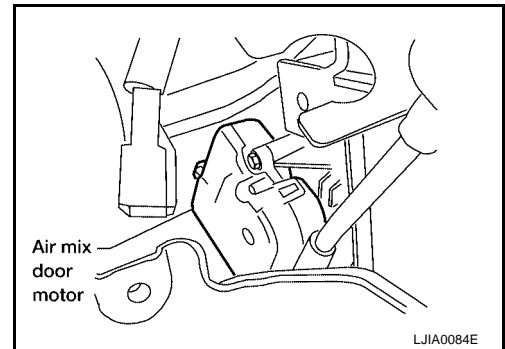
EJS001TZ

#### Removal

1. Remove the lower driver instrument panel. Refer to [IP-12, "Instrument Lower Panel LH"](#).
2. Remove the center console trim panel. Refer to [IP-10, "Removal and Installation"](#).

## AIR MIX DOOR MOTOR

3. Disconnect the air mix door motor electrical connector.
4. Remove the three screws and remove the air mix door motor.



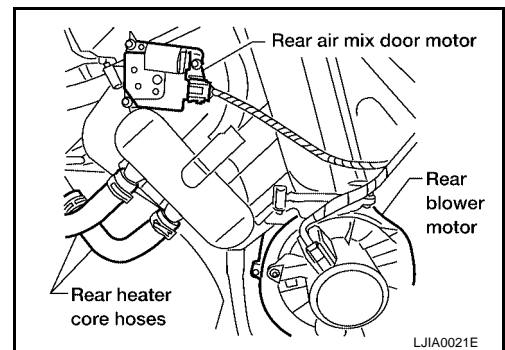
### Installation

Installation is in the reverse order of removal.

### AIR MIX DOOR MOTOR (REAR)

#### Removal

1. Remove the RH rear interior trim panel. Refer to [EI-34, "RIGHT SIDE AND REAR"](#).
2. Disconnect the rear air mix door motor electrical connector.
3. Remove the three screws and remove the rear air mix door motor.



### Installation

Installation is in the reverse order of removal.



# VARIABLE BLOWER CONTROL

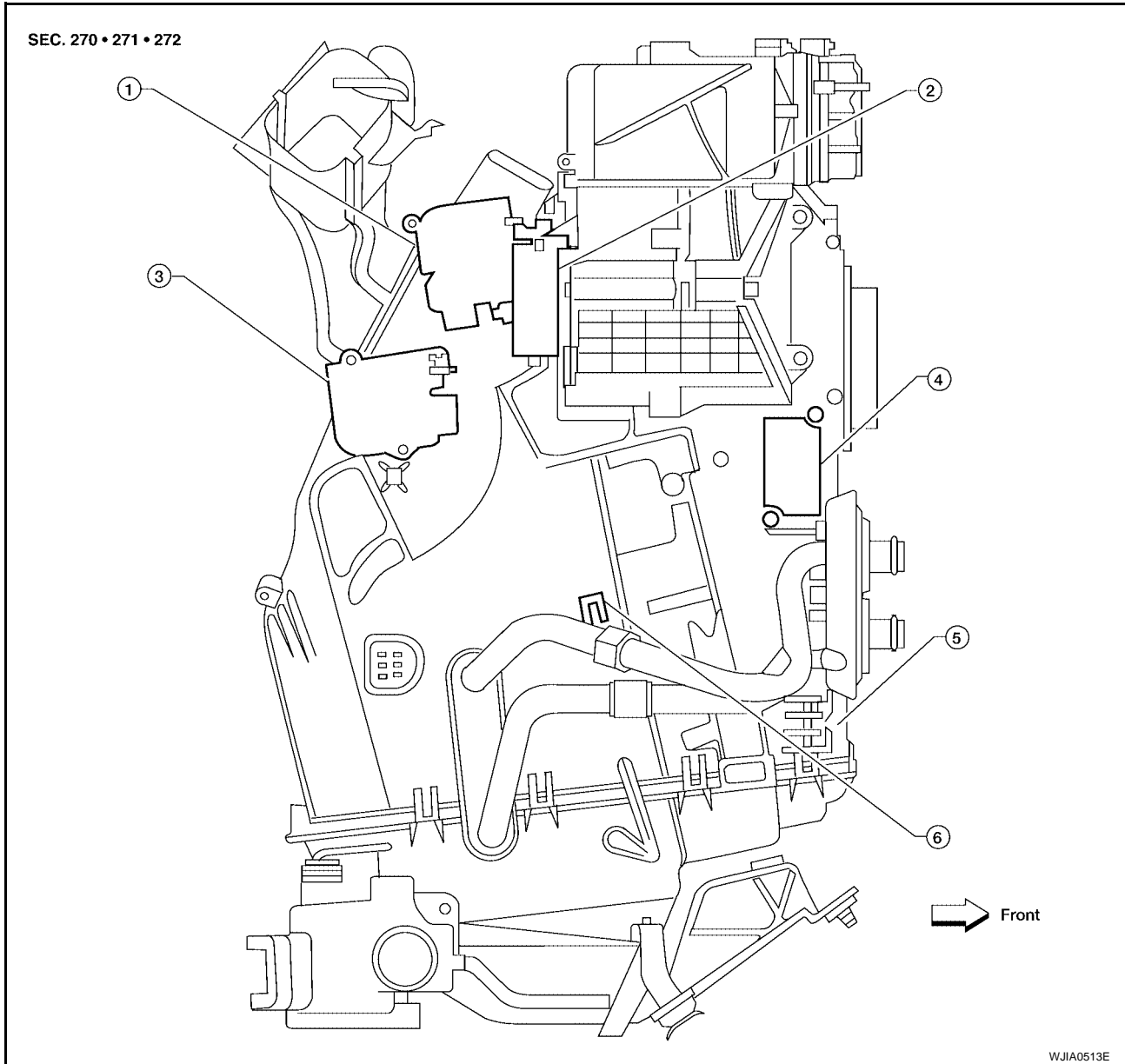
PF2:27200

EJS003PT

## VARIABLE BLOWER CONTROL

### Removal and Installation

#### Variable Blower Control - Front Heater and Cooling Unit Assembly



- |                            |   |                    |
|----------------------------|---|--------------------|
| 1. Defroster door motor    | 2. Intake door motor (passenger)          | 3. Mode door motor |
| 4. Variable blower control | 5. Front heater and cooling unit assembly | 6. Intake sensor   |

#### REMOVAL

1. Remove the instrument lower panel RH and glove box. Refer to [IP-13, "Instrument Lower Panel RH and Glove Box"](#).
2. Remove the center console trim panel. Refer to [IP-10, "Removal and Installation"](#).
3. Disconnect the variable blower control electrical connector.
4. Remove the two screws and remove the variable blower control.

#### INSTALLATION

Installation is in the reverse order of removal.

# REAR BLOWER MOTOR RESISTOR

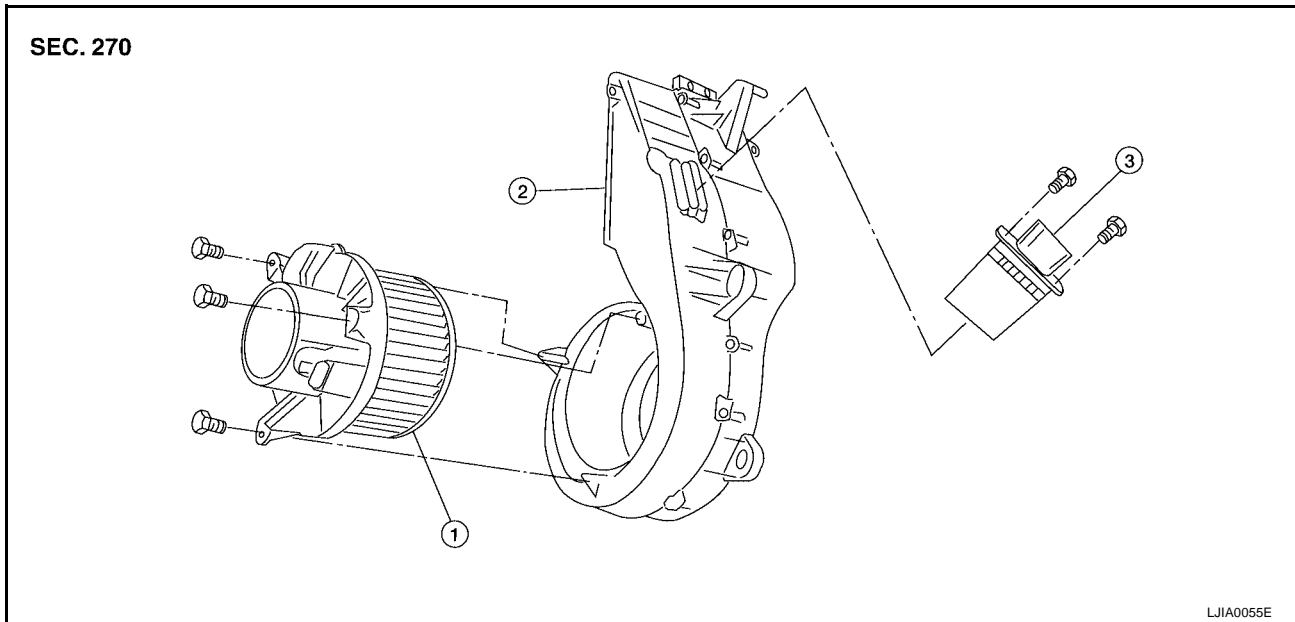
## REAR BLOWER MOTOR RESISTOR

PF2:27150

### Removal and Installation

EJS0017E

#### Rear Blower Motor Resistor



1. Rear blower motor

2. Rear blower motor case

3. Rear blower motor resistor

#### REMOVAL

1. Remove the rear RH interior trim panel. Refer to [EI-34, "RIGHT SIDE AND REAR"](#).
2. Disconnect the rear blower motor resistor electrical connector.
3. Remove the two screws and remove the rear blower motor resistor.

#### INSTALLATION

Installation is in the reverse order of removal.

# DUCTS AND GRILLES

## DUCTS AND GRILLES

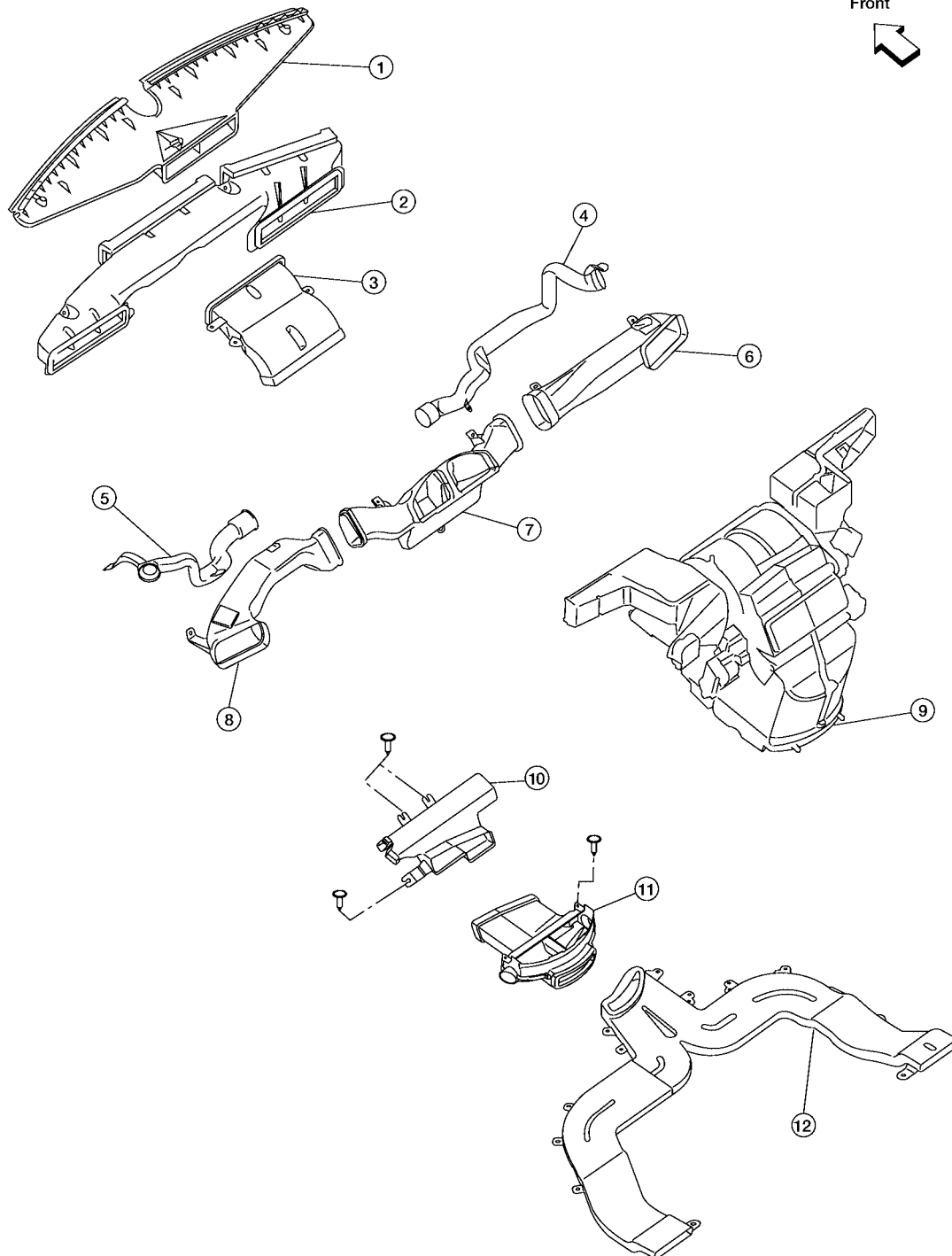
PF27860

### Components

EJS001U7

#### Ducts - Front Heater and Cooling Unit Assembly

SEC. 270 • 273

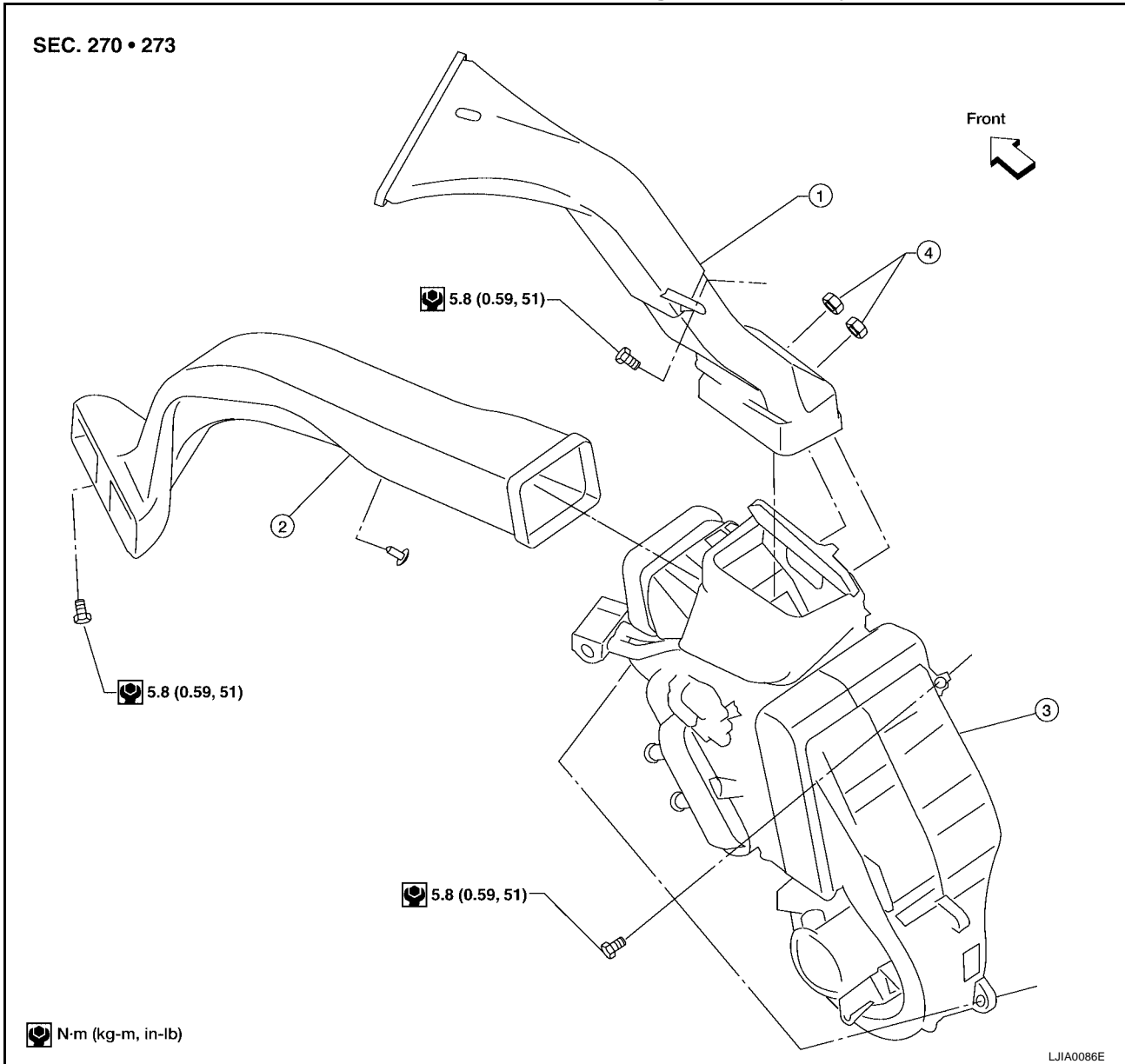


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# DUCTS AND GRILLES

- |                           |                             |   |
|---------------------------|-----------------------------|---|
| 1. Defroster nozzle       | 2. Fresh air duct           | 3. Defroster duct                         |
| 4. RH side demister duct  | 5. LH side demister duct    | 6. RH ventilator duct                     |
| 7. Center ventilator duct | 8. LH ventilator duct       | 9. Front heater and cooling unit assembly |
| 10. Floor connector duct  | 11. Floor distribution duct | 12. Floor duct                            |

## Ducts - Rear Heater and Cooling Unit Assembly

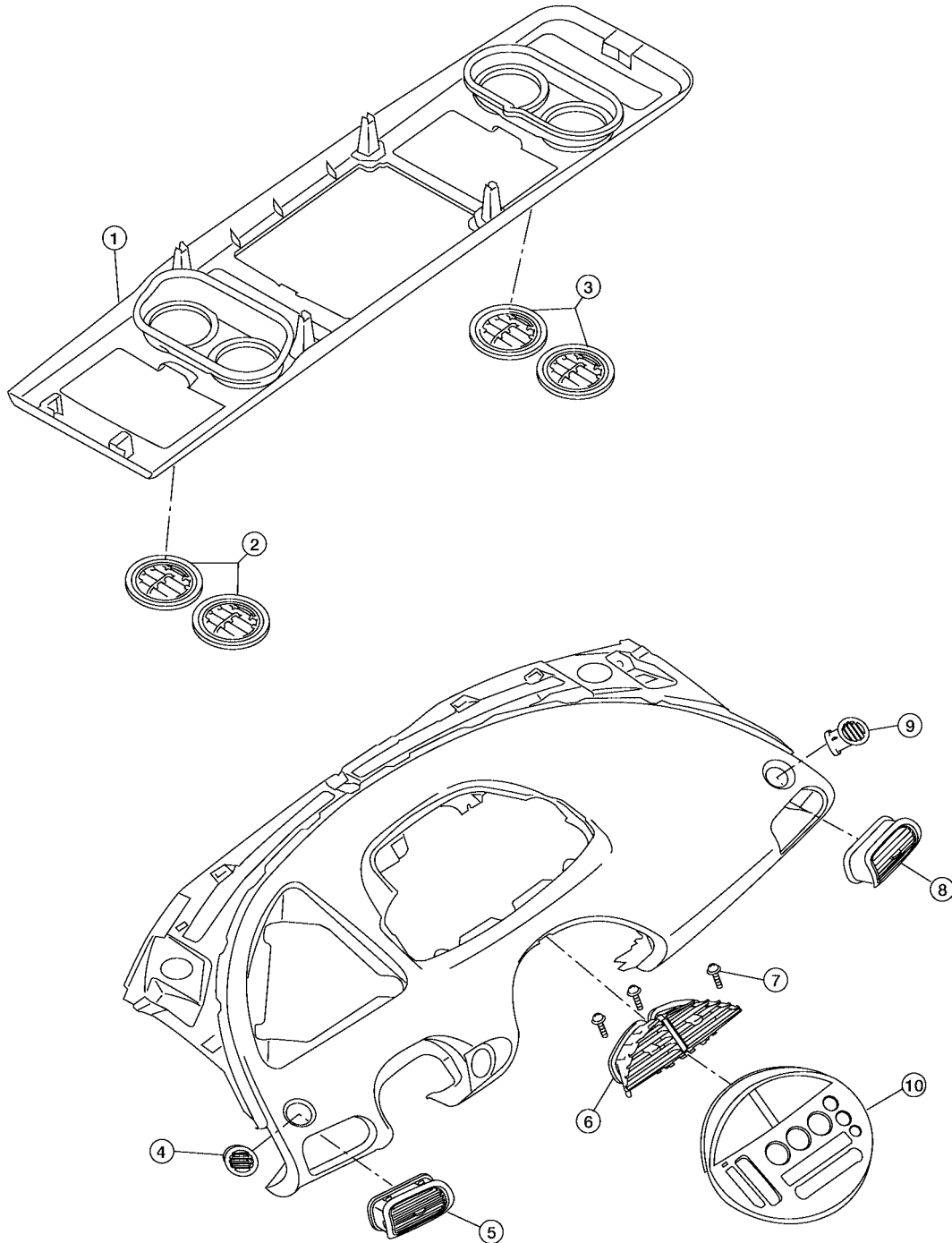


- |                       |                    |  |
|-----------------------|--------------------|--|
| 1. Rear overhead duct | 2. Rear floor duct | 3. Rear heater and cooling unit assembly |
| 4. Clips              |                    |  |

# DUCTS AND GRILLES

## Grilles

SEC. 685 • 970



- 1. Overhead console
- 4. LH side demister grille

- 2. Overhead console front grilles
- 5. LH ventilator grille

- 3. Overhead console rear grilles
- 6. Center ventilator grille

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# DUCTS AND GRILLES

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- 7. Center ventilator grille screws
- 10. Cluster lid C

- 8. RH ventilator grille

- 9. RH side demister grille

EJS001TF

## Removal and Installation DEFROSTER NOZZLE

### Removal

1. Remove the front heater and cooling unit assembly. Refer to [MTC-131, "FRONT HEATER AND COOLING UNIT ASSEMBLY"](#).
2. Remove the defroster nozzle.

### Installation

Installation is in the reverse order of removal.

## FRESH AIR DUCT

### Removal

1. Remove the front heater and cooling unit assembly. Refer to [MTC-131, "FRONT HEATER AND COOLING UNIT ASSEMBLY"](#).
2. Remove the defroster nozzle.
3. Remove the fresh air duct.

### Installation

Installation is in the reverse order of removal.

## DEFROSTER DUCT

### Removal

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

### 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, LH, AND CENTER VENTILATOR DUCT

### Removal

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

### Installation

Installation is in the reverse order of removal.

## FLOOR CONNECTOR DUCT

### Removal

1. Remove the front heater and cooling unit assembly. Refer to [MTC-131, "FRONT HEATER AND COOLING UNIT ASSEMBLY"](#).
2. Remove the three clips and remove the floor connector duct.

### Installation

Installation is in the reverse order of removal.

## FLOOR DISTRIBUTION DUCT

### Removal

1. Remove the center console lower cover. Refer to [IP-10, "Removal and Installation"](#).

# DUCTS AND GRILLES

2. Remove the clip and remove the floor distribution duct.

## Installation

Installation is in the reverse order of removal.

## FLOOR DUCT

### Removal

1. Remove the floor carpet. Refer to [EI-37, "FLOOR TRIM"](#) .
2. Remove the floor duct.

### Installation

Installation is in the reverse order of removal.

## REAR OVERHEAD DUCT

### Removal

1. Remove the rear RH interior trim panel. Refer to [EI-32, "Removal and Installation"](#) .
2. Remove the bolt and two clips, and remove the rear overhead duct.

#### NOTE:

The rear headliner duct connected to the rear overhead duct is part of the headlining trim panel and is replaced as an assembly. Refer to [EI-38, "HEADLINING"](#) .

### Installation

Installation is in the reverse order of removal.

## REAR FLOOR DUCT

### Removal

1. Remove the rear RH interior trim panel. Refer to [EI-32, "Removal and Installation"](#) .
2. Remove the screw and clip, then remove the rear floor duct.

### Installation

Installation is in the reverse order of removal.

## GRILLES

### Removal

1. Remove the interior trim panel as necessary that contains the grille to be removed. Refer to [EI-32, "BODY SIDE TRIM"](#) or [EI-38, "HEADLINING"](#) .
2. Remove the grille from the interior trim panel.

### Installation

Installation is in the reverse order of removal.

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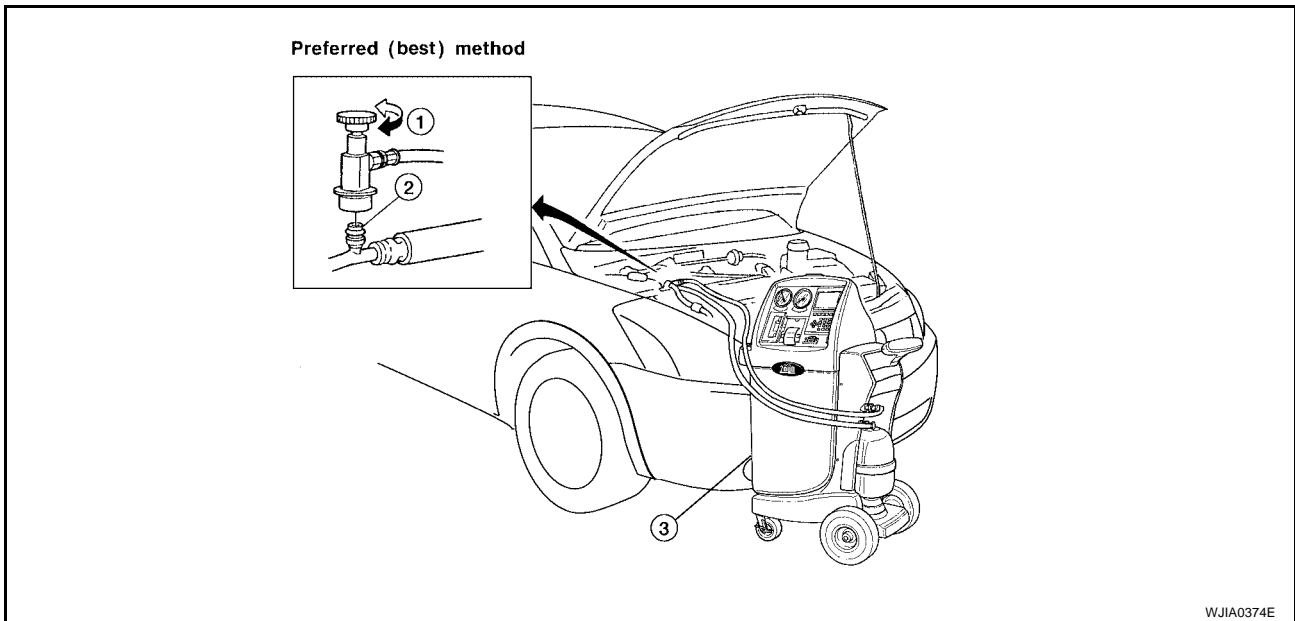
# REFRIGERANT LINES

PFP:92600

EJS001TG

## REFRIGERANT LINES

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

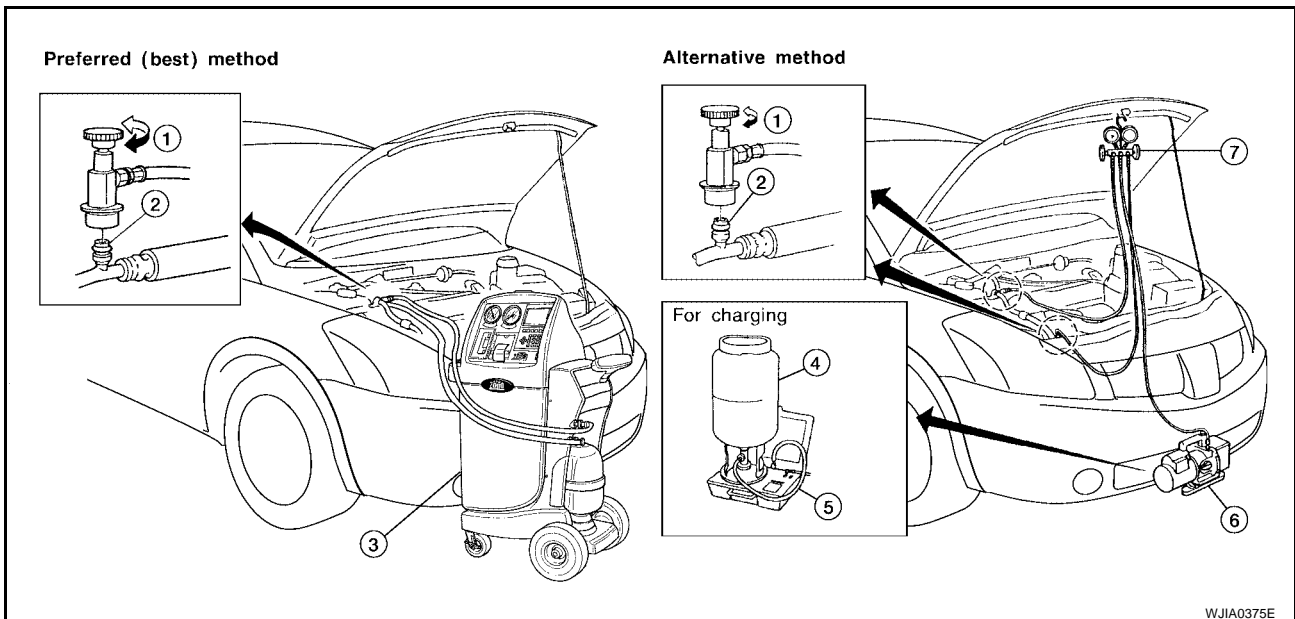


1. Shut-off valve
2. A/C service valve
3. Recovery/recycling equipment

#### **WARNING:**

Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) refrigerant from the A/C system using certified service equipment meeting requirements of SAE J2210 HFC-134a (R-134a) recycling equipment or SAE J2201 HFC-134a (R-134a) recovery equipment. If an accidental system discharge occurs, ventilate the work area before resuming service. Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

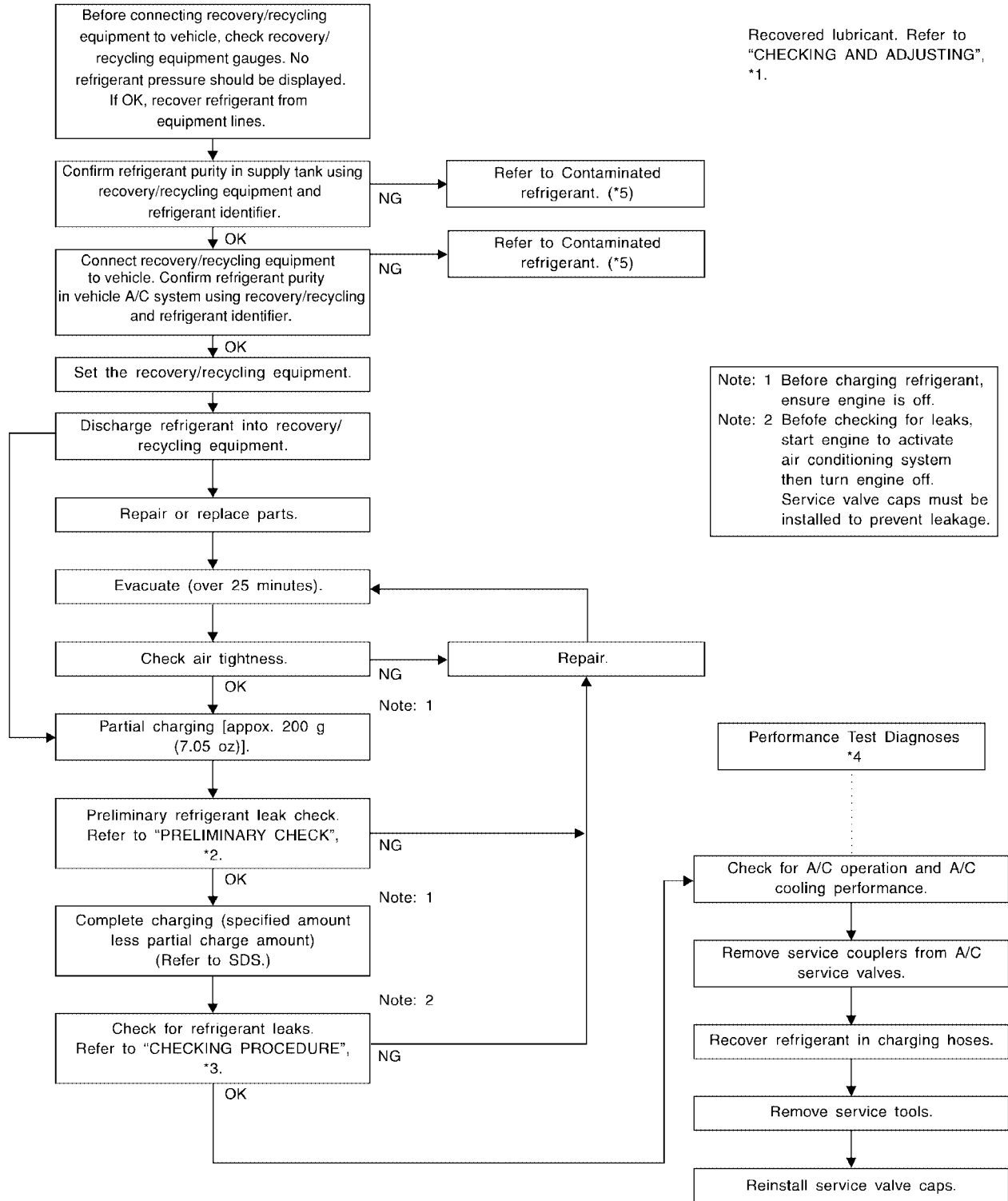
### Evacuating System and Charging Refrigerant



1. Shut-off valve
2. A/C service valve
3. Recovery/recycling equipment
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-22, "CHECKING AND ADJUSTING"](#) .

\*2 [MTC-170, "Checking for Refrigerant Leaks"](#).

\*3 [MTC-170, "Checking for Refrigerant Leaks"](#).

\*4 [MTC-108, "PERFORMANCE TEST DIAGNOSES"](#).

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

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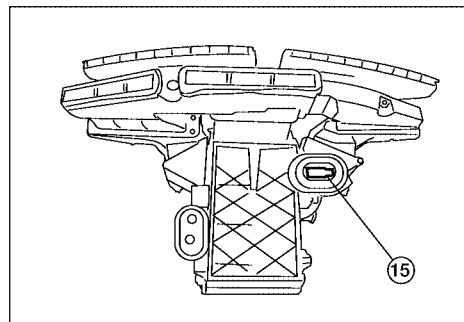
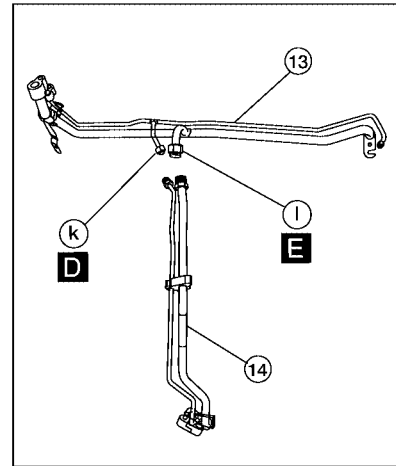
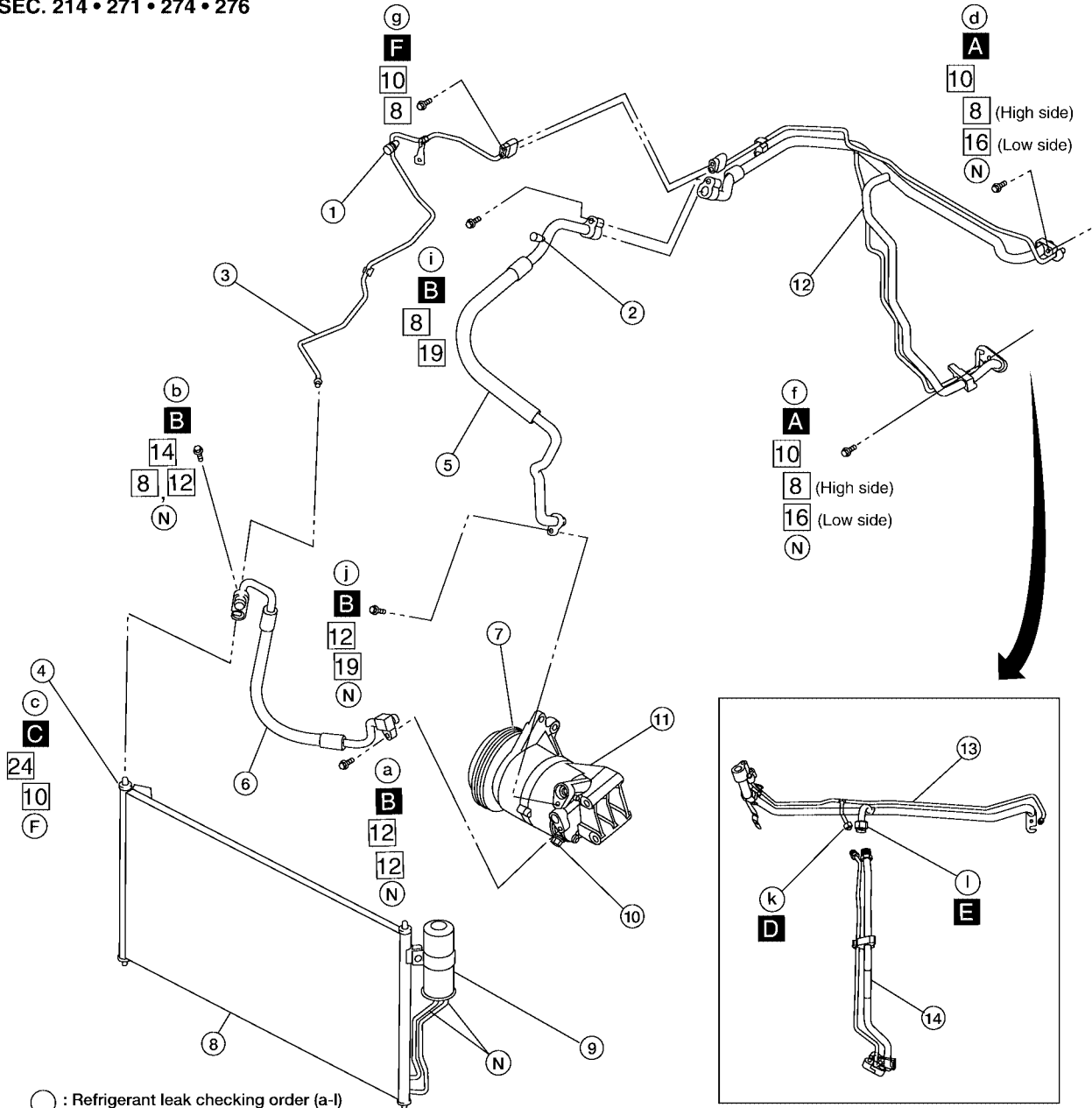
# REFRIGERANT LINES

EJS001TH

## Components

### Front A/C Compressor and Condenser

SEC. 214 • 271 • 274 • 276



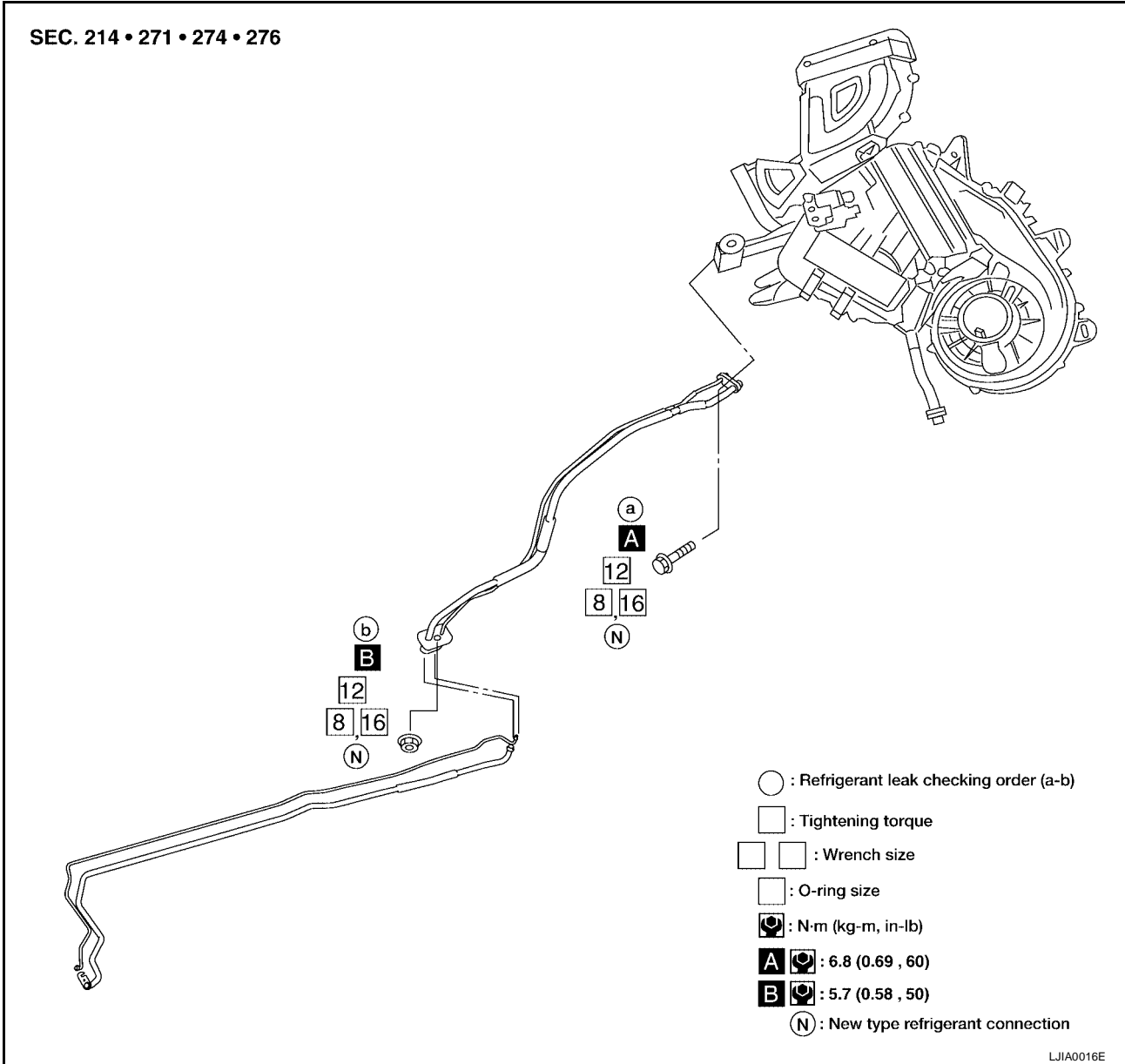
- : Refrigerant leak checking order (a-l)
- : Tightening torque
- : Wrench size
- : O-ring size
- ⊙ : N-m (kg-m, in-lb)
- ⊙ : N-m (kg-m, ft-lb)
- A** ⊙ : 6.8 (0.69, 60)
- B** ⊙ : 14.2 (1.4, 10)
- C** ⊙ : 10.8 (1.1, 8)
- D** ⊙ : 18 (1.8, 13)    **F** : Former type refrigerant connection
- E** ⊙ : 31 (3.2, 23)    **N** : New type refrigerant connection
- F** ⊙ : 5.7 (0.58, 50)

WJIA1967E

# REFRIGERANT LINES

- |  |  |   |
|--|--|---|
| 1. High-pressure service valve               | 2. Low-pressure service valve                | 3. High-pressure pipe                   |
| 4. Refrigerant pressure sensor               | 5. Low-pressure flexible hose                | 6. High-pressure flexible hose          |
| 7. Shaft seal                                | 8. Condenser                                 | 9. Liquid tank                          |
| 10. Pressure relief valve                    | 11. Compressor                               | 12. High/low pressure pipe (production) |
| 13. High/low pressure pipe - upper (service) | 14. High/low pressure pipe - lower (service) | 15. Expansion valve (front)             |

## Rear A/C



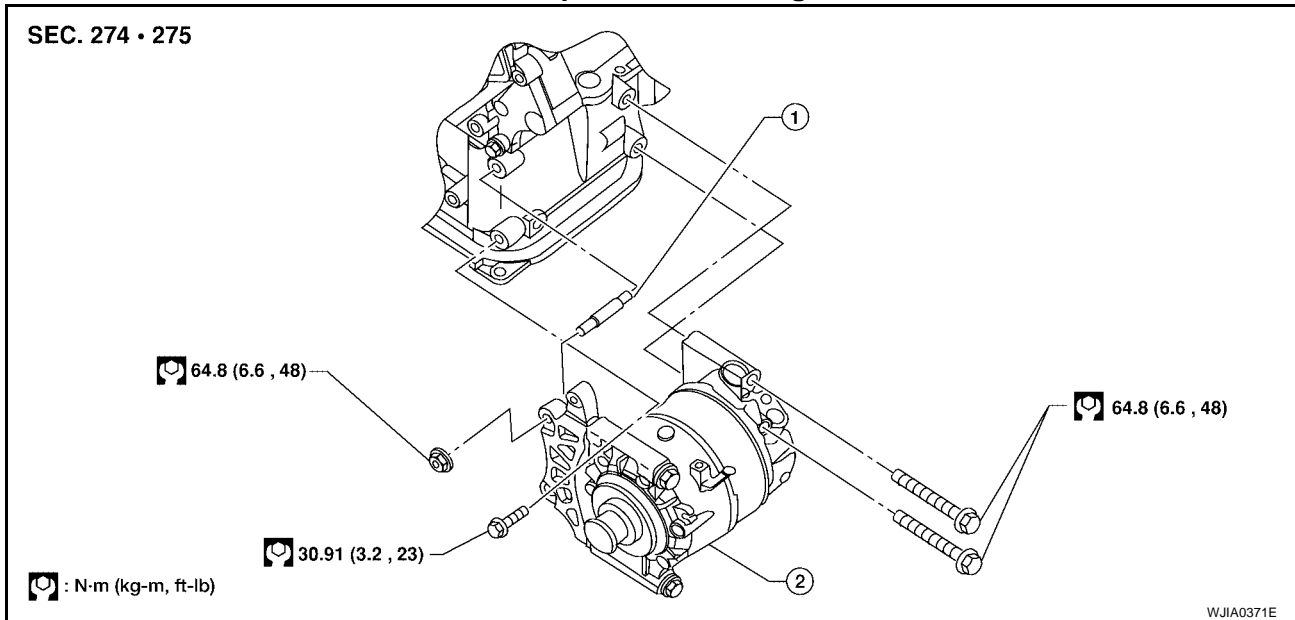
**NOTE:**  
 Refer to [MTC-7, "Precautions for Refrigerant Connection"](#) .

# REFRIGERANT LINES

EJS00171

## Removal and Installation for Compressor

### Compressor Mounting



### REMOVAL

1. Discharge the refrigerant. Refer to [MTC-152, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the engine under cover and the splash shield.
3. Remove the drive belt. Refer to [EM-14, "DRIVE BELTS"](#).
4. Remove the compressor mounting stud.
5. Disconnect the compressor connector.
6. 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.**

7. 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, then apply compressor oil to it when installing it.
- After charging refrigerant, check for leaks.



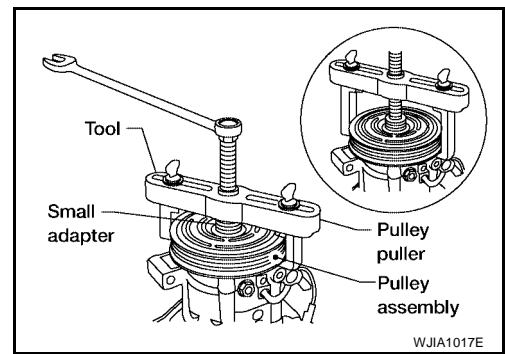
# REFRIGERANT LINES

6. 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 pulley on the small adapter.

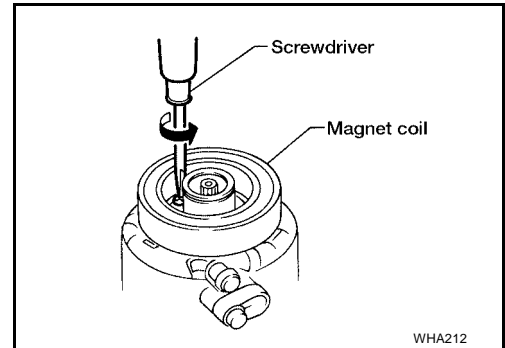
**Tool number : KV99233130 (J-29884)**

**CAUTION:**

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



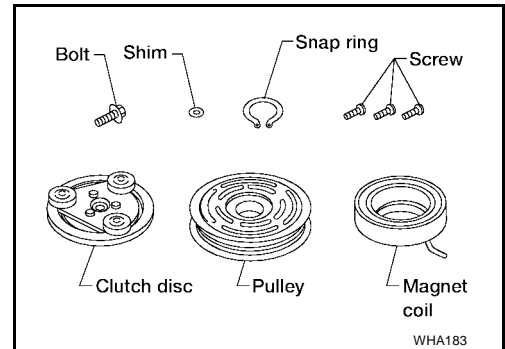
7. Remove the magnet coil harness clip using a screwdriver, remove the three magnet coil fixing screws and remove the magnet coil.



## 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

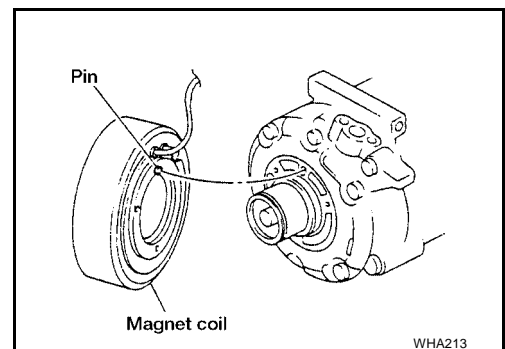
Check magnet coil for loose connections or any cracked insulation.

## INSTALLATION

1. Install the magnet coil.

**CAUTION:**

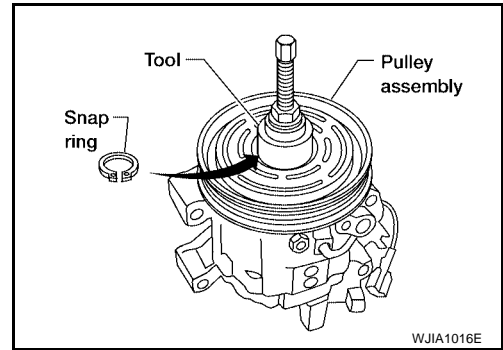
Be sure to align the magnet coil pin with the hole in the compressor front head.



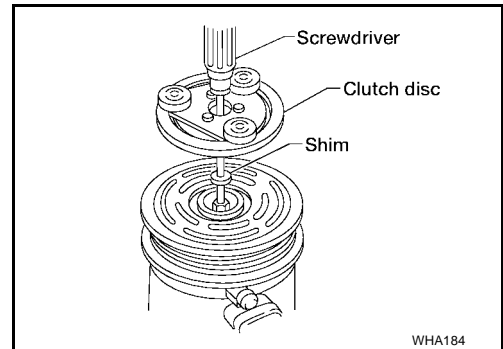
# REFRIGERANT LINES

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** : — (J-38873-A)



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

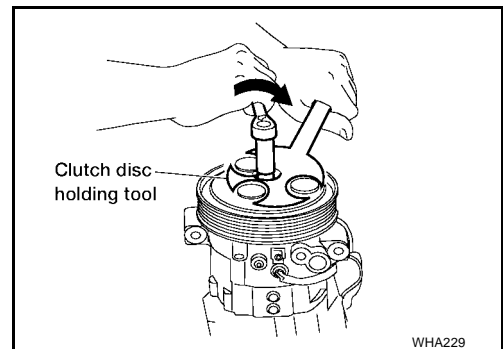


5. Install the clutch pulley bolt using Tool, to prevent the clutch disc from turning and tighten the bolt to specification. Refer to [MTC-154, "Components"](#).

**Tool number** : J-44614

**CAUTION:**

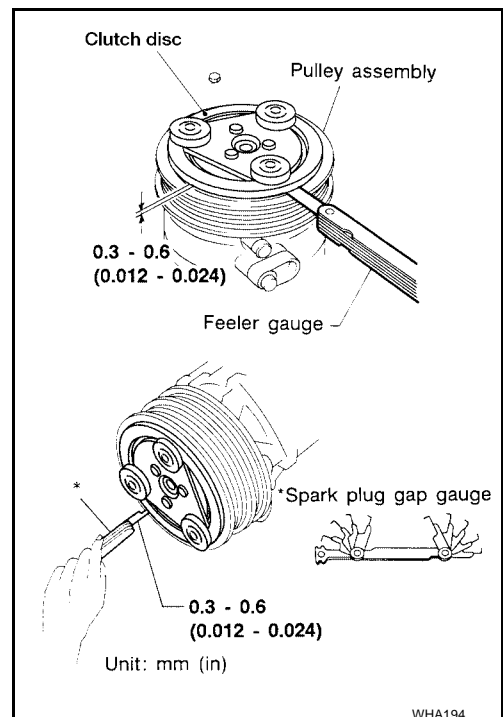
**After tightening the clutch pulley bolt, check that the clutch pulley rotates smoothly.**



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.



# 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

EJS001TK

### REMOVAL

1. Discharge the refrigerant. Refer to [MTC-152, "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.

2. Remove the engine under cover.
3. Remove the low-pressure flexible hose. Refer to [MTC-154, "Components"](#) .

### INSTALLATION

Installation is in the reverse order of removal.

Refer to [MTC-154, "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

EJS001TL

### REMOVAL

1. Discharge the refrigerant. Refer to [MTC-152, "HFC-134a \(R-134a\) Service Procedure"](#) .
2. Remove the engine under cover.
3. Remove the high-pressure flexible hose. Refer to [MTC-154, "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-154, "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

EJS001TM

### REMOVAL

1. Reposition the IPDM E/R aside.
2. Remove the windshield washer fluid bottle filler neck.
3. Reposition the coolant reservoir tank aside.
4. Reposition the power steering fluid reservoir aside.
5. Discharge the refrigerant. Refer to [MTC-152, "HFC-134a \(R-134a\) Service Procedure"](#) .
6. Remove the high-pressure pipe. Refer to [MTC-154, "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-154, "Components"](#) .

#### 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.



# REFRIGERANT LINES

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## Removal and Installation for High/Low-pressure Pipe

### REMOVAL

1. Discharge the refrigerant. Refer to [ATC-169, "HFC-134a \(R-134a\) Service Procedure"](#) .

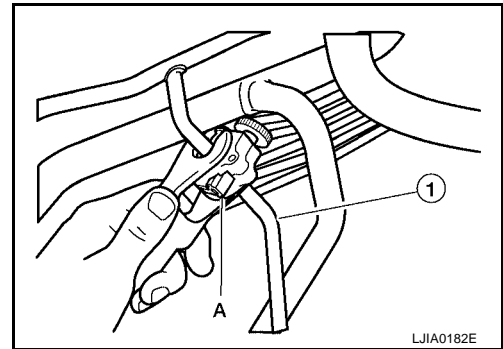
#### WARNING:

- Avoid breathing the A/C refrigerant and oil vapor or mist. Exposure may irritate the eyes, nose and throat.
- If an accidental system discharge occurs, ventilate the work area before resuming removal.

2. Remove the cowl top cover. Refer to [EI-19, "COWL TOP"](#) .
3. Disconnect the ECM from the cowl top extension and reposition it out of the way.
4. Remove the two heater pump clips from the cowl top extension and reposition the heater pump out of the way. Refer to [ATC-152, "HEATER PUMP"](#) .
5. Disconnect the heater hose clips from the cowl top extension and reposition the heater hose out of the way.
6. Remove the wiper motor and linkage. Refer to [WW-30, "Removal and Installation of Wiper Motor and Linkage"](#) .
7. Remove the cowl top extension. Refer to [EI-19, "COWL TOP"](#) .
8. Carefully cut the high pressure pipe (1) using a suitable ratchet-type pipe cutter (A) as shown.

#### CAUTION:

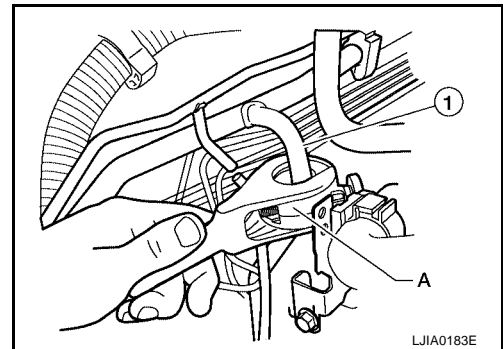
- Do NOT damage the hydraulic brake lines or any other surrounding parts when cutting the pipe.
- A small amount of refrigerant may discharge from the pipe when it is cut.
- Do not allow debris to fall into the cut ends of the pipe.



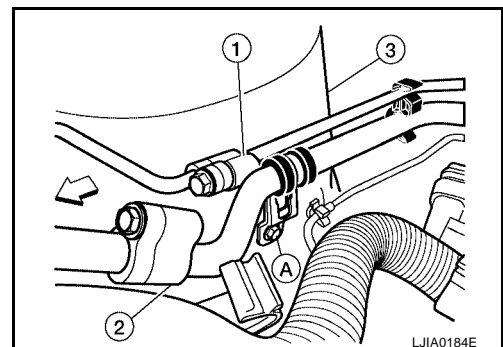
9. Carefully cut the low pressure pipe (1) using a suitable ratchet-type pipe cutter (A) as shown.

#### CAUTION:

- Do NOT damage the hydraulic brake lines or any other surrounding parts when cutting the pipe.
- A small amount of refrigerant may discharge from the pipe when it is cut.



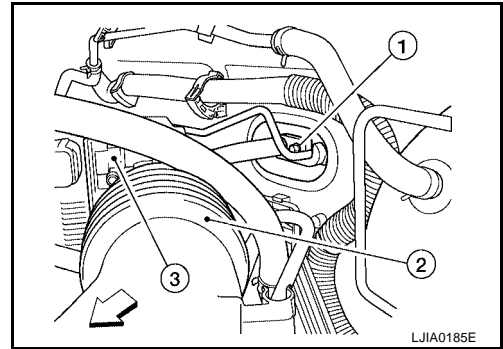
10. Disconnect the power brake booster vacuum hose from the intake manifold collector to allow removal of the cut A/C pipes.
11. Disconnect the high pressure pipe connection (1), low pressure pipe connection (2), and the A/C pipe clamp bolt (A) located near the RH front suspension strut tower (3) as shown.



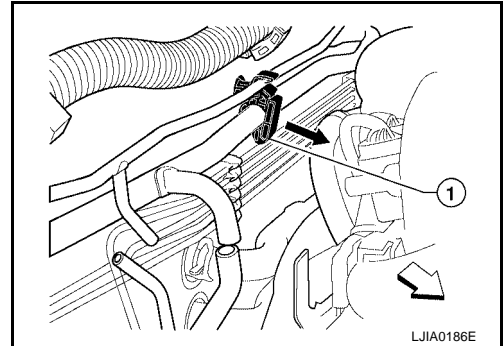
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## REFRIGERANT LINES

12. Disconnect the high/low pressure pipe connector bolt (1) from the front expansion valve as shown.
- Air cleaner to electric throttle control actuator tube (2)
  - Electric throttle control actuator (3)
  - ⇐: Front



13. Use a suitable tool to pry the pipe support clip (1) from the threaded stud on the dash panel as shown.
- ⇐: Front

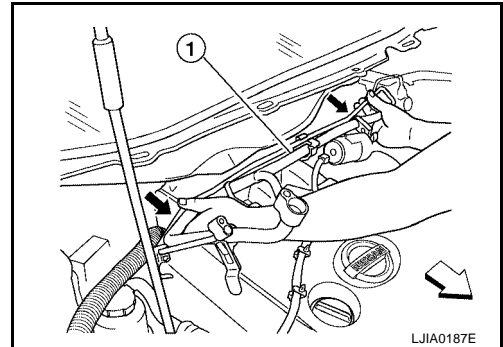


14. Remove the top section of the high/low pressure pipe (1) as shown.

- ⇐: Front

**CAUTION:**

Cap or wrap the open pipe connections with a suitable material such as vinyl tape to avoid the entry of air, moisture and contamination.

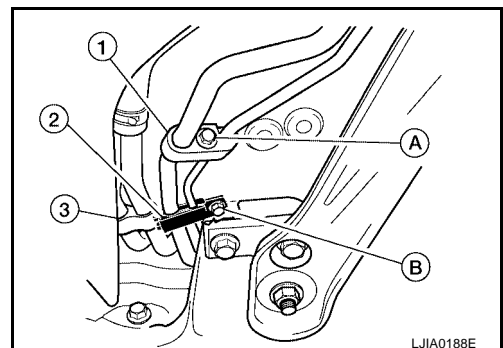


15. Remove the lower section of the high/low pressure pipe.

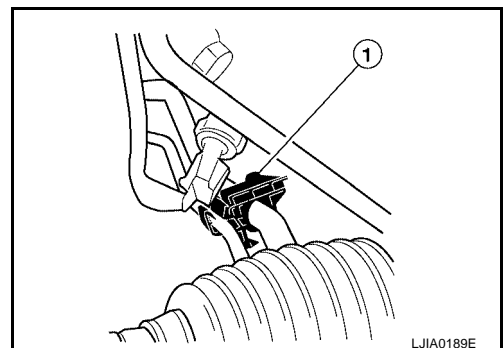
- Access the lower section of the high/low pressure pipe from under the vehicle.
- Remove the high/low pressure pipe connection (1) bolt (A).
- Remove the A/C pipe clamp bolt (B) to release the A/C pipe clamp (2).

**NOTE:**

Reposition the rear heater pipe clamp (3) for additional clearance to remove the lower section of the high/low pressure pipe as necessary.



- Pry off the pipe support clip (1) secured to the dash panel threaded stud, using a suitable tool.

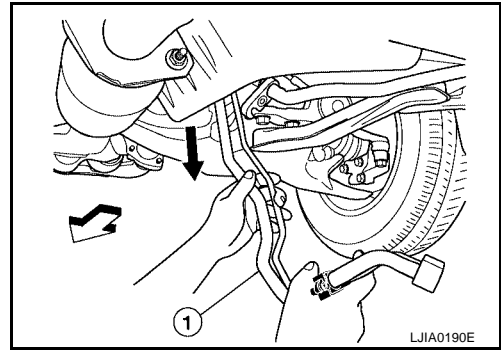


# REFRIGERANT LINES

- e. Carefully remove the lower section of the high/low pressure pipe (1).

**CAUTION:**

Cap or wrap the open pipe connections with a suitable material such as vinyl tape to avoid the entry of air, moisture and contamination.



## INSTALLATION

**CAUTION:**

- Clean all of the A/C pipe fittings and connections.
- Replace the O-rings of the high/low-pressure pipe with new ones.
- Lubricate all the O-rings with NISSAN A/C System Lubricant Type S (DH-PS), part number KLH00-PAGS1P.

**NOTE:**

The service replacement high/low pressure pipe is a two piece pipe assembly.

1. Install and position the new lower high/low pressure pipe without tightening the connections.

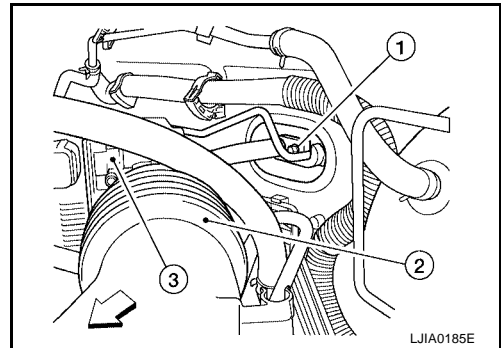
**NOTE:**

To ease installation, first remove the A/C support clip from the lower section high/low pressure pipe and secure it to the dash panel threaded stud.

2. Install the new upper high/low pressure pipe through the engine compartment.

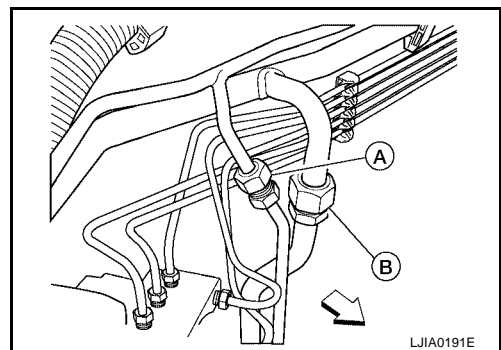
- a. Install the high/low pressure pipe to the front expansion valve and only hand tighten the connector bolt (1) as shown.

- Air cleaner to electric throttle control actuator tube (2)
- Electric throttle control actuator (3)
- ←: Front



- b. Hand tighten the fittings between the upper and lower high pressure pipe (A) and the low pressure pipe (B) as shown.

- ←: Front

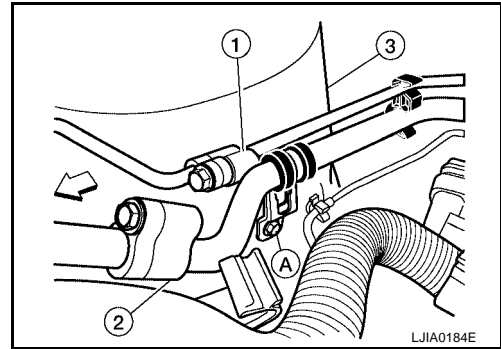


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## REFRIGERANT LINES

- c. Hand tighten the high pressure pipe connection (1) and low pressure pipe connection (2) located near the RH front suspension strut tower (3) as shown.
- d. Install the A/C pipe clamp bolt (A) to the RH front suspension strut tower (3) as shown.
- e. Attach the high/low pressure pipe to the A/C support clip (secured to the dash panel threaded stud).
- f. Tighten the high pressure pipe connection (1) and low pressure pipe connection (2) located near the RH front suspension strut tower (3) as shown to specification.

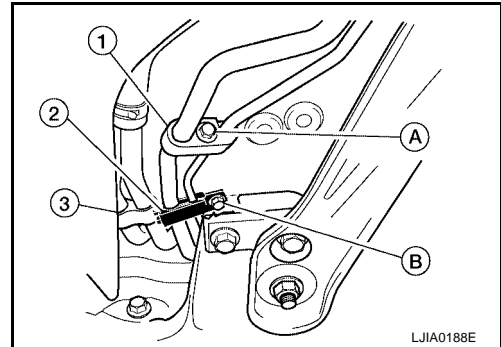


3. Complete the installation of the lower high/low pressure pipe.

### CAUTION:

- Clean all of the A/C pipe fittings and connections.
- Replace the O-rings of the high/low-pressure pipe with new ones.
- Lubricate all the O-rings with NISSAN A/C System Oil Type S (DH-PS), part number KLH00-PAGS1P.

- a. Under the vehicle, tighten the high/low pressure pipe connection (1) bolt (A) as shown to specification.
- b. Install the A/C pipe clamp (2) and tighten the A/C pipe clamp bolt (B).
- c. As necessary, reposition the rear heater pipe clamp (3).

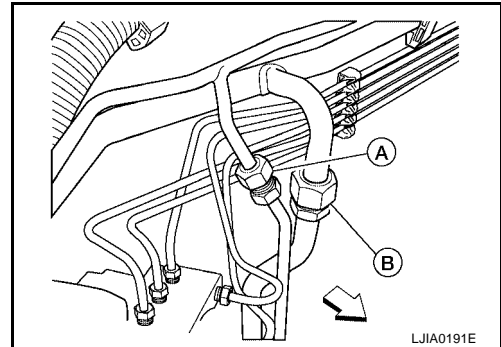


- d. Attach the other pipe support clip to the dash panel threaded stud.
- e. From the engine compartment, tighten the fittings between the upper and lower high pressure pipe (A) and the low pressure pipe (B) as shown to specification.

- ←: Front

### CAUTION:

- Do NOT damage the hydraulic brake lines or any other surrounding parts when tightening the fittings.



4. Connect the power brake booster vacuum hose to the intake manifold collector.
5. Check that there is sufficient clearance between the lower high/low pressure pipe and the front stabilizer bar. Adjust the lower high/low pressure pipe as necessary.
6. Evacuate and recharge the A/C system and check the A/C system for leaks. Refer to [ATC-169, "HFC-134a \(R-134a\) Service Procedure"](#) .
7. Install the remaining components in the reverse order of removal.

## Removal and Installation for Refrigerant Pressure Sensor

EJS001TO

### REMOVAL

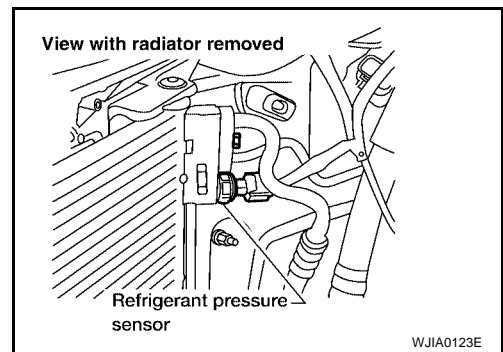
1. Discharge the refrigerant. Refer to [MTC-152, "HFC-134a \(R-134a\) Service Procedure"](#) .

# REFRIGERANT LINES

2. Disconnect the refrigerant pressure sensor 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-154, "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.

## Removal and Installation for Condenser

EJS001TP

### REMOVAL

1. Discharge the refrigerant. Refer to [MTC-152, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the radiator. Refer to [CO-10, "RADIATOR"](#).

**CAUTION:**

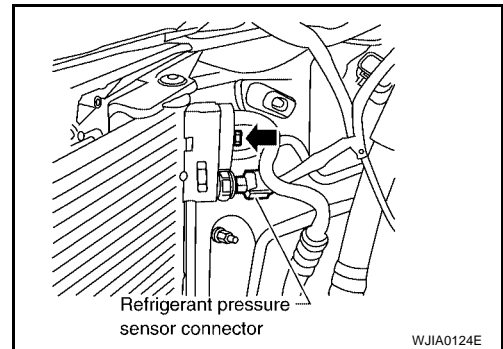
Be careful not to damage the core surface of the condenser and the radiator.

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

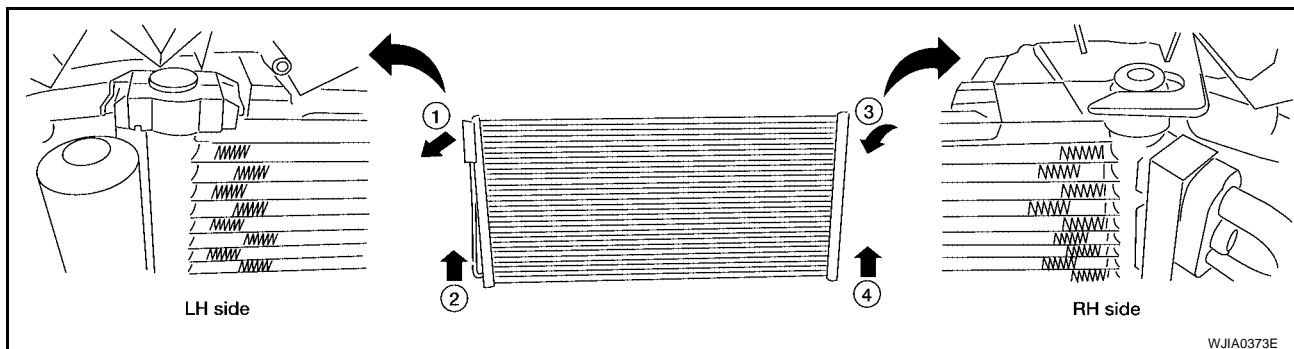
**CAUTION:**

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

4. Disconnect the refrigerant pressure sensor connector.
5. Remove the refrigerant pressure sensor.



6. Carefully release retaining clips located on top driver side of condenser and rotate the condenser out of its mounts as shown.



## INSTALLATION

Installation is in the reverse order of removal.  
Refer to [MTC-154, "Components"](#).

**CAUTION:**

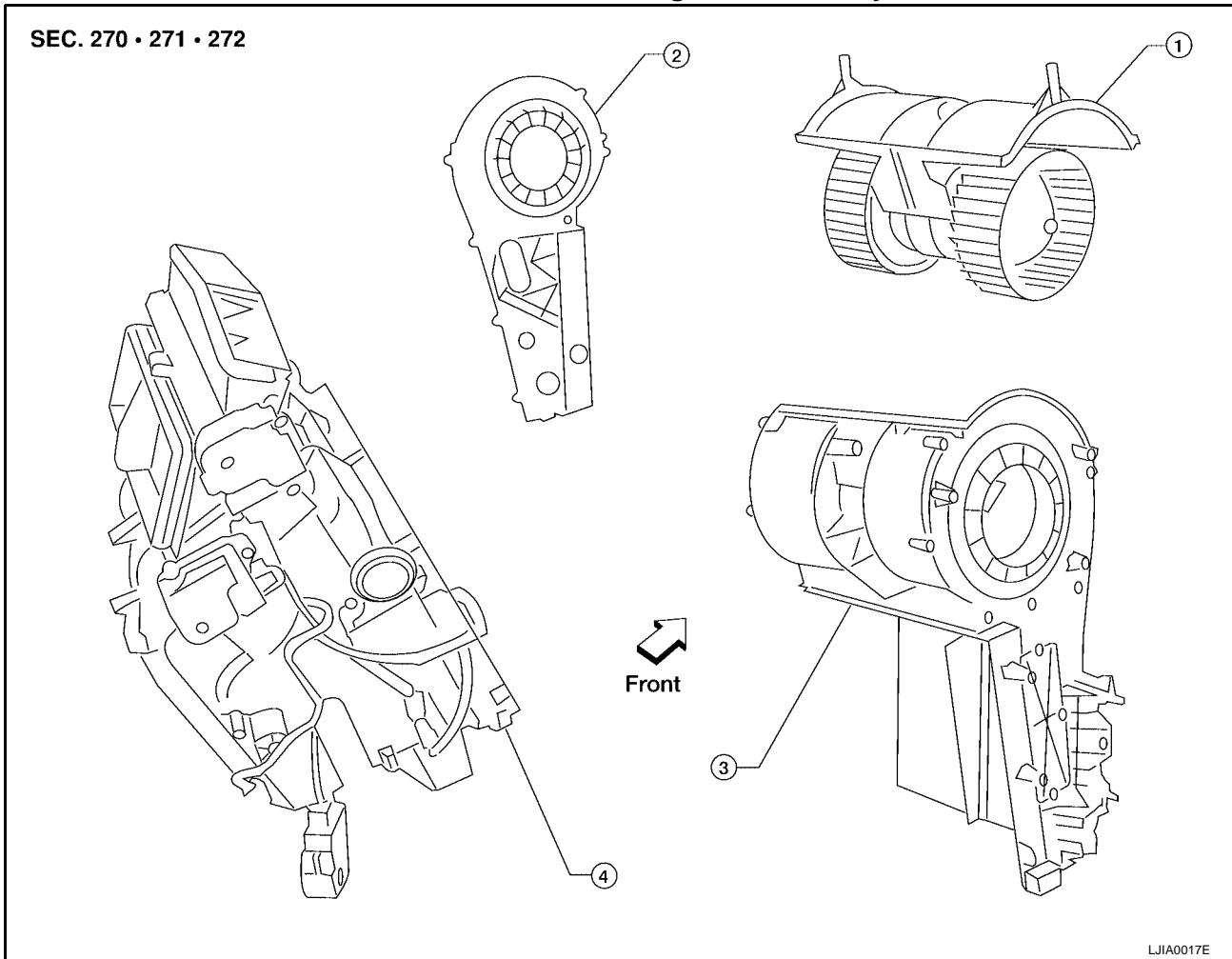
- Replace the O-rings of the high-pressure pipe and the high-pressure flexible hose with new ones, then apply compressor oil to them after installing them.
- After charging refrigerant, check for leaks.

# REFRIGERANT LINES

## Removal and Installation for Front Evaporator

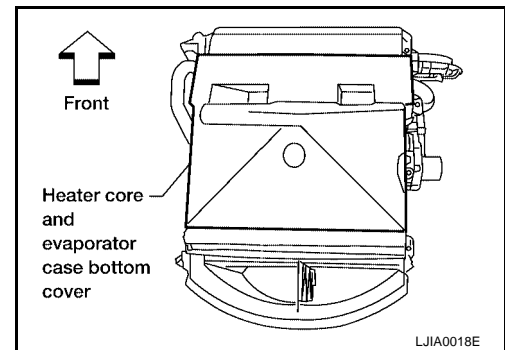
EJS001TQ

### Front Heater and Cooling Unit Assembly



### REMOVAL

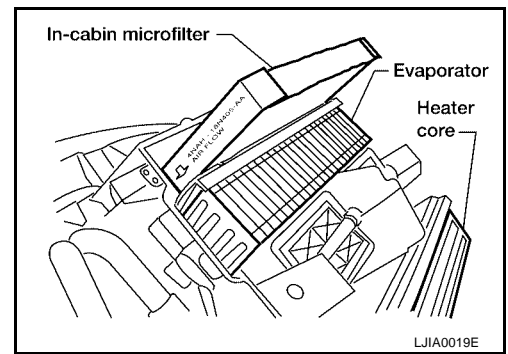
1. Remove the front heater and cooling unit assembly. Refer to [MTC-131, "FRONT HEATER AND COOLING UNIT ASSEMBLY"](#).
2. Remove the blower motor side cover.
3. Remove the front blower motor.
4. Remove the heater core and evaporator case bottom cover.



5. Remove the blower motor case.

## REFRIGERANT LINES

6. Remove the two in-cabin microfilters.
7. 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.
- When installing the in-cabin microfilters, face the microfilters according to the air flow direction arrow printed on the side of the filters.

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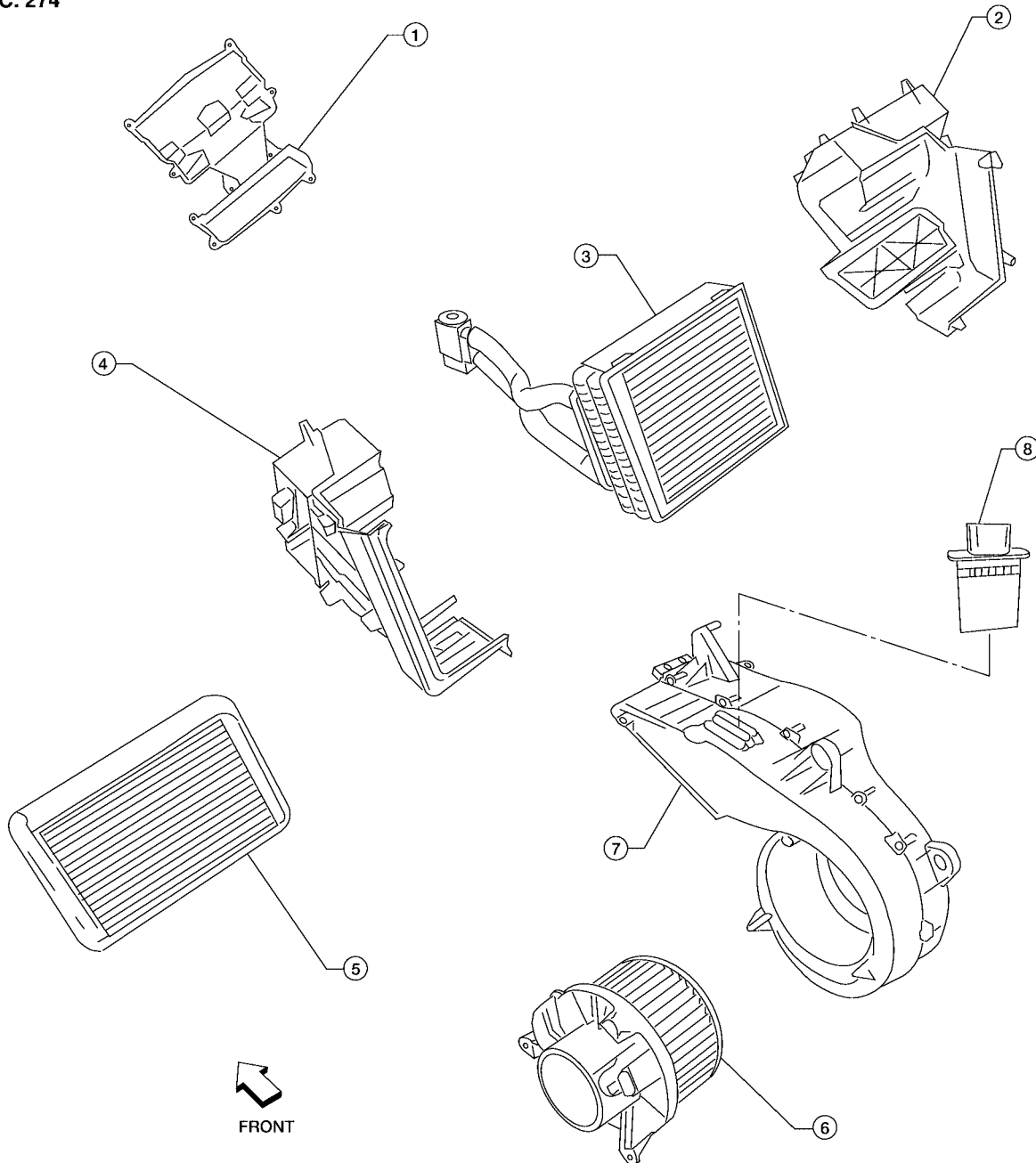
# REFRIGERANT LINES

## Removal and Installation for Rear Evaporator

EJS001TR

### Rear Heater and Cooling Unit Assembly

SEC. 274



- |                      |                                    |                      |
|----------------------|------------------------------------|----------------------|
| 1. Front cover       | 2. Evaporator and heater core case | 3. Evaporator        |
| 4. Side cover        | 5. Heater core                     | 6. Rear blower motor |
| 7. Blower motor case | 8. Rear blower motor resistor      |                      |

LJIA0020E

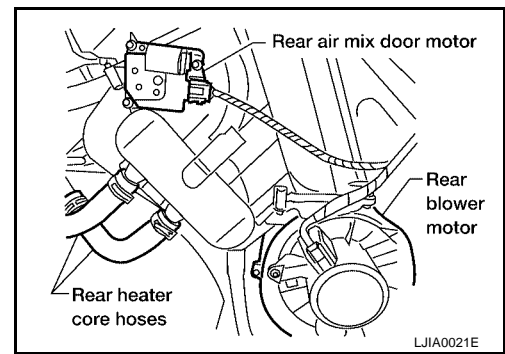
### REMOVAL

1. Remove the rear heater and cooling unit assembly from the vehicle. Refer to [MTC-132, "REAR HEATER AND COOLING UNIT ASSEMBLY"](#).
2. Remove the rear blower motor.
3. Remove the rear blower motor resistor.



# REFRIGERANT LINES

4. Remove the rear air mix door motor.
5. Remove the rear duct and blend door assembly. Refer to [MTC-150, "DEFROSTER NOZZLE"](#) .
6. Disassemble the rear heater and cooling unit assembly to remove the evaporator.



## INSTALLATION

Installation is in the reverse order of removal.

### CAUTION:

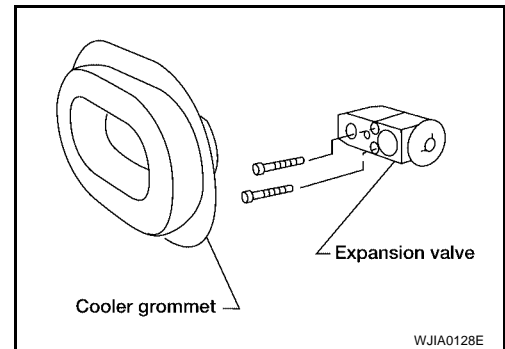
- Replace the O-rings on the rear A/C pipes with new ones. Apply compressor oil to the O-rings before installing them.

## Removal and Installation for Front Expansion Valve

EJS001UE

### REMOVAL

1. Discharge the refrigerant. Refer to [MTC-152, "HFC-134a \(R-134a\) Service Procedure"](#) .
2. Remove the front heater and cooling unit assembly. Refer to [MTC-131, "FRONT HEATER AND 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 (0.4 kg-m, 35 in-lb)  
**A/C refrigerant pipe to expansion valve bolt** : Refer to [MTC-154, "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

## Removal and Installation for Rear Expansion Valve

EJS001UF

### REMOVAL

1. Discharge the refrigerant. Refer to [MTC-152, "HFC-134a \(R-134a\) Service Procedure"](#) .
2. Remove the rear RH interior side trim panel. Refer to [EI-34, "RIGHT SIDE AND REAR"](#) .
3. Disconnect the A/C refrigerant pipes from the expansion valve.

### CAUTION:

Cap or wrap the A/C refrigerant pipe ends with a suitable material such as vinyl tape to avoid the entry of air and contaminants.

4. Remove the expansion valve.

## INSTALLATION

Installation is in the reverse order of removal.

# REFRIGERANT LINES

- Expansion valve bolts : 4 N-m (0.4 kg-m, 35 in-lb)  
A/C refrigerant pipe to expansion valve bolt : Refer to [MTC-154, "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

EJS001TT

Perform a visual inspection of all refrigeration parts, fittings, hoses and components for signs of A/C lubricant leakage, damage, and corrosion. Any 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 (J-41995) or fluorescent dye leak detector (J-42220).

If any dye is observed using a fluorescent dye leak detector (J-42220), confirm the leak using a electronic refrigerant leak detector (J-41995). It is possible that the dye is from a prior leak that 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 refrigerant leak detector (J-41995), move the probe along the suspected leak area at 25 - 50 mm (1 - 2 in) per second and no further than 6 mm (1/4 in) from the component.

## CAUTION:

**Moving the electronic refrigerant 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 Dye Leak Detector

EJS001TU

1. Check the A/C system for leaks using the fluorescent dye leak detector and safety goggles (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 leak (tubes, core or expansion valve).
2. If the suspected area is difficult to see, use an adjustable mirror or wipe the area with a clean shop rag or cloth, then inspect the shop rag or cloth with the fluorescent dye leak detector (J-42220) for dye residue.
3. After the leak is repaired, remove any residual dye using dye cleaner (J-43872) to prevent future misdiagnosis.
4. Perform a system performance check and then verify the leak repair using a electronic refrigerant leak detector (J-41995).

### 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 electronic refrigerant leak detector (J-41995) to contact with any substance. This can also cause false readings and may damage the detector.

## Dye Injection

EJS001TV

### NOTE:

This procedure is only necessary when recharging the system or when the compressor has seized and must be replaced.

1. Check the A/C system static (at rest) pressure. Pressure must be at least 345 kPa (3.52 kg/cm<sup>2</sup> , 50 psi).
2. Pour one bottle 7.4 cc (1/4 ounce) of the HFC-134a (R-134a) fluorescent leak detection dye (J-41447) into the HFC-134a (R-134a) dye injector (J-41459).

### CAUTION:

**If repairing the A/C system or replacing a component, pour the HFC-134a (R-134a) fluorescent leak detection dye (J-41447) directly into the open system connection and proceed with the service procedures.**

3. Connect the injector tool (J-41459) to the low-pressure service valve.
4. Start the engine and switch the A/C system ON.

# REFRIGERANT LINES

- When the A/C system is operating (compressor running), inject one bottle 7.4 cc (1/4 ounce) of HFC-134a (R-134a) fluorescent leak detection dye (J-41447) through the low-pressure service valve using HFC-134a (R-134a) dye injector (J-41459). Refer to the manufacturer's operating instructions.
- With the engine still running, disconnect the HFC-134a (R-134a) dye injector (J-41459) from the low-pressure service valve.
- Operate the A/C system for a minimum of 20 minutes to mix the HFC-134a (R-134a) fluorescent leak detection dye (J-41447) with the A/C system oil. Depending on the leak size, operating conditions and location of the leak, it may take from minutes to days for the HFC-134a (R-134a) fluorescent leak detection dye to penetrate an A/C system leak and become visible.

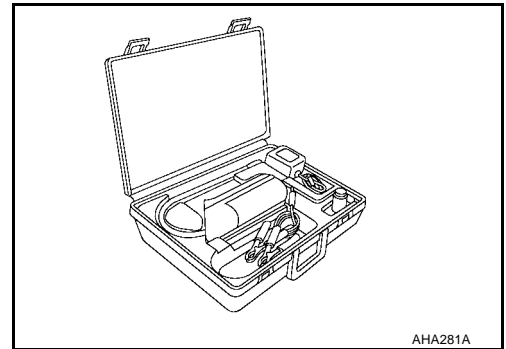
## Electronic Refrigerant Leak Detector PRECAUTIONS FOR HANDLING LEAK DETECTOR

EJS001TW

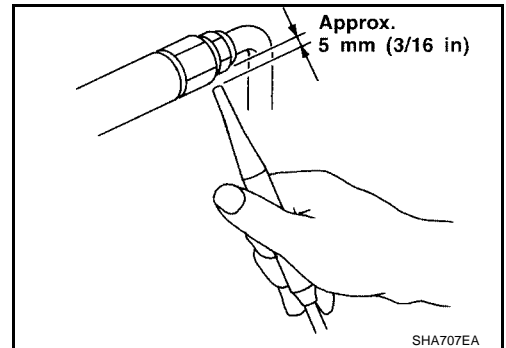
### NOTE:

When performing a refrigerant leak check, use a electronic refrigerant leak detector (J-41995) or equivalent. Ensure that the electronic refrigerant leak detector (J-41995) is calibrated and set properly according to the manufacturer's operating instructions.

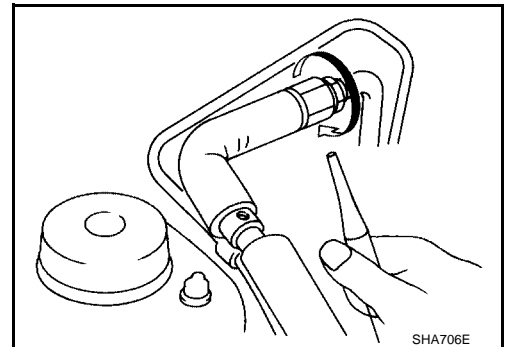
The electronic refrigerant leak detector (J-41995) is a delicate device. To use the electronic refrigerant leak detector (J-41995) properly, read the manufacturer's operating instructions and perform any specified maintenance.



- Position the probe approximately 5 mm (3/16 in) away from the point to be checked as shown.



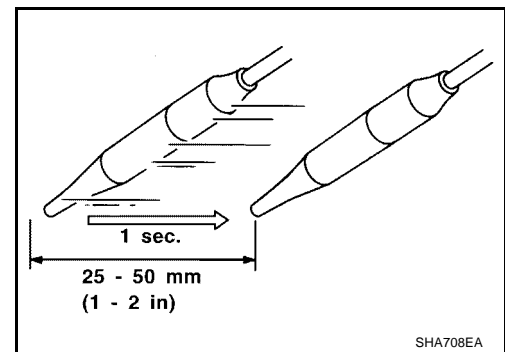
- When checking for leaks, circle each fitting completely with the probe as shown.



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## REFRIGERANT LINES

3. Move the probe along each component at a speed of approximately 25 - 50 mm (1 - 2 in)/second as shown.



### CHECKING PROCEDURE

#### NOTE:

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 a calm area (low air/wind movement) so that the leaking refrigerant is not dispersed.

1. Turn the engine OFF.
2. Connect the manifold gauge set (J-39183-C) to the A/C service ports. Refer to [MTC-152, "SETTING OF SERVICE TOOLS AND EQUIPMENT"](#).
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.52 kg/cm<sup>2</sup>, 50 psi) above a temperature of 16°C (61°F). If less than specification, recover/evacuate and recharge the system with the specified amount of refrigerant. Refer to [MTC-152, "HFC-134a \(R-134a\) Service Procedure"](#).

#### NOTE:

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

4. Conduct the leak test from the high pressure side (compressor discharge to evaporator inlet) to the low pressure side (evaporator drain hose to shaft seal). Refer to [MTC-154, "Components"](#). Clean the component to be checked and carefully move the electronic refrigerant leak detector probe completely around the following connections and components.
  - Compressor
  - High and low-pressure pipe and hose fittings, relief valve, and compressor shaft seal
  - Liquid tank
  - 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 manifold gauge set (J-39183-C) from the service valves, wipe any residue from the service valves to prevent any false readings by the electronic refrigerant leak detector (J-41995).

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

#### NOTE:

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 is detected, verify at least once by blowing compressed air into the area of the suspected leak, then repeat the leak check.
6. Do not stop when one leak is found. Continue to check for additional leaks at all system components and connections.
7. If no leaks are found, perform steps 8 - 11.
8. Start the engine.
9. Set the heater A/C controls as follows:

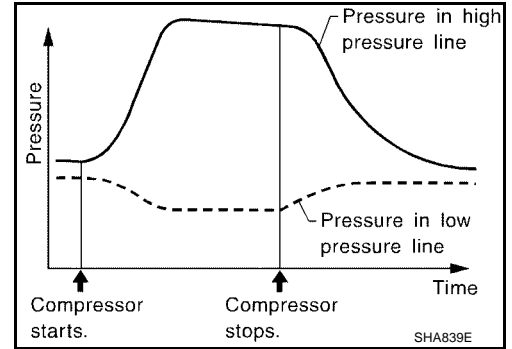
# REFRIGERANT LINES

## NOTE:

For the automatic system, turn OFF the automatic controls and set the heater A/C controls manually.

- a. A/C switch to ON
  - b. Air flow to VENT mode
  - c. Intake position to RECIRCULATION mode
  - d. Temperature to MAX cold
  - e. Blower speed to HIGH
10. Run the engine at 1,500 rpm for at least 2 minutes.
  11. Turn the engine OFF and perform the leak check again following steps 4 through 6 above.

Refrigerant leaks should be checked immediately after turning the engine OFF. Begin with the leak detector at the compressor. The pressure on the high pressure side will gradually drop after the 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 the pressure is high.



12. Before connecting the recovery/recycling equipment to the vehicle, check the recovery/recycling equipment gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover the refrigerant from the equipment lines and then check the refrigerant purity.
13. Confirm refrigerant purity in supply tank using recovery/recycling equipment and refrigerant identifier equipment (J-41810-NI).
14. Confirm the refrigerant purity in the vehicle's A/C system using recovery/recycling equipment and refrigerant identifier equipment (J-41810-NI).
15. Discharge the A/C system using recovery/recycling equipment. Repair the leaking fitting or component as necessary.
16. Evacuate and recharge the A/C system and perform the leak test to confirm that there are no refrigerant leaks.
17. Conduct the Operational Check to ensure system works properly. Refer to [MTC-53, "Operational Check"](#).

# SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

### Service Data and Specifications (SDS) COMPRESSOR

EJS0017X

Make	ZEXEL VALEO CLIMATE CONTROL
Model	DKS-17D
Type	Swash plate
Displacement	175.5 cm <sup>3</sup> (10.7 in <sup>3</sup> ) / revolution
Cylinder bore x stroke	30.5 x 24.0 mm (1.201 x 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 DH-PS	
Part number	KLH00-PAGS0	
Capacity	Total in system	220 mℓ (7.44 US fl oz, 7.7 Imp fl oz)
	Compressor (service part) charging amount	Refer to <a href="#">MTC-22, "CHECKING AND ADJUSTING"</a> .

### REFRIGERANT

Type	HFC-134a (R-134a)
Capacity	900 ± 50 g (1.98 ± 0.11 lb)

### ENGINE IDLING SPEED

Refer to [EC-81, "Idle Speed and Ignition Timing Check"](#) .

### BELT TENSION

Refer to [MA-13, "Tension Adjustment"](#) .