

SECTION **ATC**

AUTOMATIC AIR CONDITIONER

A
B
C

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PRECAUTIONS

PRECAUTIONS

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

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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)

EJS004TP

WARNING:

- CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer to [ATC-4, "Contaminated Refrigerant"](#) . To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use the recovery/recycling equipment and refrigerant identifier.
- Use only specified oil for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If oil other than that specified is used, compressor failure is likely to occur.
- The specified HFC-134a (R-134a) oil 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 oil from a sealed container. Immediately reseal containers of oil. Without proper sealing, oil will become moisture saturated and should not be used.
 - Avoid breathing A/C refrigerant and oil 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) recovery equipment]. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.
 - Do not allow oil, NISSAN A/C System Oil Type S (DH-PS) or equivalent, to come in contact with styrofoam parts. Damage may result.

Contaminated Refrigerant

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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.

PRECAUTIONS

- If you choose to perform the repair, recover the refrigerant using only **dedicated equipment and containers. Do not recover contaminated refrigerant into your existing service equipment.** If your facility does not have dedicated recovery equipment, you may contact a local refrigerant product retailer for available service. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.
- If the vehicle is within the warranty period, the air conditioner warranty is void. Please contact NISSAN Customer Affairs for further assistance.

General Refrigerant Precautions

EJS004TR

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

EJS004TS

- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety goggles to protect your eyes and enhance the visibility of the fluorescent dye.
- The fluorescent dye leak detector is not a replacement for an electronic refrigerant leak detector. The fluorescent dye leak detector should be used in conjunction with an electronic refrigerant leak detector (J-41995).
- 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 (R-134a) and CFC-12 (R-12) A/C systems are different. Do not use HFC-134a (R-134a) leak detection dye in CFC-12 (R-12) A/C systems or CFC-12 (R-12) leak detection dye in HFC-134a (R-134a) A/C systems or A/C system damage may result.
- The fluorescent properties of the dye will remain for over three (3) years unless a compressor failure occurs.

A/C Identification Label

EJS004TT

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

PRECAUTIONS

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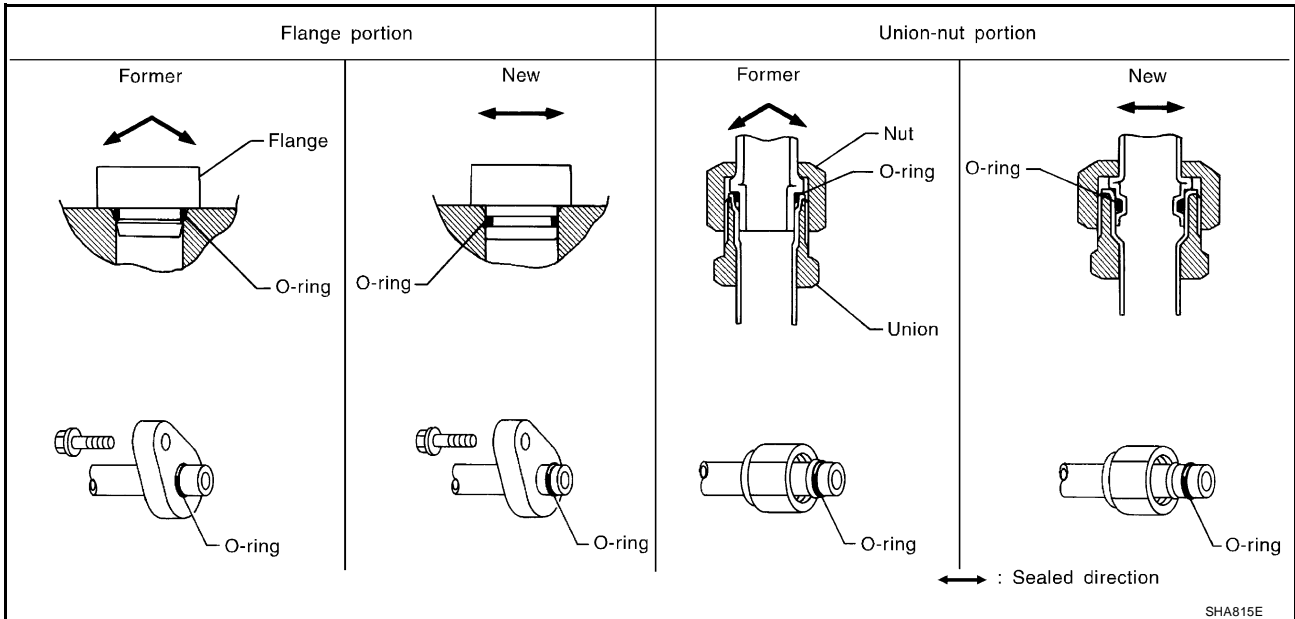
Precautions for Refrigerant Connection

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.

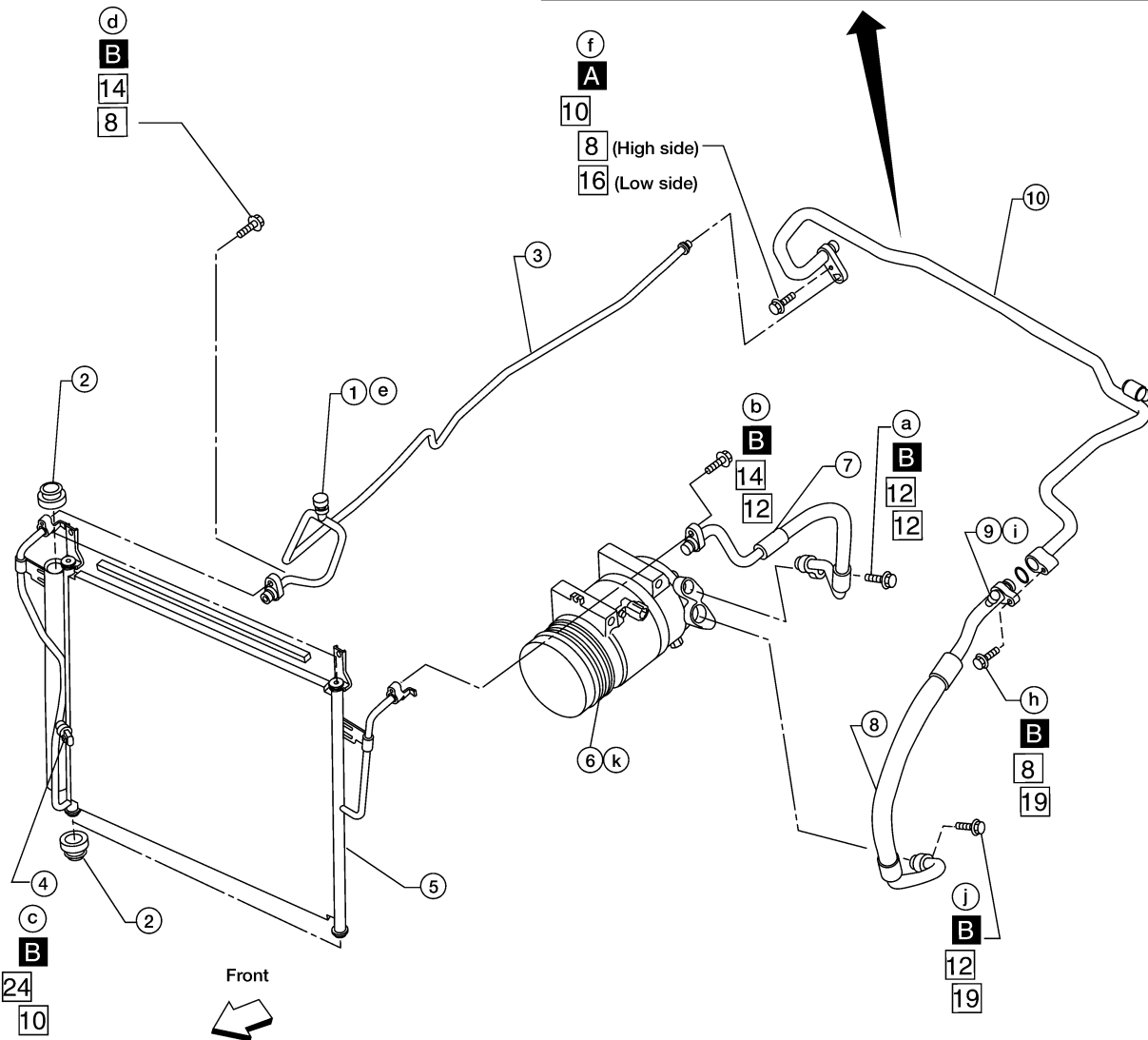
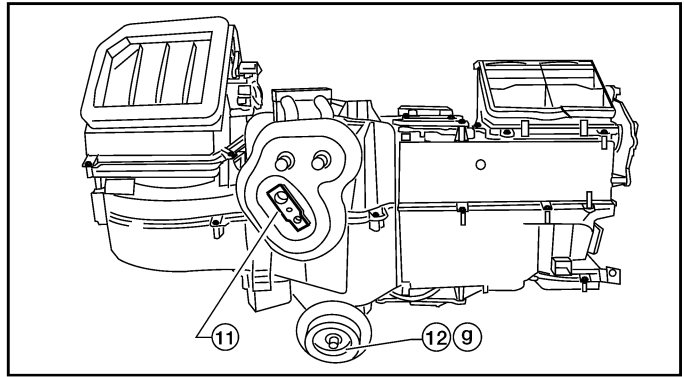


PRECAUTIONS

O-RING AND REFRIGERANT CONNECTION

A/C Compressor and Condenser

SEC. 214 • 271 • 274 • 276



- : Refrigerant leak checking order (a-k)
- : Tightening torque
- : Wrench size
- : O-ring size
- ⊗ : N-m (kg-m, in-lb)
- A** ⊗ : 3.4 (0.35 , 30)
- B** ⊗ : 9.3 (0.95 , 82)

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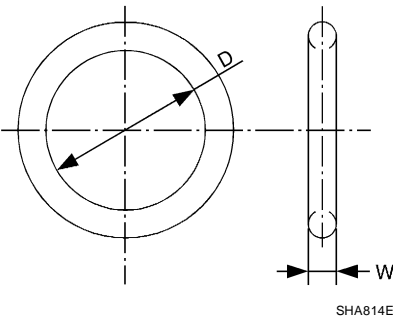
PRECAUTIONS

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

CAUTION:

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

O-Ring Part Numbers and Specifications

	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:

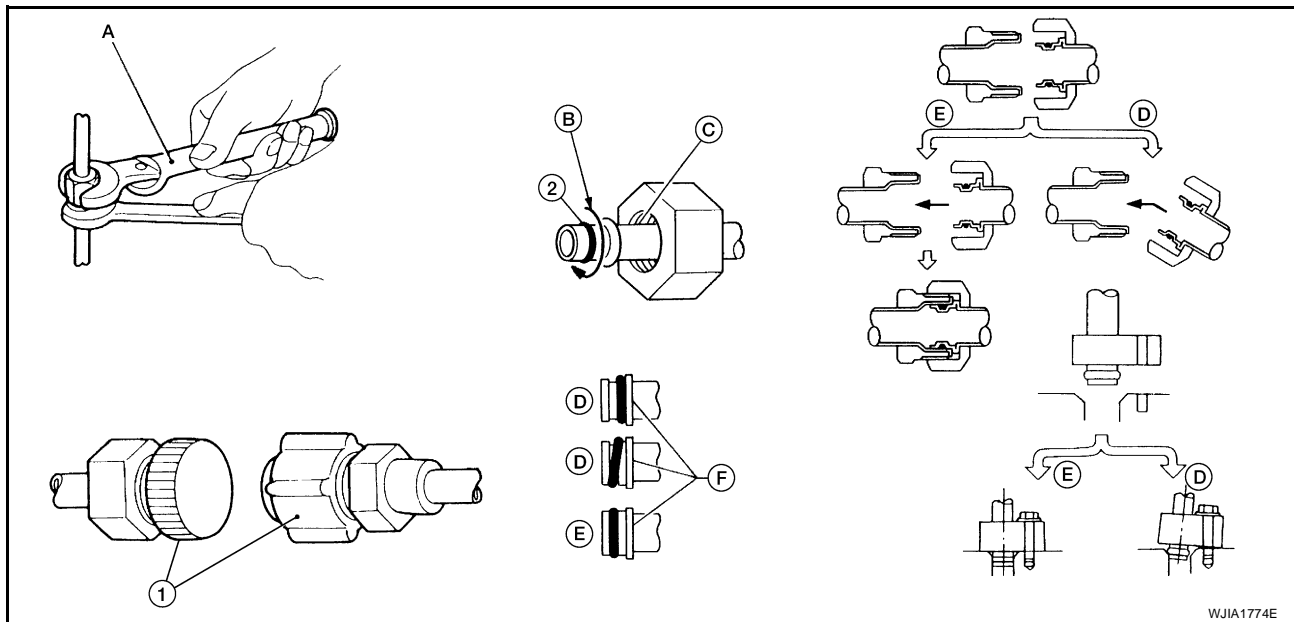
Make sure all refrigerant is discharged into the recycling equipment and the pressure in the system is less than atmospheric pressure. Then gradually loosen the discharge side hose fitting and remove it.

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 oil 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 oil to circle of the O-rings shown in illustration. Be careful not to apply oil to threaded portion.
Oil name: NISSAN A/C System Oil Type S (DH-PS) or equivalent
Part number: KLH00-PAGS0
- O-ring must be closely attached to dented portion of tube.
- When replacing the O-ring, be careful not to damage O-ring and tube.
- Connect tube until you hear it click, then tighten the nut or bolt by hand until snug. Make sure that the O-ring is installed to tube correctly.
- 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



- | | | |
|--------------|--------------------------------|------------------|
| 1. Plug | 2. O-ring | A. Torque wrench |
| B. Apply oil | C. Do not apply oil to threads | D. NG (no good) |
| E. OK (okay) | F. Inflated portion | |

Precautions for Servicing Compressor

EJS004TV

- 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 Oil Quantity in Compressor" exactly. Refer to [ATC-20, "Maintenance of Oil Quantity in Compressor"](#).
- Keep friction surfaces between clutch and pulley clean. If the surface is contaminated with oil, wipe it off by using a clean waste cloth moistened with thinner.
- After compressor service operation, turn the compressor shaft by hand more than 5 turns in both directions. This will equally distribute oil 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 [ATC-184, "Removal and Installation for Compressor Clutch"](#).

Precautions for Service Equipment RECOVERY/RECYCLING EQUIPMENT

EJS004TW

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

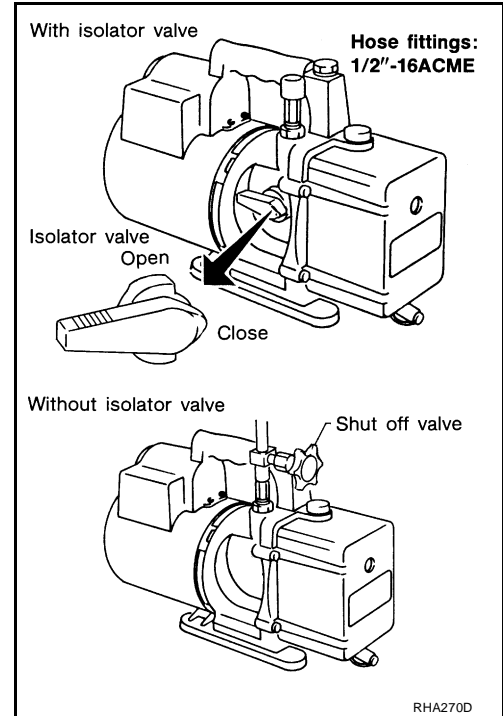
VACUUM PUMP

The oil contained inside the vacuum pump is not compatible with the specified oil for HFC-134a (R-134a) A/C systems. The vent side of the vacuum pump is exposed to atmospheric pressure so the vacuum pump oil 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.

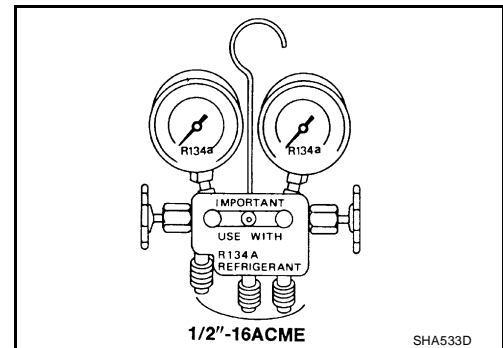
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has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



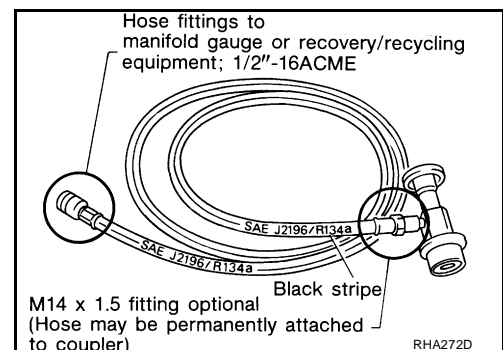
MANIFOLD GAUGE SET

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



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.

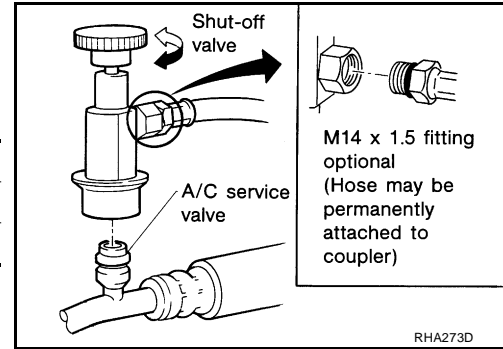


PRECAUTIONS

SERVICE COUPLERS

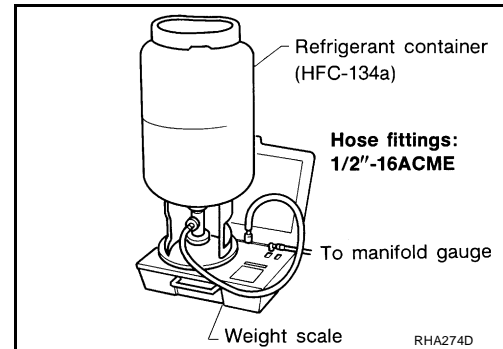
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. If an improper connection is attempted, discharging and contamination may occur.

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



REFRIGERANT WEIGHT SCALE

Verify that no refrigerant other than HFC134a (R-134a) and specified oils have been used with the scale. If the scale controls refrigerant flow electronically, the hose fitting must be 1/2"-16 ACME.



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.

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PREPARATION

PREPARATION

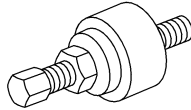
PF0:00002

Special Service Tools

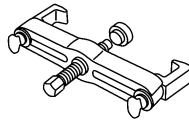
EJS004TX

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	Installing pulley
KV99233130 (J-29884) Pulley puller	Removing pulley



LHA171



LHA172

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

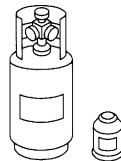
EJS004TY

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

Separate and non-interchangeable service equipment must be used for handling each type of refrigerant/oil. Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and/or oil) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerants/oil.

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

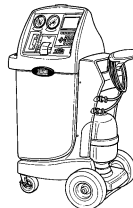
Tool number (Kent-Moore No.) Tool name	Description
HFC-134a (R-134a) (—) Refrigerant	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size ● large container 1/2"-16 ACME
KLH00-PAGS0 (—) NISSAN A/C System Oil Type S (DH-PS)	Type: Poly alkylene glycol oil (PAG), type S (DH-PS) Application: HFC-134a (R-134a) swash plate 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	Refrigerant recovery, recycling and re-charging



S-NT196



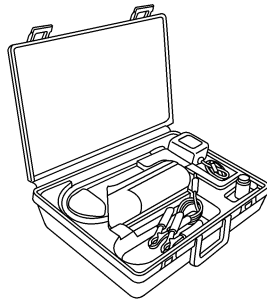
S-NT197



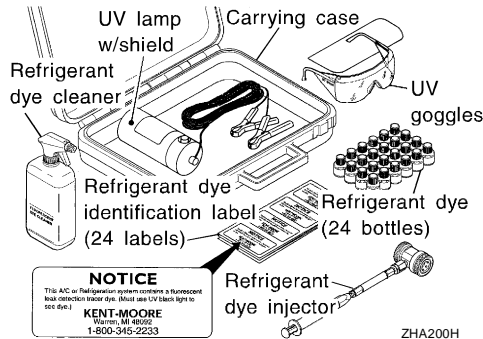
WJIA0293E

PREPARATION

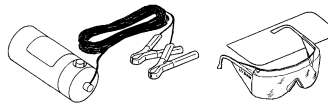
Tool number (Kent-Moore No.) Tool name	Description
<p>— (J-41995) Electronic refrigerant leak detector</p>	<p>Power supply: ● DC 12V (battery terminal)</p> <div style="text-align: right;">A B C D</div>
<p>— (J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) Refrigerant dye injector (J-41447) qty. 24 HFC-134a (R-134a) refrigerant dye (J-43872) Refrigerant dye cleaner</p>	<p>Power supply: ● DC 12V (battery terminal)</p> <div style="text-align: right;">E F G H</div>
<p>— (J-42220) Fluorescent dye leak detector</p>	<p>Power supply: ● DC 12V (battery terminal)</p> <p>For checking refrigerant leak when fluorescent dye is installed in A/C system. Includes: UV lamp and UV safety goggles</p> <div style="text-align: right;">I ATC</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: right;">K L M</div>
<p>— (J-41459) HFC-134a (R-134a) Dye injector Use with J-41447, 1/4 ounce bottle</p>	<p>For injecting 1/4 ounce of fluorescent leak detection dye into A/C system.</p>
<p>— (J-43872) Refrigerant dye cleaner</p>	<p>For cleaning dye spills.</p>



AHA281A



ZHA200H

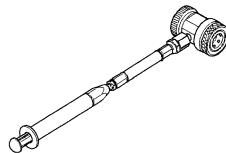


SHA438F



Refrigerant dye
(24 bottles)

SHA439F



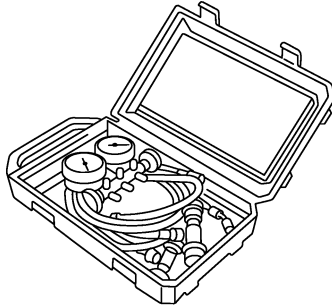
SHA440F



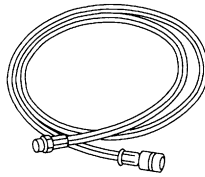
SHA441F

PREPARATION

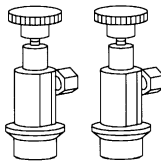
Tool number (Kent-Moore No.) Tool name	Description
— (J-39183-C) Manifold gauge set (with hoses and couplers)	Identification: <ul style="list-style-type: none"> ● The gauge face indicates R-134a. Fitting size-Thread size ● 1/2"-16 ACME
Service hoses: <ul style="list-style-type: none"> ● High side hose (J-39500-72B) ● Low side hose (J-39500-72R) ● Utility hose (J-39500-72Y) 	Hose color: <ul style="list-style-type: none"> ● Low side hose: Blue with black stripe ● High side hose: Red with black stripe ● Utility hose: Yellow with black stripe or green with black stripe Hose fitting to gauge: <ul style="list-style-type: none"> ● 1/2"-16 ACME
Service couplers <ul style="list-style-type: none"> ● High side coupler (J-39500-20A) ● Low side coupler (J-39500-24A) 	Hose fitting to service hose: <ul style="list-style-type: none"> ● M14 x 1.5 fitting is optional or permanently attached.
— (J-39699) Refrigerant weight scale	For measuring of refrigerant Fitting size-Thread size <ul style="list-style-type: none"> ● 1/2"-16 ACME
— (J-39649) Vacuum pump (Including the isolator valve)	Capacity: <ul style="list-style-type: none"> ● Air displacement: 4 CFM ● Micron rating: 20 microns ● Oil capacity: 482 g (17 oz) Fitting size-Thread size <ul style="list-style-type: none"> ● 1/2"-16 ACME



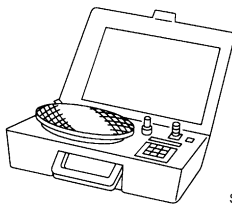
RJIA0196E



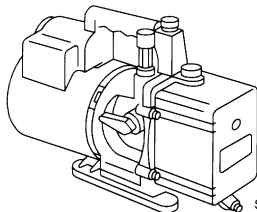
S-NT201



S-NT202



S-NT200

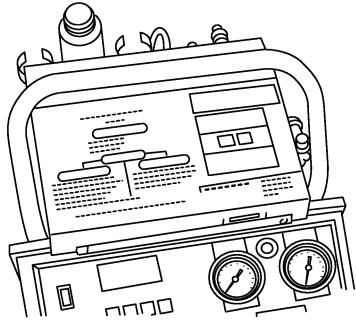
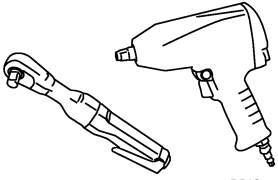
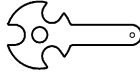


S-NT203

PREPARATION

Commercial Service Tools

EJS004TZ

Tool name	Description
<p>(J-41810-NI) Refrigerant identifier equipment (R-134a)</p>  <p style="text-align: right; font-size: small;">RJIA0197E</p>	<p>For checking refrigerant purity and system contamination</p>
<p>Power tool</p>  <p style="text-align: right; font-size: small;">PBIC0190E</p>	<p>Loosening bolts and nuts</p>
<p>(J-44614) Clutch disc holding tool</p>  <p style="text-align: right; font-size: small;">WHA230</p>	<p>Clutch disc holding tool</p>

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REFRIGERATION SYSTEM

REFRIGERATION SYSTEM

PPF:KA990

Refrigerant Cycle REFRIGERANT FLOW

EJS004U0

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

Refrigerant System Protection REFRIGERANT PRESSURE SENSOR

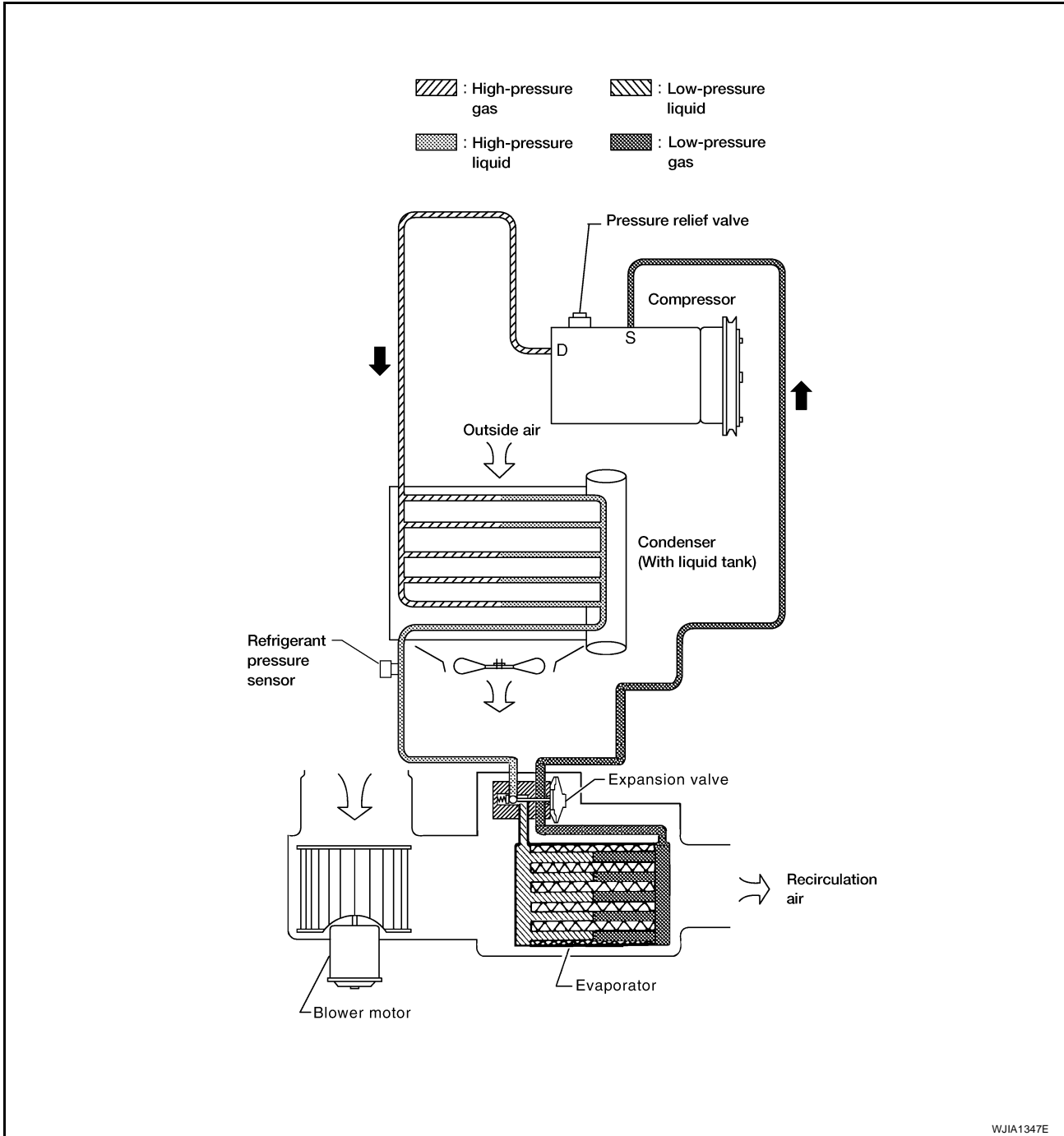
EJS004U1

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/cm², 398 psi), or below about 120 kPa (1.22 kg/cm², 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/cm² , 433.6 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.



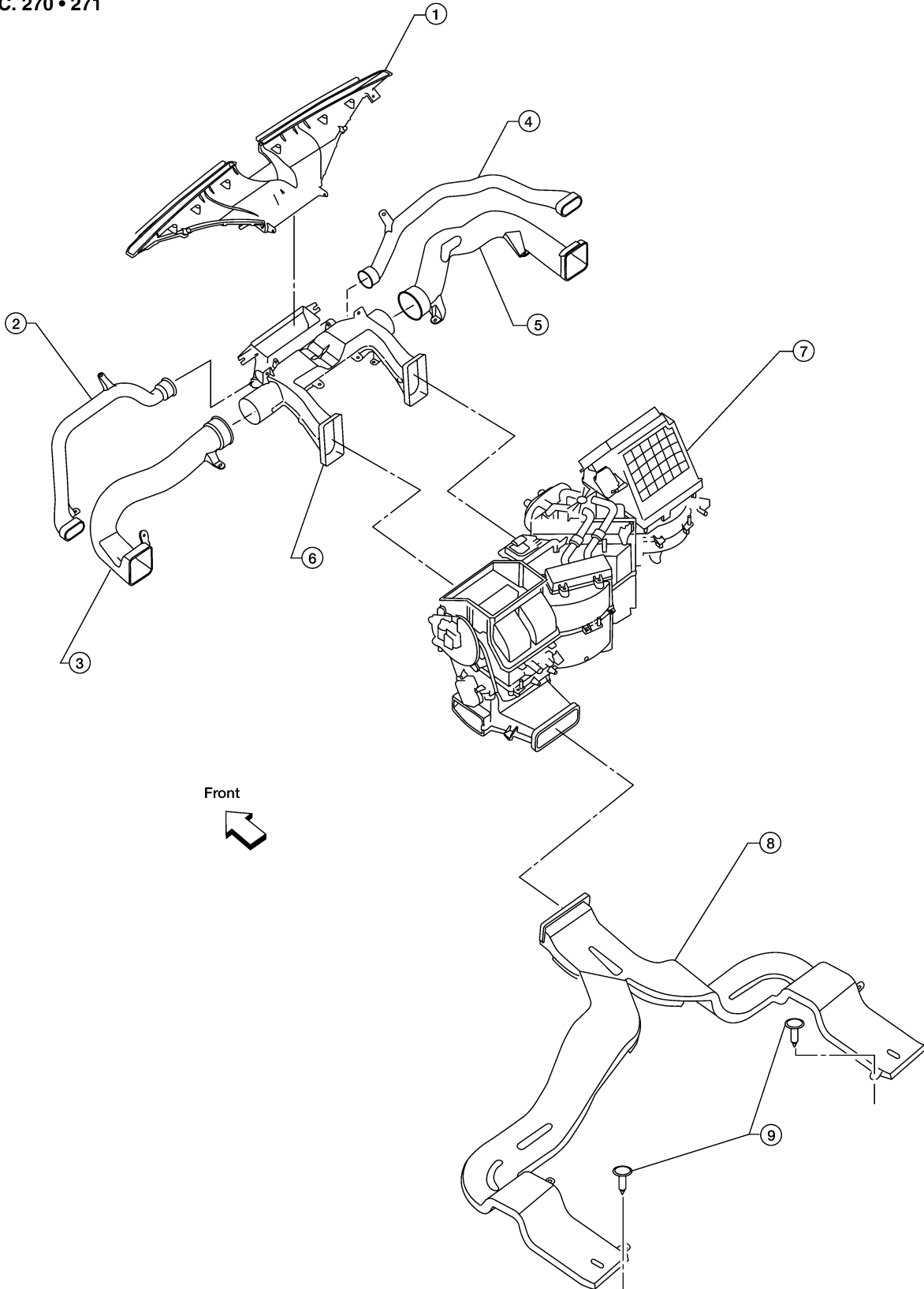
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REFRIGERATION SYSTEM

EJS004U2

Component Layout REFRIGERATION SYSTEM

SEC. 270 • 271



LJJA0141E

REFRIGERATION SYSTEM

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

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OIL**Maintenance of Oil Quantity in Compressor**

EJS004U3

The oil in the compressor circulates through the system with the refrigerant. Add oil to compressor when replacing any component or after a large refrigerant leakage has occurred. It is important to maintain the specified amount.

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

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

OIL

Name: NISSAN A/C System Oil Type S (DH-PS) or equivalent


Part number: KLH00-PAGS0

CHECKING AND ADJUSTING**CAUTION:**

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

Start the engine and set the following conditions:

Test Condition

- **Engine speed: Idling to 1,200 rpm**
- **A/C switch: On**
- **Blower fan 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 oil return operation for about ten minutes**

Adjust the oil quantity according to the following table.

Oil Adjusting Procedure for Components Replacement Except Compressor

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

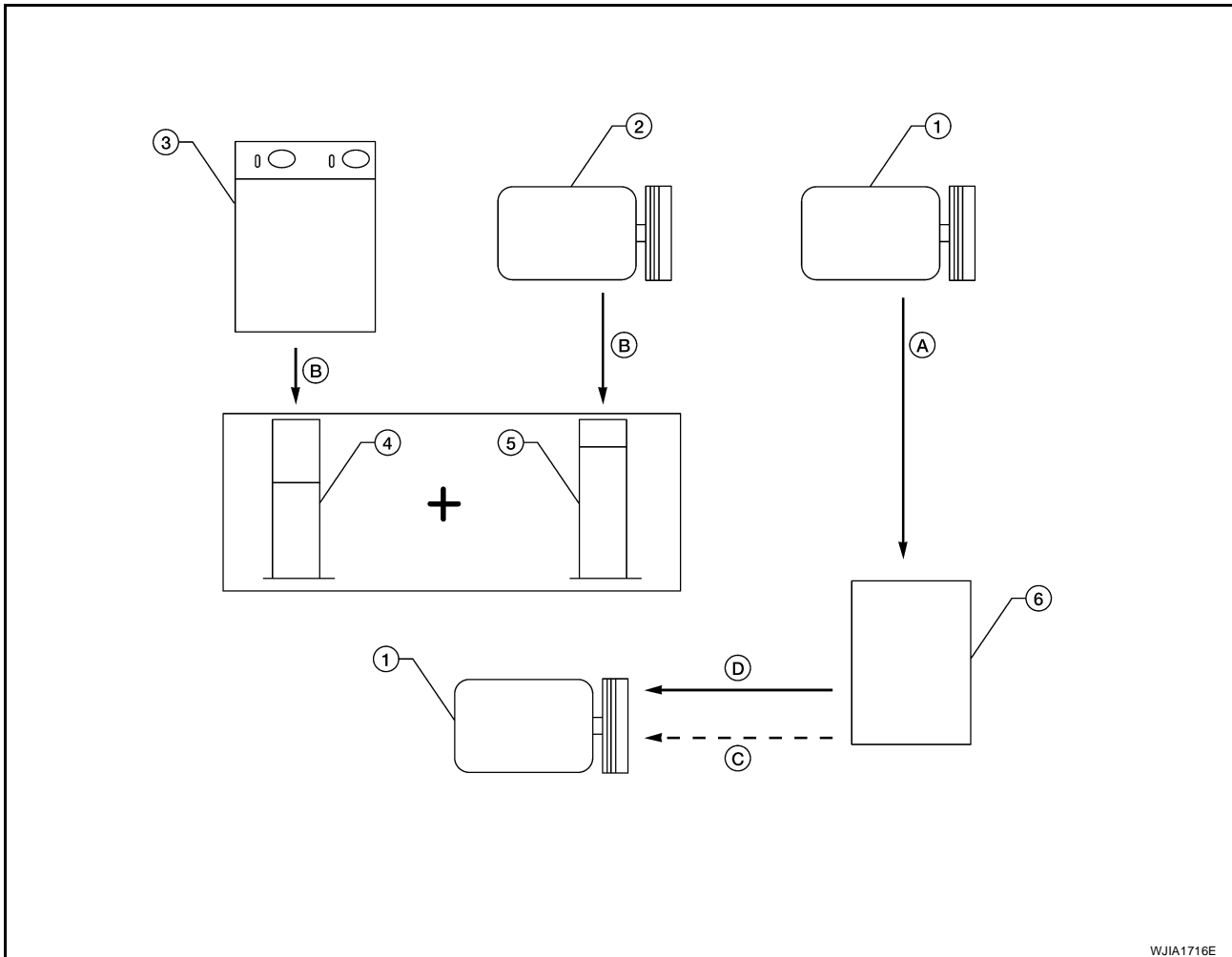
Amount of Oil to be Added

Part replaced	Oil to be added to system	Remarks
	Amount of oil m ℓ (US fl oz, Imp fl oz)	
Evaporator	75 (2.5, 2.6)	—
Condenser	75 (2.5, 2.6)	—
Liquid tank	5 (0.2, 0.2)	Add if compressor is not replaced.
In case of refrigerant leak	30 (1.0, 1.1)	Large leak
	—	Small leak *1

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

OIL

Oil Adjustment Procedure for Compressor Replacement



- | | | |
|---|-----------------------------------|---|
| 1. New compressor | 2. Old compressor | 3. Recovery/recycling equipment |
| 4. Measuring cup X | 5. Measuring cup Y | 6. New oil |
| A. Drain oil from the new compressor into clean container | B. Record amount of oil recovered | C. Add an additional 5 mℓ (0.2 US fl oz, 0.2 Imp fl oz) of new oil when replacing liquid tank |
| D. Install new oil equal to recorded amounts in measuring cups X plus Y | | |

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

OIL

CAUTION:

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

AIR CONDITIONER CONTROL

AIR CONDITIONER CONTROL

PFP:27500

Description

EJS004U4

The front air control provides automatic regulation of the vehicle's interior temperature. The system is based on the driver's and passenger's selected "set temperature", regardless of the outside temperature changes. This is done by utilizing a microcomputer, also referred to as the front air control, which receives input signals from the following seven sensors:

- Ambient sensor
- In-vehicle sensor
- Intake sensor
- Optical sensor (one sensor for driver and passenger side)
- PBR (Position Balanced Resistor) built into the mode door motor, air mix door motors, and defroster door motor.
- Vehicle speed sensor
- Engine coolant temperature

The front air control uses these signals (including the set temperature) to automatically control:

- Outlet air volume
- Air temperature
- Air distribution

The front air control is used to select:

- Outlet air volume
- Air temperature/distribution

Operation

EJS004U5

AIR MIX DOORS CONTROL

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

BLOWER SPEED CONTROL

Blower speed is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and air mix door position.

When AUTO switch is pressed, the blower motor starts to gradually increase air flow volume (if required).

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

INTAKE DOOR CONTROL

The intake door is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and by the ON-OFF operation of the compressor.

MODE DOOR CONTROL

The mode door is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature and amount of sunload.

DEFROSTER DOOR CONTROL

The defroster door is controlled by turning the defroster dial to front defroster.

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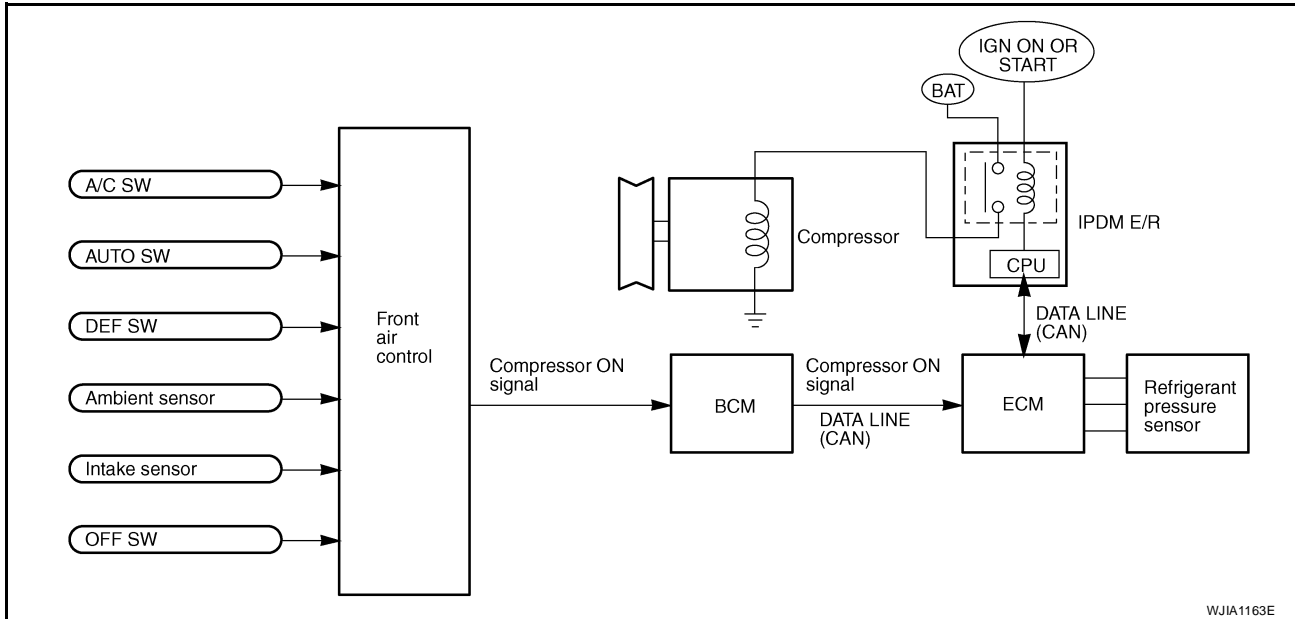
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AIR CONDITIONER CONTROL

MAGNET CLUTCH CONTROL



When A/C switch or DEF switch is pressed, front air control inputs compressor ON signal to BCM. BCM sends 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

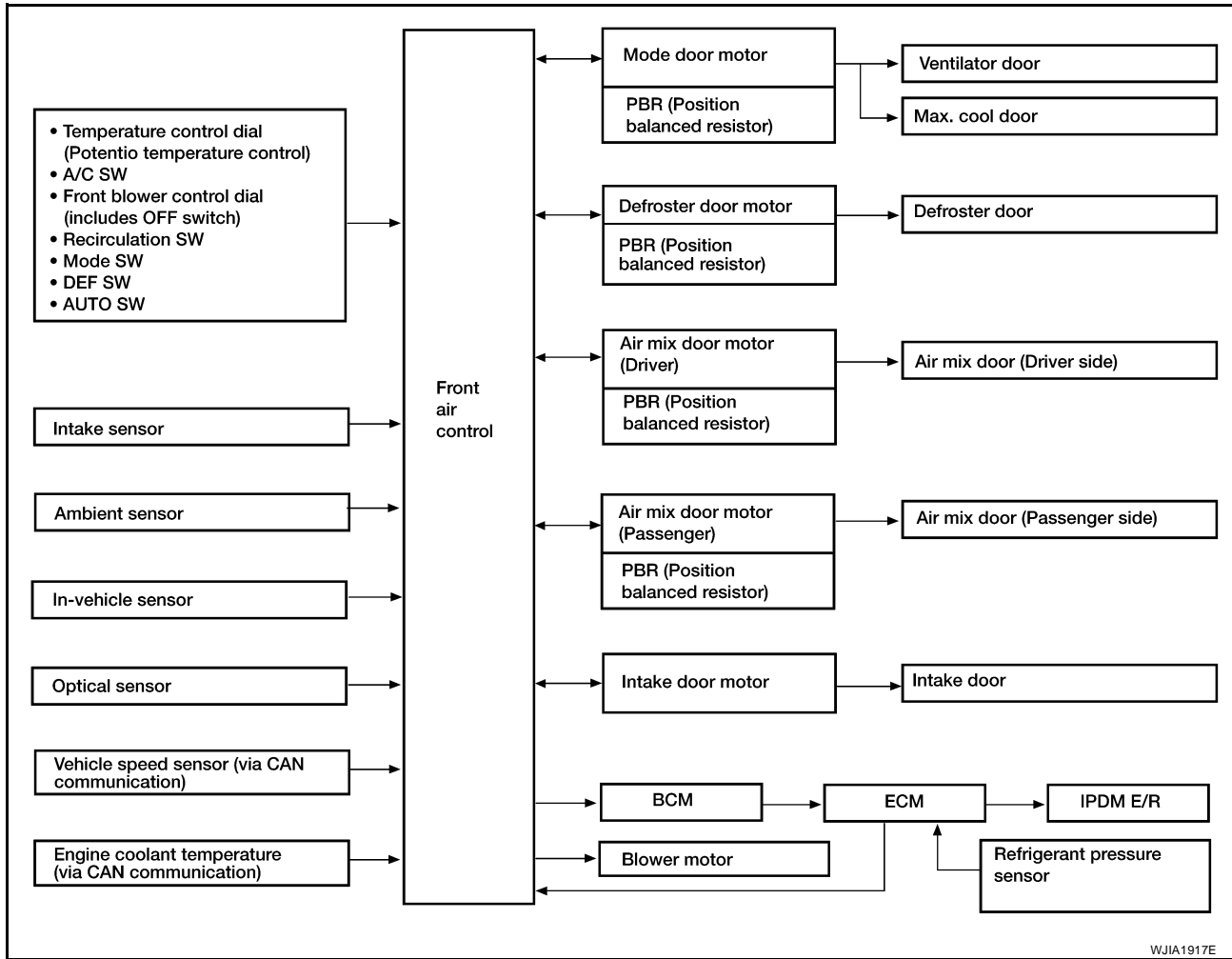
The self-diagnostic system is built into the front air control to quickly locate the cause of certain symptoms. Refer to [ATC-60, "A/C System Self-diagnosis Function"](#)

AIR CONDITIONER CONTROL

EJS004U6

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:

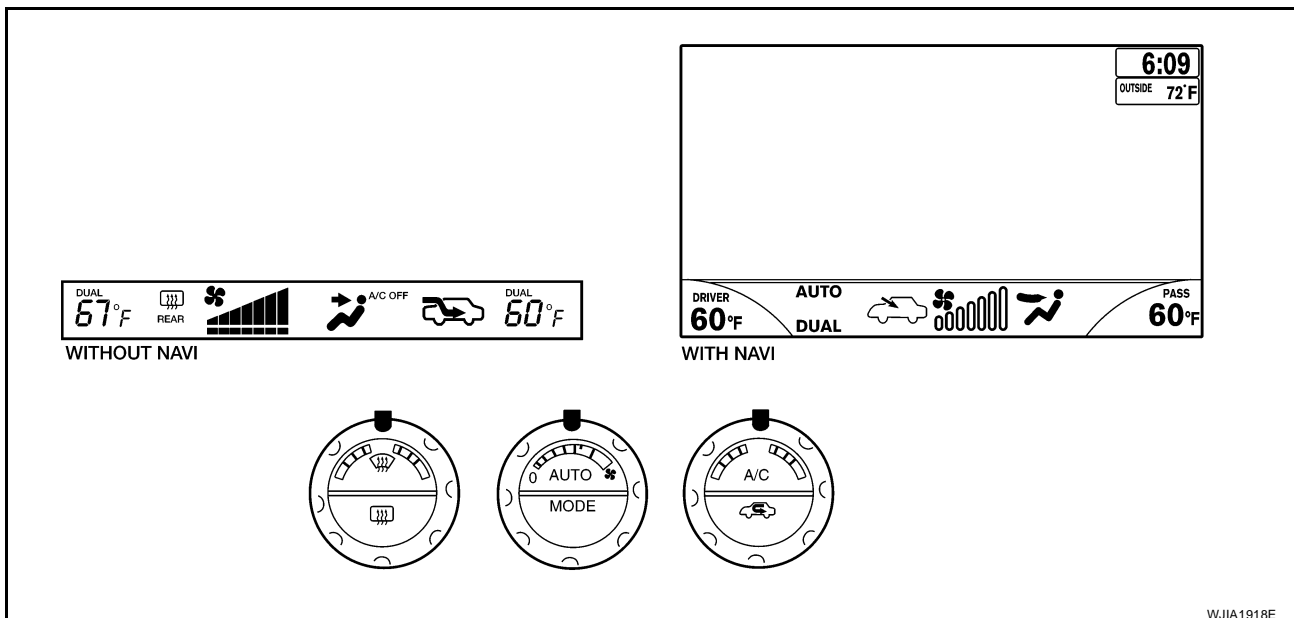


WJIA1917E

Control Operation

EJS004U7

Front air control



WJIA1918E

AIR CONDITIONER CONTROL

DISPLAY SCREEN

Displays the operational status of the system.

AUTO SWITCH

- The compressor, intake door, air mix doors, outlet doors and blower speed are automatically controlled so that the in-vehicle temperature will reach, and be maintained at the set temperature selected by the operator.
- When pressing AUTO switch, air inlet, air outlet, blower speed, and discharge air temperature are automatically controlled.

TEMPERATURE CONTROL DIAL (TEMPERATURE CONTROL) (DRIVER SIDE)

Increases or decreases the set temperature.

TEMPERATURE CONTROL DIAL (TEMPERATURE CONTROL) (PASSENGER SIDE)

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 position.

DEFROSTER () SWITCH

Positions the air outlet doors to the defrost position. Also positions the intake doors to the outside air position.

REAR WINDOW DEFOGGER SWITCH

When switch is ON, rear window and door mirrors are defogged.

OFF SWITCH

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

A/C SWITCH

The compressor is ON or OFF.

(Pressing the A/C switch when the AUTO switch is ON will turn off the A/C switch and compressor.)

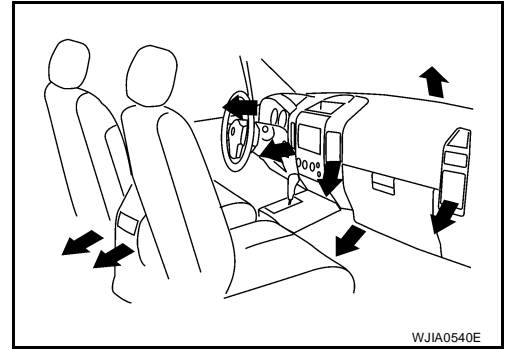
MODE SWITCH

Controls the air discharge outlets.

AIR CONDITIONER CONTROL

Discharge Air Flow FRONT

EJS004U8



Discharge air flow

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

(): Manually control

WJIA0528E

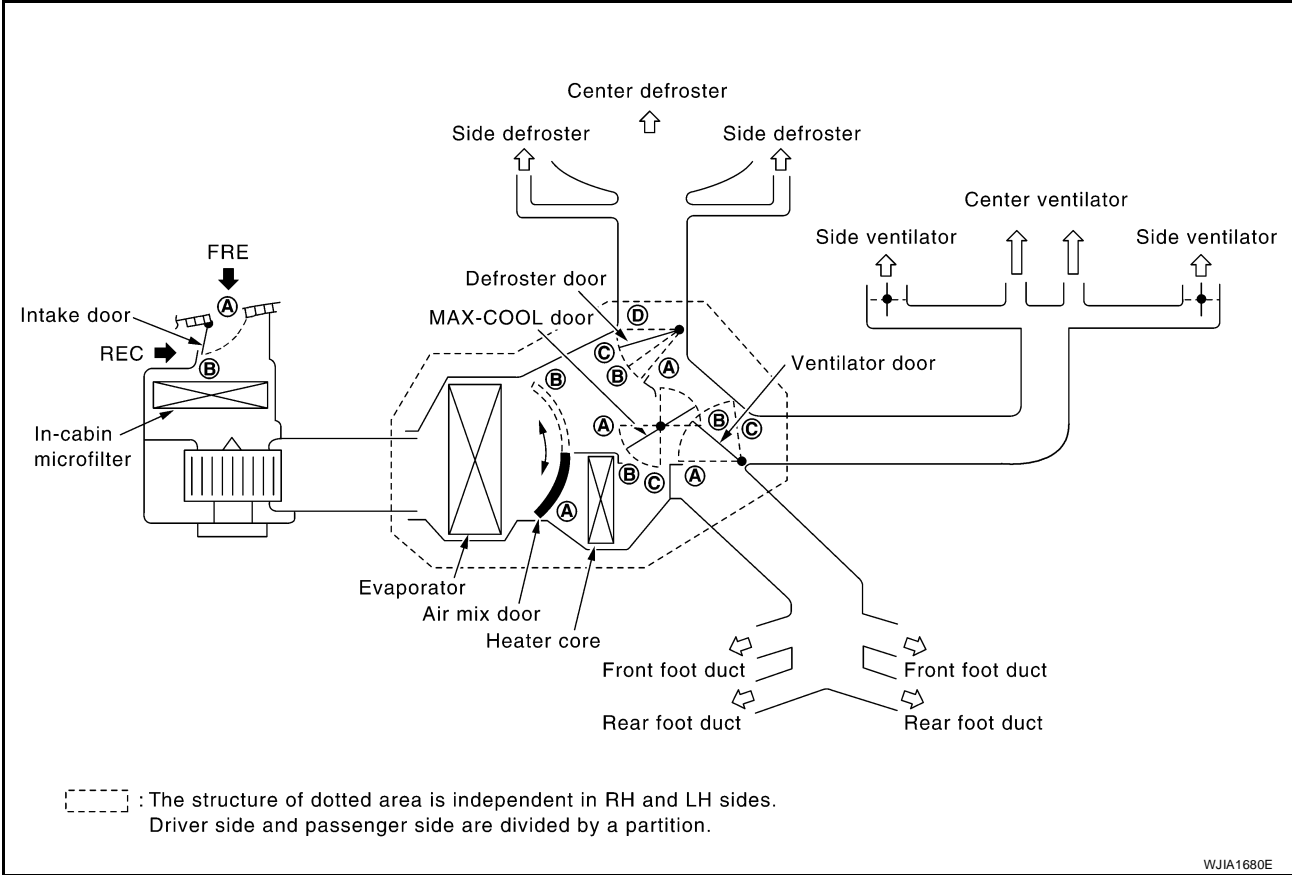
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AIR CONDITIONER CONTROL

EJS004U9

System Description SWITCHES AND THEIR CONTROL FUNCTION



Position or switch	MODE SW				DEF SW		REC SW		Temperature control dial			OFF SW
	VENT	B/L	FOOT	D/F	ON	OFF	ON	OFF				
					FRONT							
Ventilator door	(A)	(B)	(C)	(C)	(C)	—	—	—	—			(C)
MAX-COOL door	(A)	(B)	(B)	(B)	(C)	—	—	—	—			(B)
Defroster door	(D)	(D)	(D _{or} C)	(B)	(A)	—	—	—	—			(C)
Intake door	—				(B)	—	(A)	(B)	—			(B)
Air mix door	—				—	—	—		(A)	AUTO	(B)	—

WJIA1237E

AIR CONDITIONER CONTROL

CAN Communication System Description

EJS004UB

Refer to [LAN-25, "CAN COMMUNICATION"](#) .

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TROUBLE DIAGNOSIS

TROUBLE DIAGNOSIS

PF0:00004

CONSULT-II Function (HVAC)

EJS004UC

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

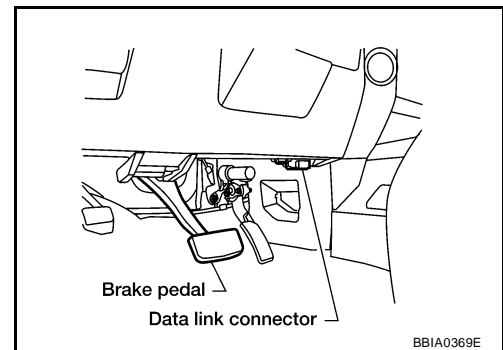
Diagnostic mode	Description
SELF-DIAG RESULTS	Displays front air control self-diagnosis results.
DATA MONITOR	Displays front air control input/output data in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ECU PART NUMBER	Front air control part number can be read.

CONSULT-II BASIC OPERATION

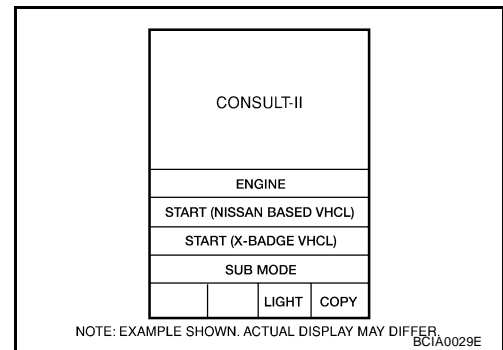
CAUTION:

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

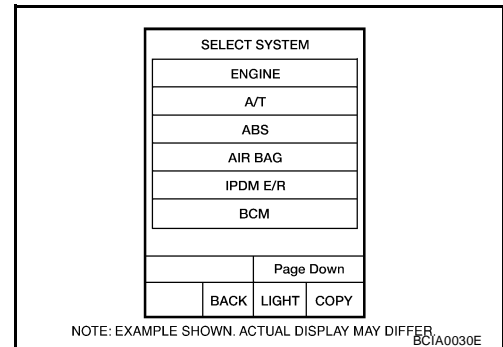
1. With the ignition switch OFF, connect CONSULT-II and "CONSULT-II CONVERTER" to the data link connector, and turn the ignition switch ON.



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



3. Touch "HVAC" on "SELECT SYSTEM" screen. If "HVAC" is not indicated, go to [GI-39, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

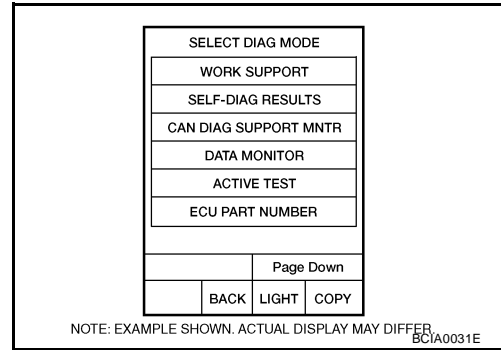


TROUBLE DIAGNOSIS

SELF-DIAGNOSIS

Operation Procedure

1. Touch "SELF-DIAG RESULTS" on "SELECT DIAG MODE" screen to view all set DTC's.



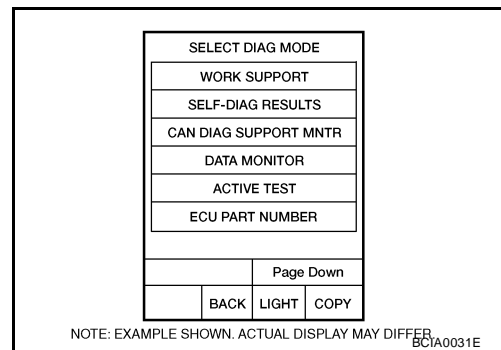
Display Item List

DTC	Description	Reference page
B2573	Battery voltage out of range	SC-4, "BATTERY"
B2578	In-vehicle sensor circuit out of range (low)	ATC-147, "In-vehicle Sensor Circuit"
B2579	In-vehicle sensor circuit out of range (high)	
B257B	Ambient sensor circuit short	ATC-143, "Ambient Sensor Circuit"
B257C	Ambient sensor circuit open	
B257F	Optical sensor (Driver) circuit open or short	ATC-152, "Optical Sensor Circuit"
B2580	Optical sensor (Passenger) circuit open or short	
B2581	Intake sensor circuit short	ATC-155, "Intake Sensor Circuit"
B2582	Intake sensor circuit open	
U1000	CAN bus fault	LAN-25, "CAN COMMUNICATION"
B2587	Stuck button	ATC-159, "REMOVAL"

DATA MONITOR

Operation Procedure

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



2. Touch either "MAIN SIGNALS" or "SELECTION FROM MENU" on "DATA MONITOR" screen.

MAIN SIGNALS	Monitors all the items.
SELECTION FROM MENU	Selects and monitors the individual item selected.

3. When "SELECTION FROM MENU" is selected, touch items to be monitored. When "MAIN SIGNALS" is selected, all the items will be monitored.
4. Touch "START".
5. Touch "RECORD" while monitoring, then the status of the monitored item can be recorded. To stop recording, touch "STOP".

TROUBLE DIAGNOSIS

Display Item List

Monitor item	Value	Contents
BATT VIA CAN	"V"	Displays battery voltage signal.
IGN VIA CAN	"ON/OFF"	Displays ignition switch signal.
DVR SUNLD SEN	"w/m2"	Displays optical sensor (driver) signal.
PAS SUNLD SEN	"w/m2"	Displays optical sensor (passenger) signal.
AMB TEMP SEN	"°C/°F"	Displays ambient sensor signal.
EVAP TEMP SEN	"°C/°F"	Displays intake sensor signal.
INCAR TMP SEN	"°C/°F"	Displays in-vehicle sensor signal.
RR TEMPSET FR	"V"	Displays air mix door (front) set point signal.
MODE FDBCK	"V"	Displays mode door motor feedback signal.
DVR MIX FDBCK	"V"	Displays air mix door motor (driver) feedback signal.
PAS MIX FDBCK	"V"	Displays air mix door motor (passenger) feedback signal.
DEF FDBCK	"V"	Displays defroster door motor feedback signal.
RECIRC	"ON/OFF"	Displays recirculation switch signal.
DEFROST	"ON/OFF"	Displays defroster switch signal.
AUTO	"ON/OFF"	Displays AUTO switch signal.
A/C	"ON/OFF"	Displays A/C switch signal.
MODE	"ON/OFF"	Displays MODE switch signal.
L TEMP UP	"ON/OFF"	Displays driver side temperature control dial (temp increase) signal.
L TEMP DOWN	"ON/OFF"	Displays driver side temperature control dial (temp decrease) signal.
RR DEFOG	"ON/OFF"	Displays rear defroster request signal.
FANUP	"ON/OFF"	Displays front blower motor (blower speed increase) signal.
FANDOWN	"ON/OFF"	Displays front blower motor (blower speed decrease) signal.
MODE SELECT	" [PNL]" " [MIX]" " [FLR]" " [DEFR]" " [MAX]" " [DENT]"	Displays mode door motor position.

*: DENT is displayed when MODE switch is between selections.

TROUBLE DIAGNOSIS

CONSULT-II Function (BCM)

EJS004UD

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

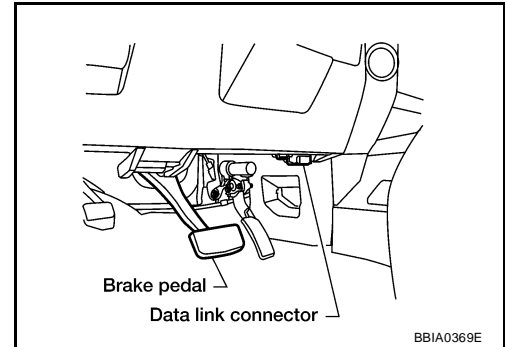
BCM diagnostic test item	Diagnostic mode	Description
Inspection by part	WORK SUPPORT	Supports inspections and adjustments. Commands are transmitted to the BCM for setting the status suitable for required operation, input/output signals are received from the BCM and received data is displayed.
	DATA MONITOR	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

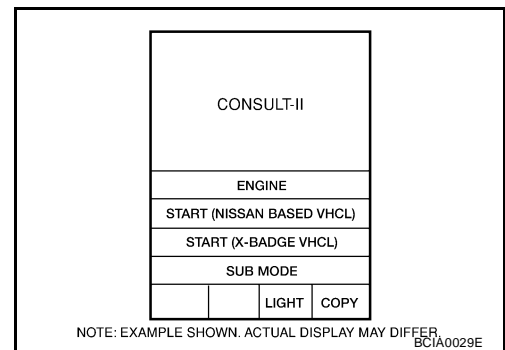
CAUTION:

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

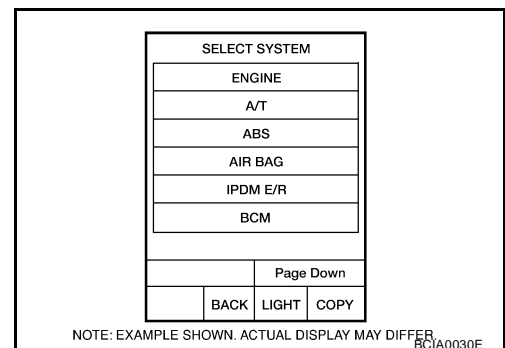
1. With the ignition switch OFF, connect CONSULT-II and "CONSULT-II CONVERTER" to the data link connector, and turn the ignition switch ON.



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



3. Touch "BCM" on "SELECT SYSTEM" screen. If "BCM" is not indicated, go to [GI-39, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

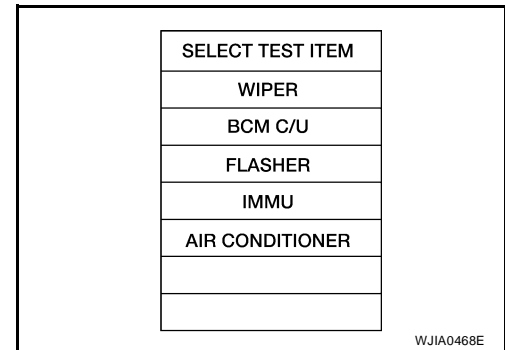


TROUBLE DIAGNOSIS

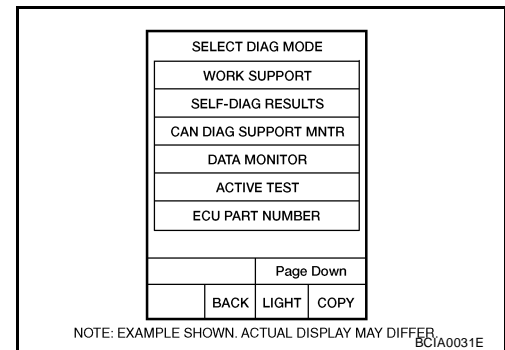
DATA MONITOR

Operation Procedure

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



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



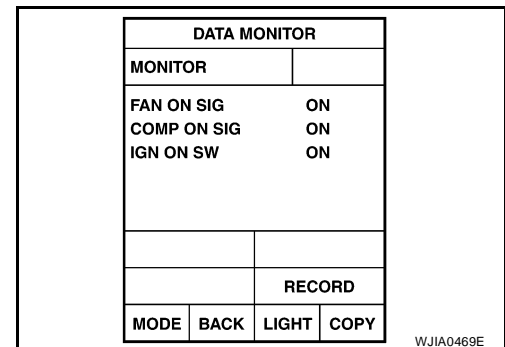
3. Touch either "ALL SIGNALS" or "SELECTION FROM MENU" on "DATA MONITOR" screen.

ALL SIGNALS	Monitors all the items.
SELECTION FROM MENU	Selects and monitors the individual item selected.

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

5. Touch "START".

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



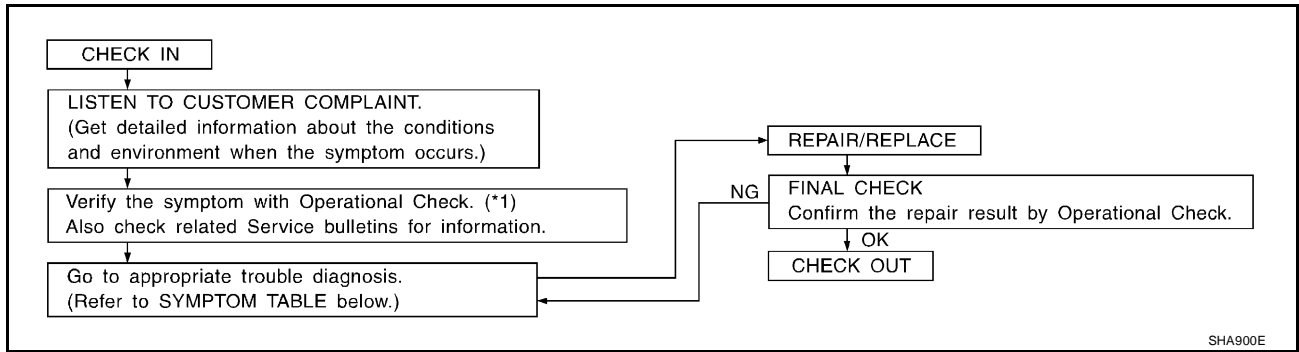
Display Item List

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

TROUBLE DIAGNOSIS

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

EJS004UE



*1 [ATC-62, "Operational Check"](#)

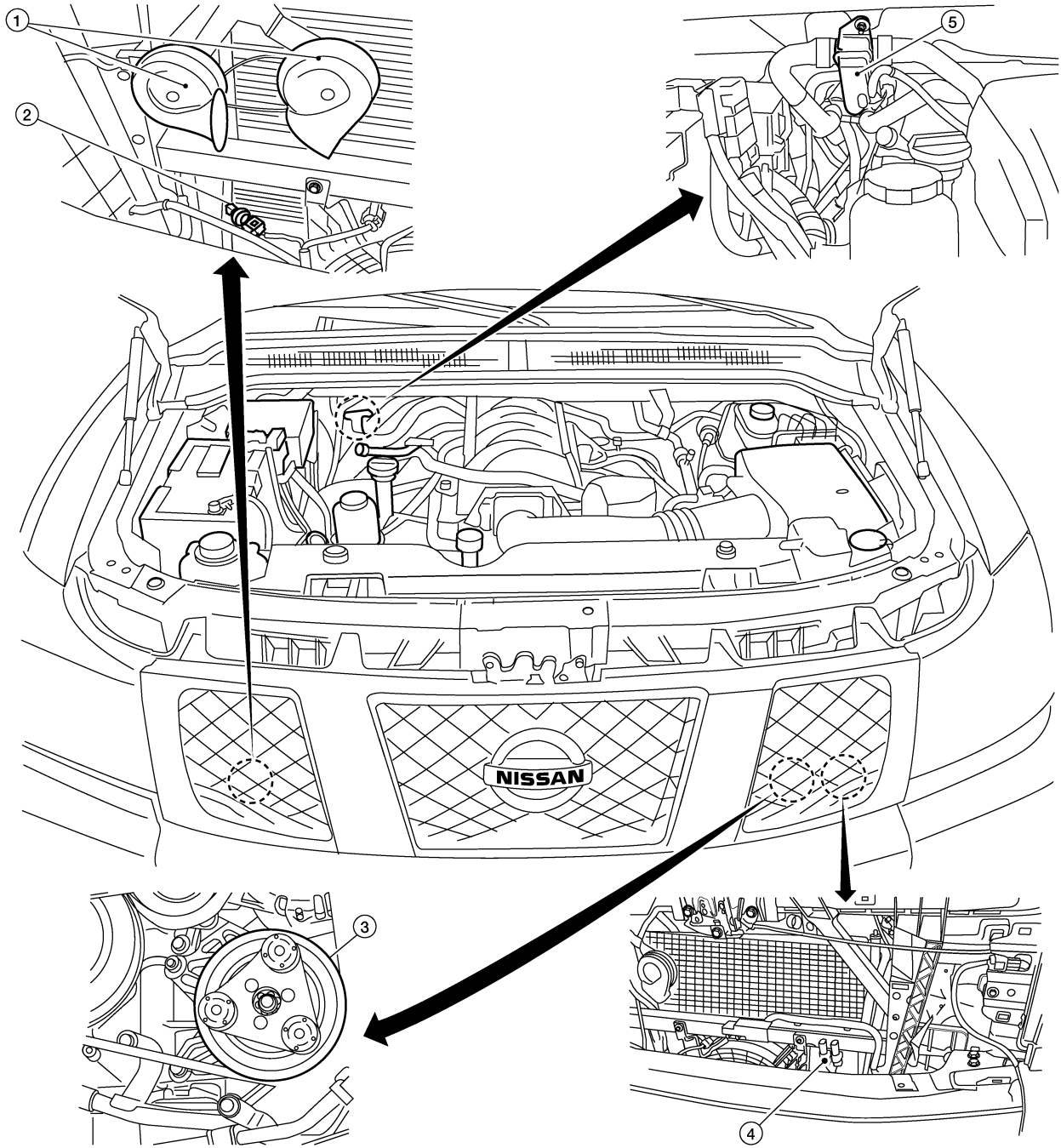
SYMPTOM TABLE

Symptom	Reference Page	
A/C system does not come on.	Go to Trouble Diagnosis Procedure for A/C System.	ATC-64
A/C system display is malfunctioning (with navi).	Go to Navigation System.	AV-89
A/C system display is malfunctioning (without navi).	Go to Control Unit.	ATC-159
A/C system cannot be controlled.	Go to Self-diagnosis Function.	ATC-60
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor.	ATC-68
Mode door motor is malfunctioning.		
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor.	ATC-77
Air mix door motor is malfunctioning.		
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor.	ATC-94
Intake door motor is malfunctioning.		
Defroster door motor is malfunctioning.	Go to Trouble Diagnosis Procedure for Defroster Door Motor.	ATC-99
Front blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Front Blower Motor.	ATC-108
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	ATC-120
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	ATC-129
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	ATC-136
Noise	Go to Trouble Diagnosis Procedure for Noise.	ATC-137
Self-diagnosis cannot be performed.	Go to Trouble Diagnosis Procedure for Self-diagnosis.	ATC-138
Memory function does not operate.	Go to Trouble Diagnosis Procedure for Memory Function.	ATC-139

TROUBLE DIAGNOSIS

Component Parts and Harness Connector Location ENGINE COMPARTMENT

EJS004UF

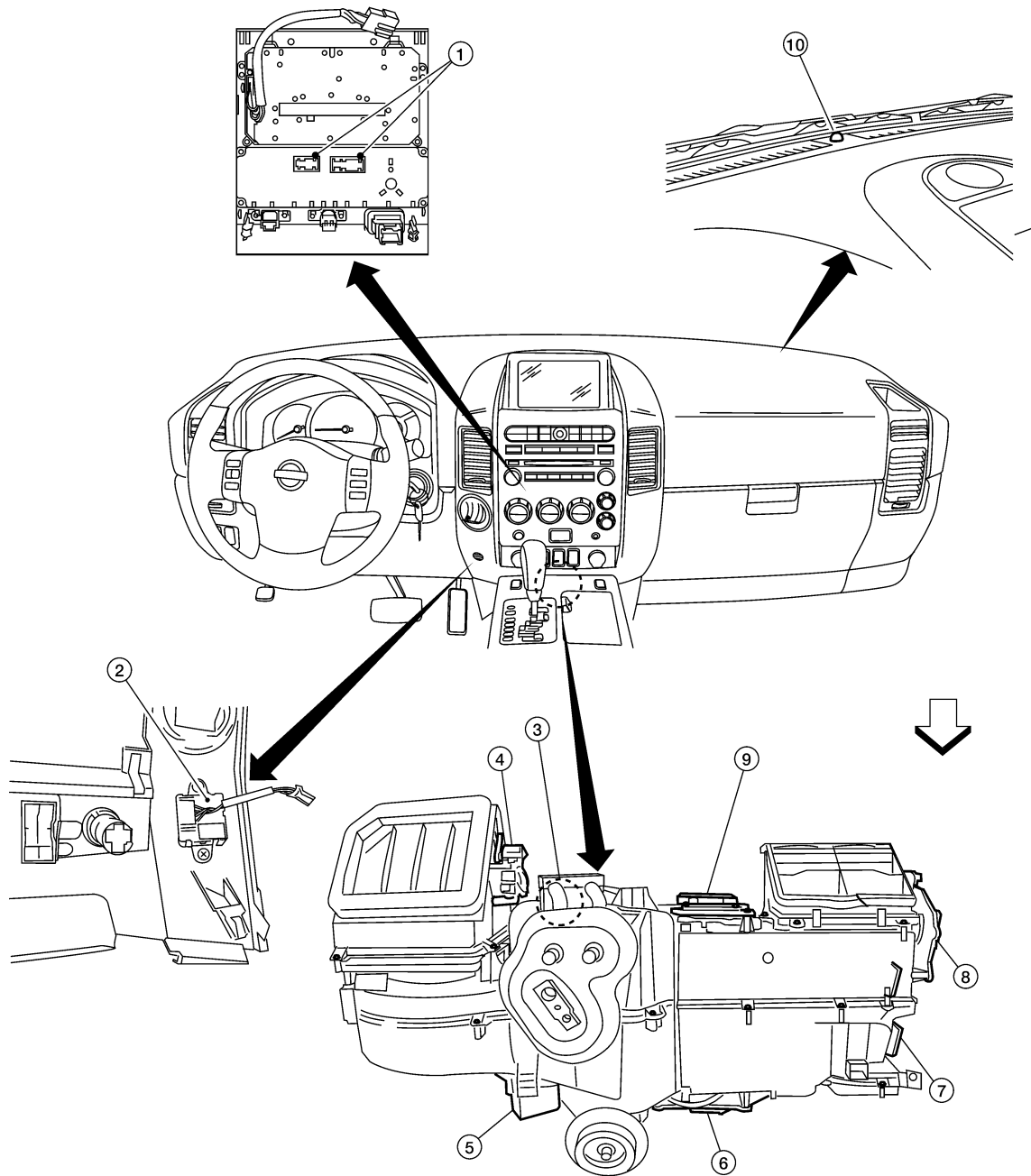


WJIA1883E

- | | | | | | |
|---|---------------------------------|---|--|---|-------------------|
| 1 | Horn (view with grille removed) | 2 | Refrigerant pressure sensor E111
(view with grille removed) | 3 | A/C Compressor F3 |
| 4 | Ambient sensor E1 | 5 | Water valve F68 | | |

TROUBLE DIAGNOSIS

PASSENGER COMPARTMENT



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⇐: Front

- 1 Front air control M49, M50
- 4 Intake door motor M58
- 7 Mode door motor M142
- 10 Optical sensor M402

- 2 In-vehicle sensor M32
- 5 Variable blower control M122
- 8 Defroster door motor M144

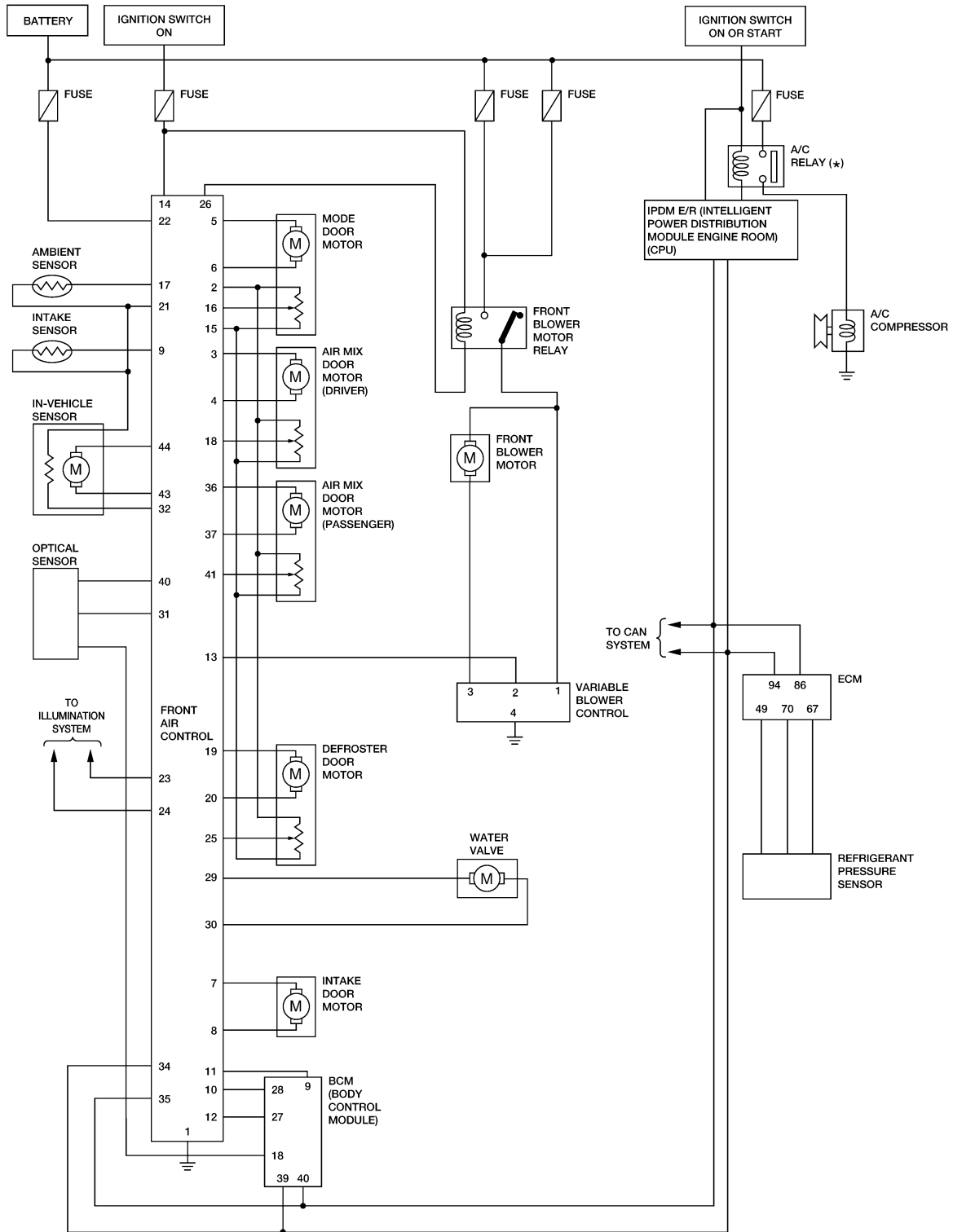
- 3 Intake sensor M146
- 6 Air mix door motor (driver) M143
- 9 Air mix door motor (passenger) M147

WJIA1948E

TROUBLE DIAGNOSIS

Schematic WITH NAVI

EJS004UG

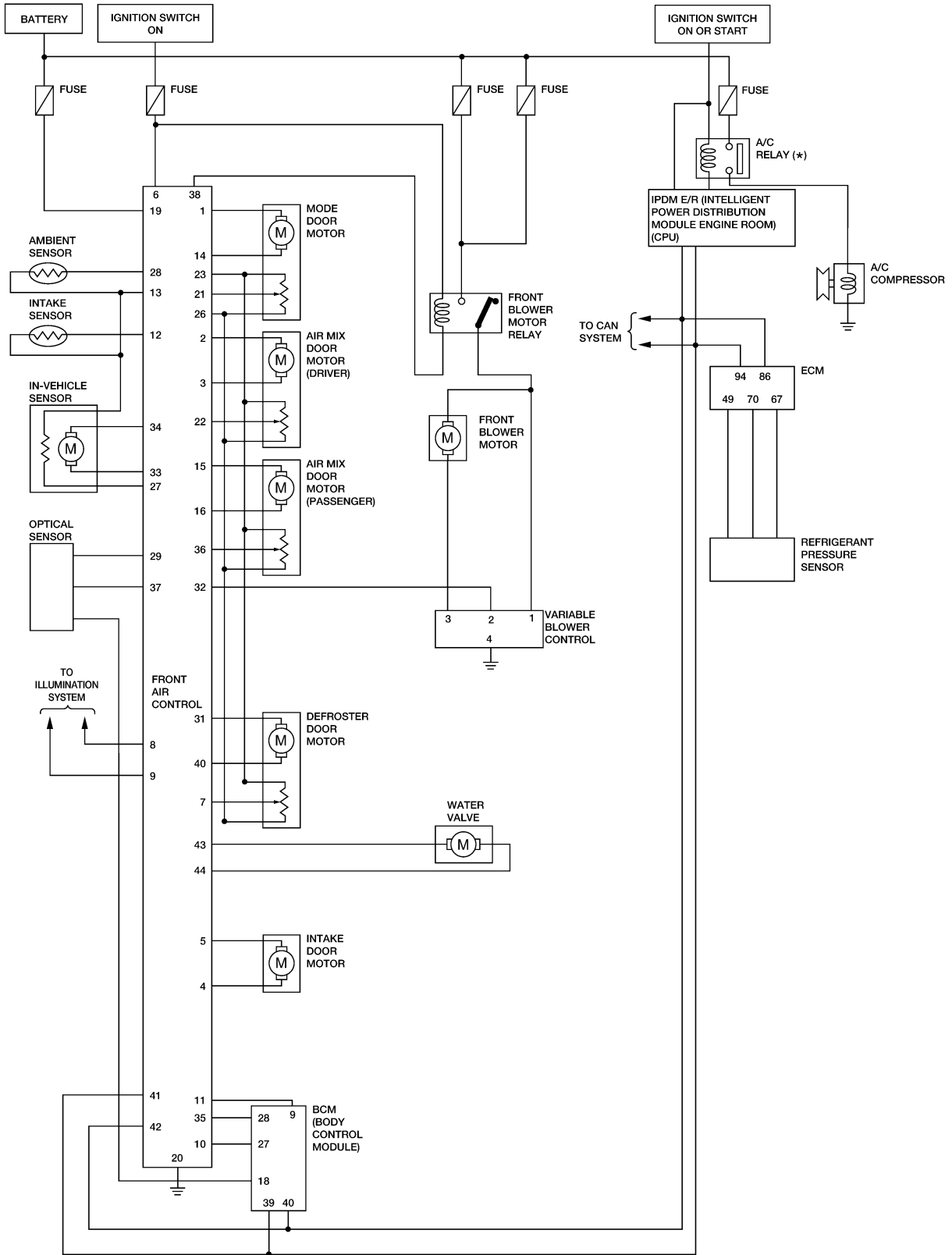


* : THIS RELAY IS BUILT INTO THE IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM).

WJWA0340E

TROUBLE DIAGNOSIS

WITHOUT NAVI



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

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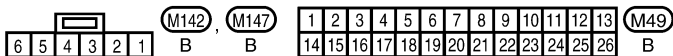
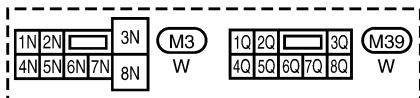
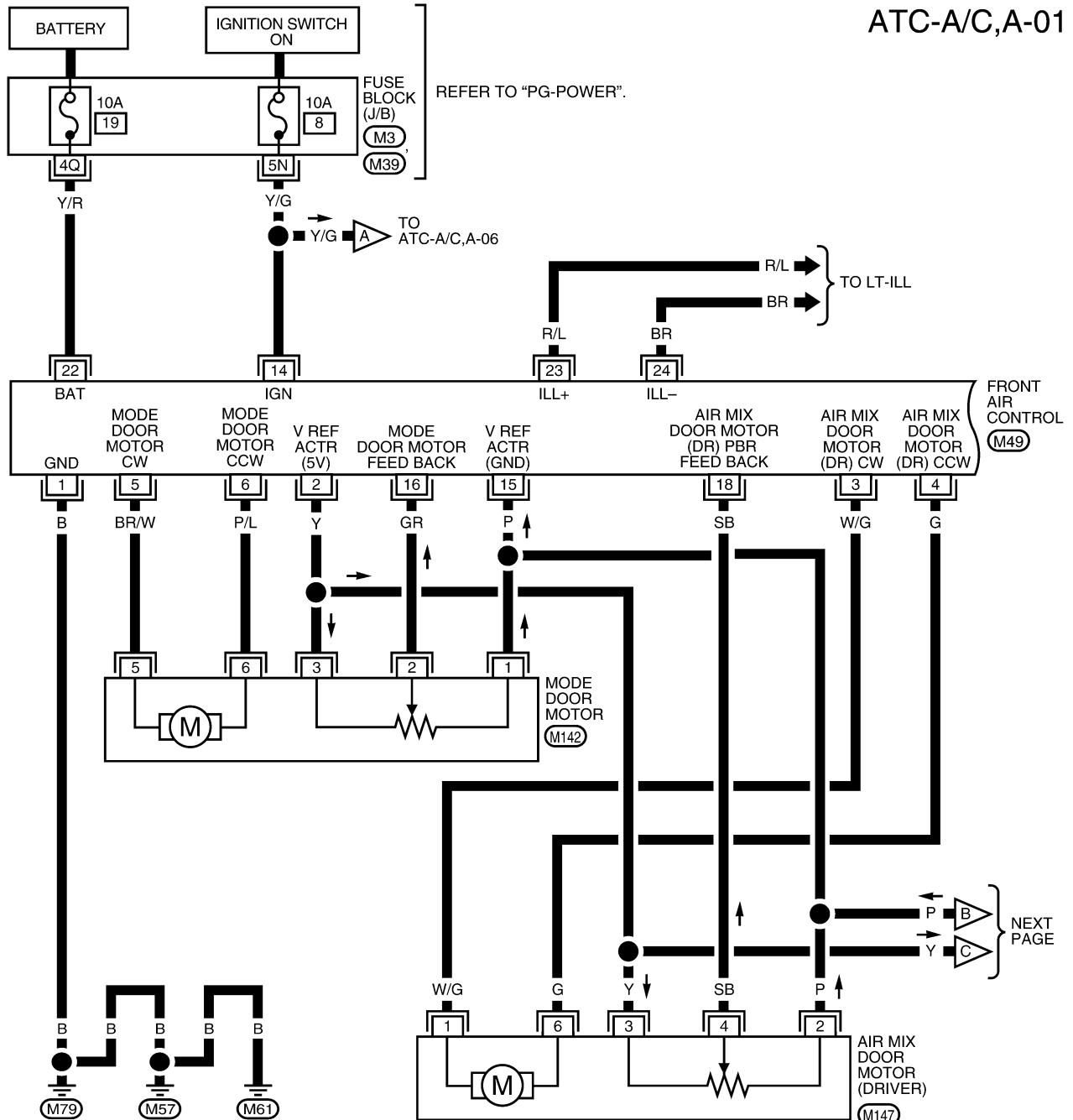
WJWA0349E

TROUBLE DIAGNOSIS

Wiring Diagram — A/C,A — WITH NAVI

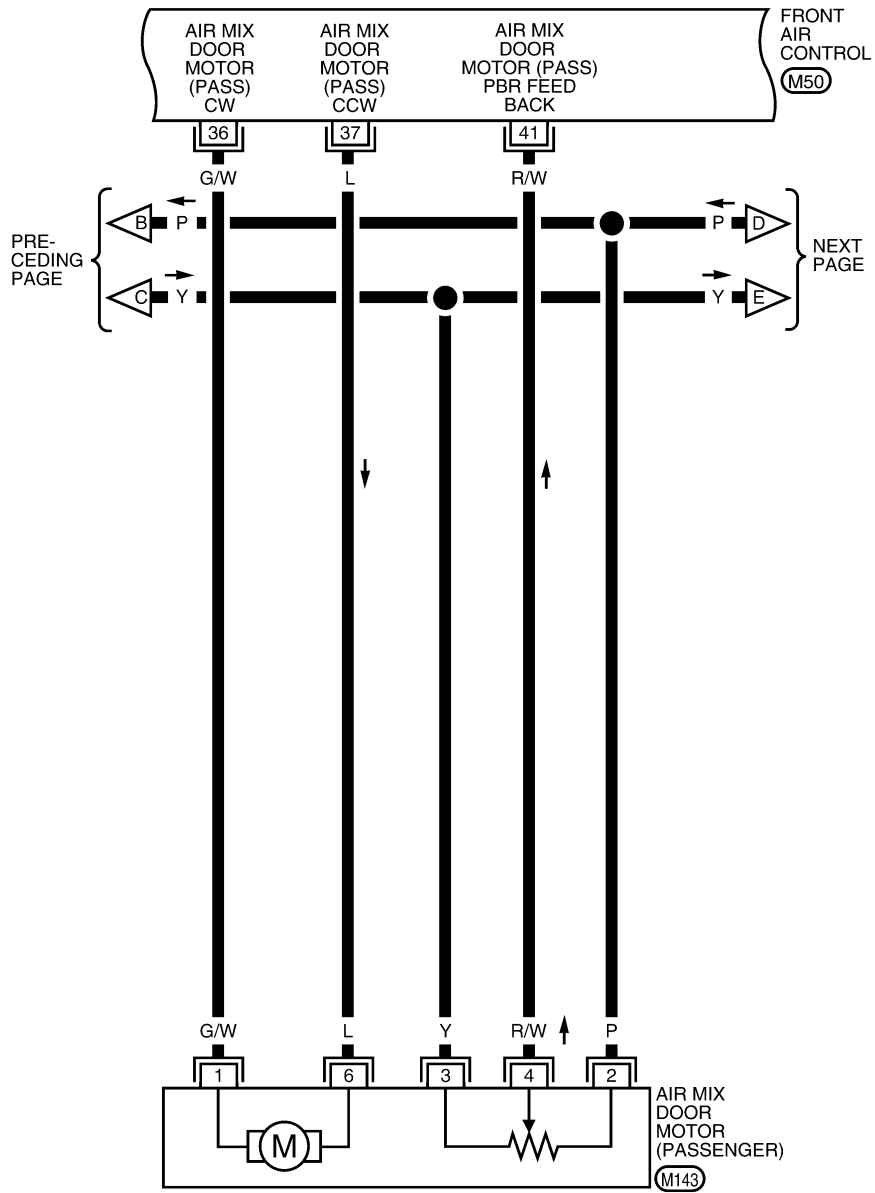
EJS004UH

ATC-A/C,A-01



TROUBLE DIAGNOSIS

ATC-A/C,A-02

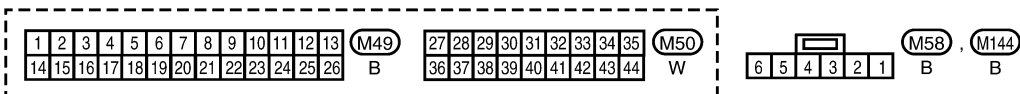
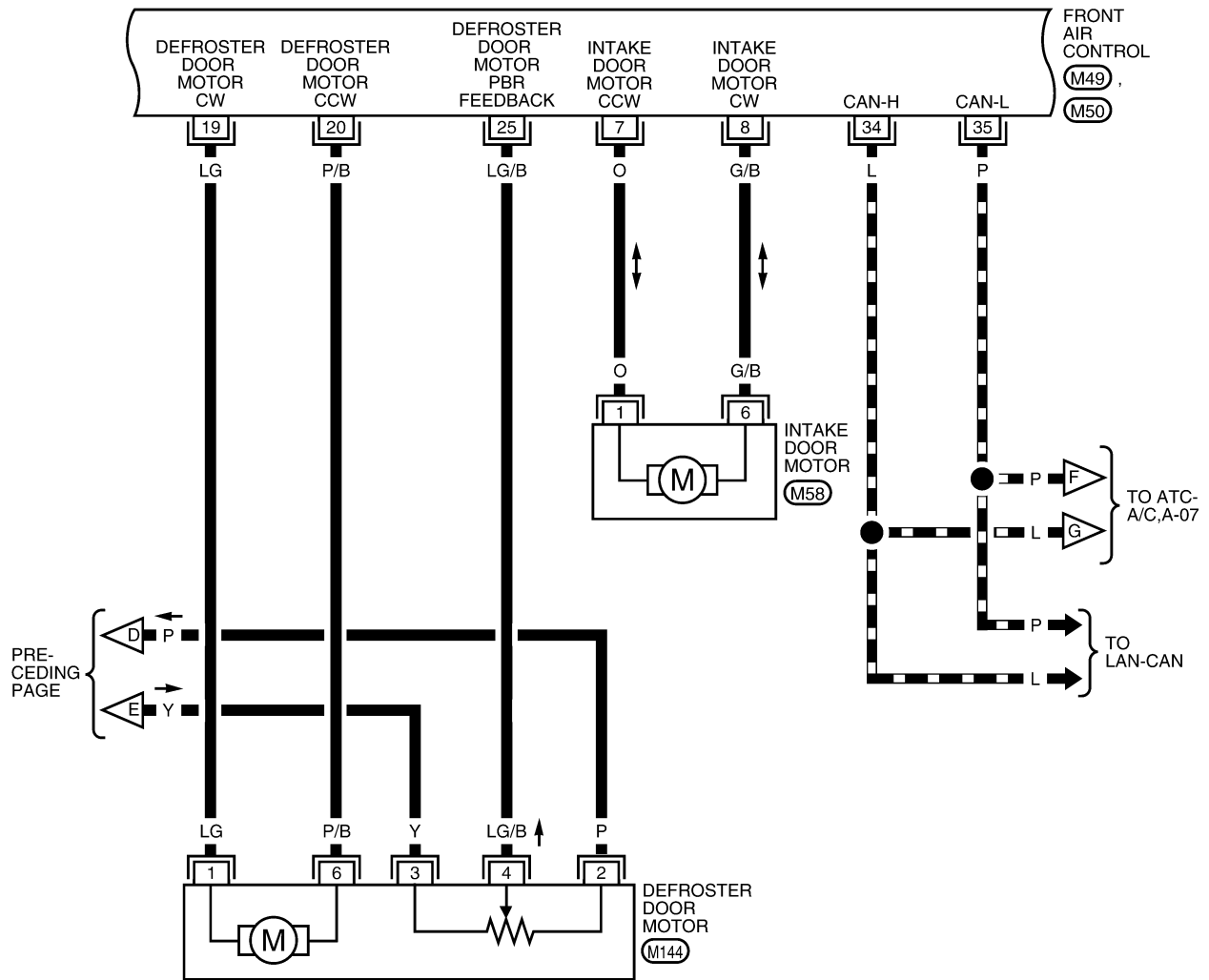


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TROUBLE DIAGNOSIS

ATC-A/C,A-03

▬ : DATA LINE

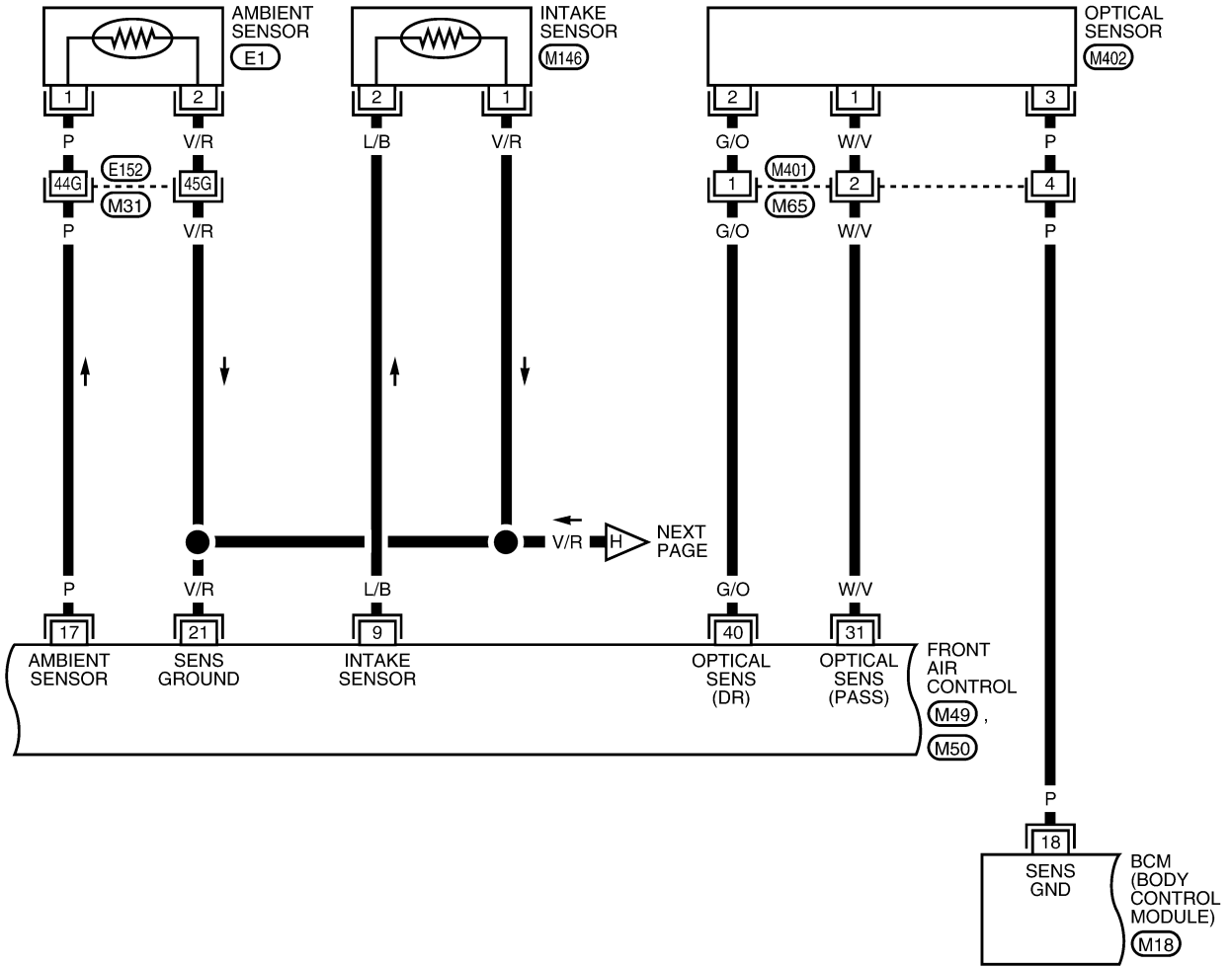


WJWA0343E

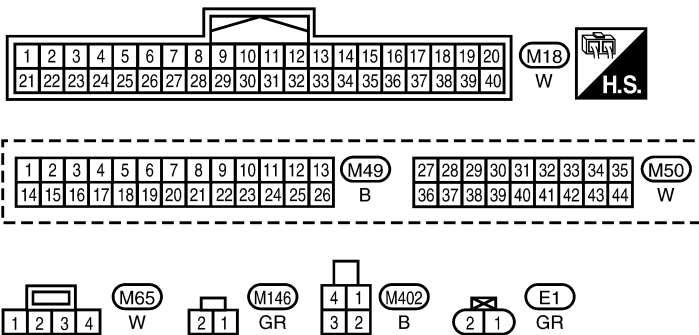
TROUBLE DIAGNOSIS

ATC-A/C,A-04

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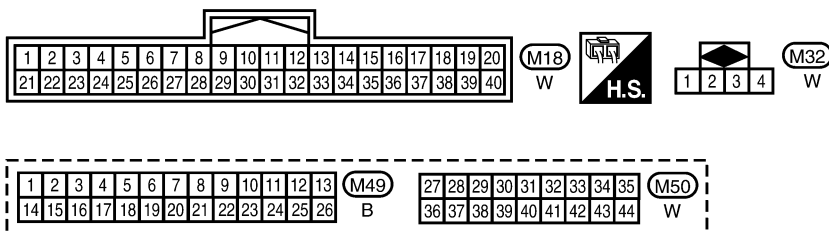
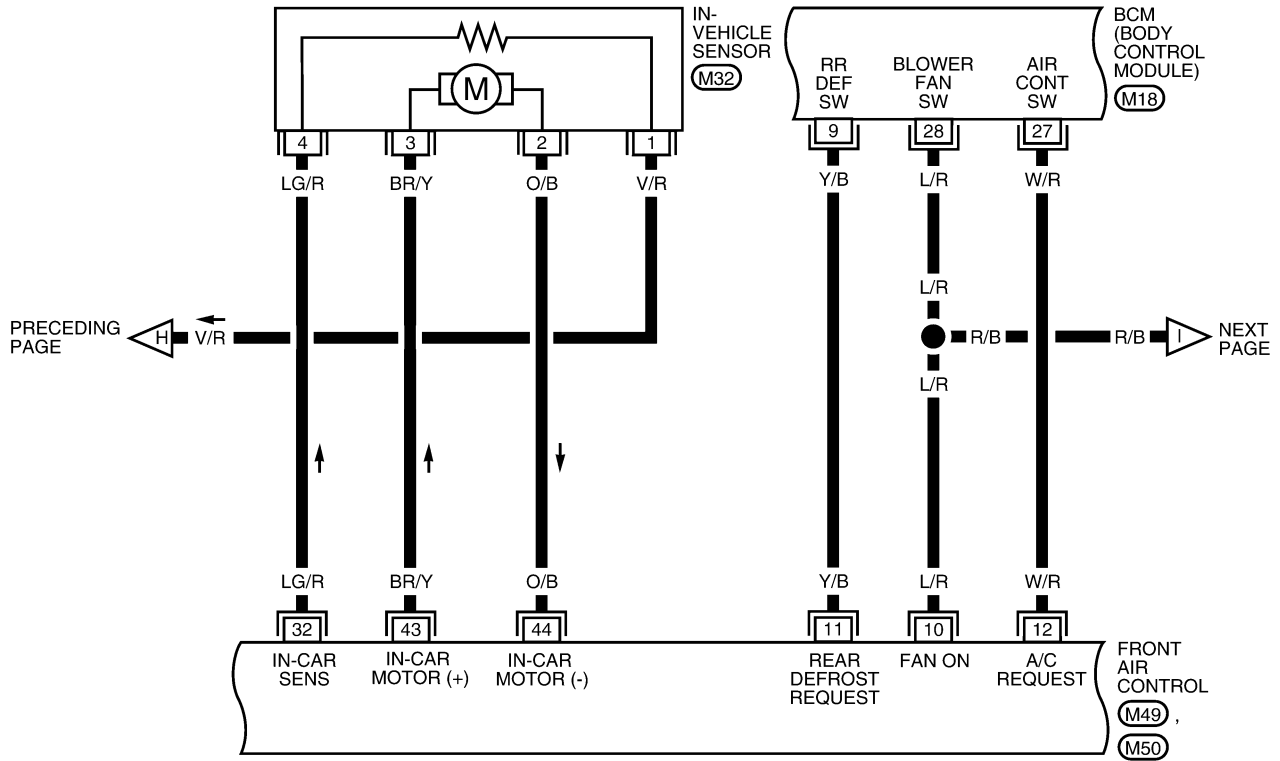


REFER TO THE FOLLOWING.
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

WJWA0344E

TROUBLE DIAGNOSIS

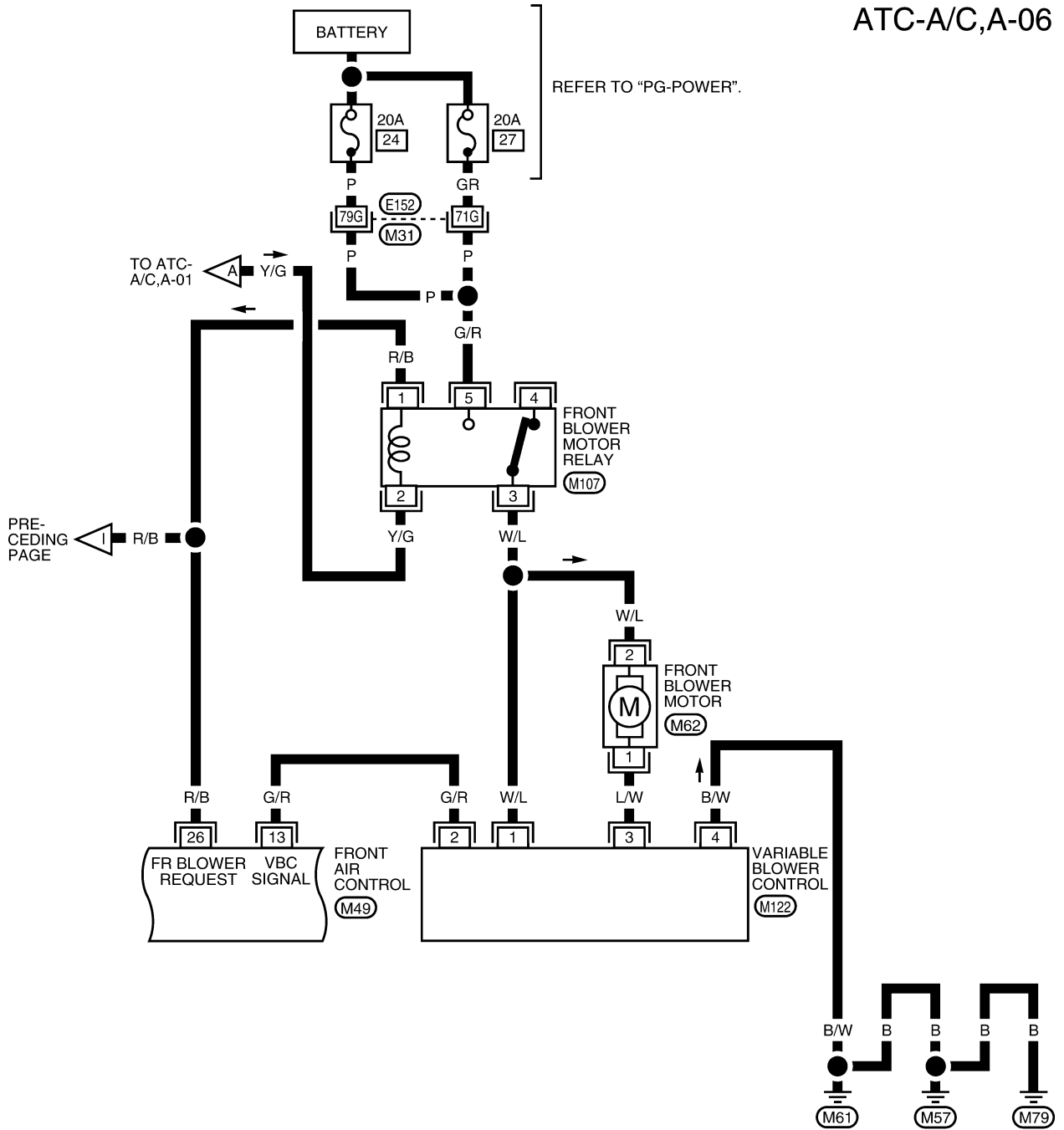
ATC-A/C,A-05



WJWA0345E

TROUBLE DIAGNOSIS

ATC-A/C,A-06



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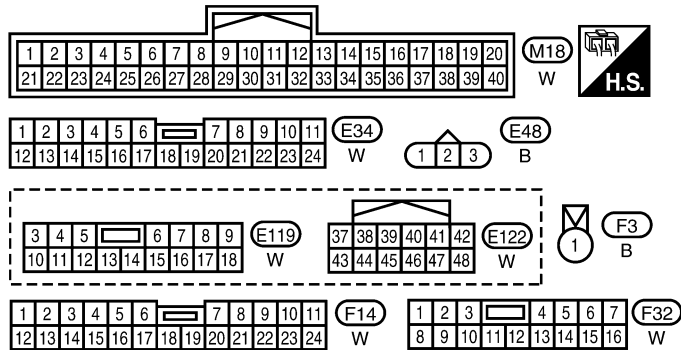
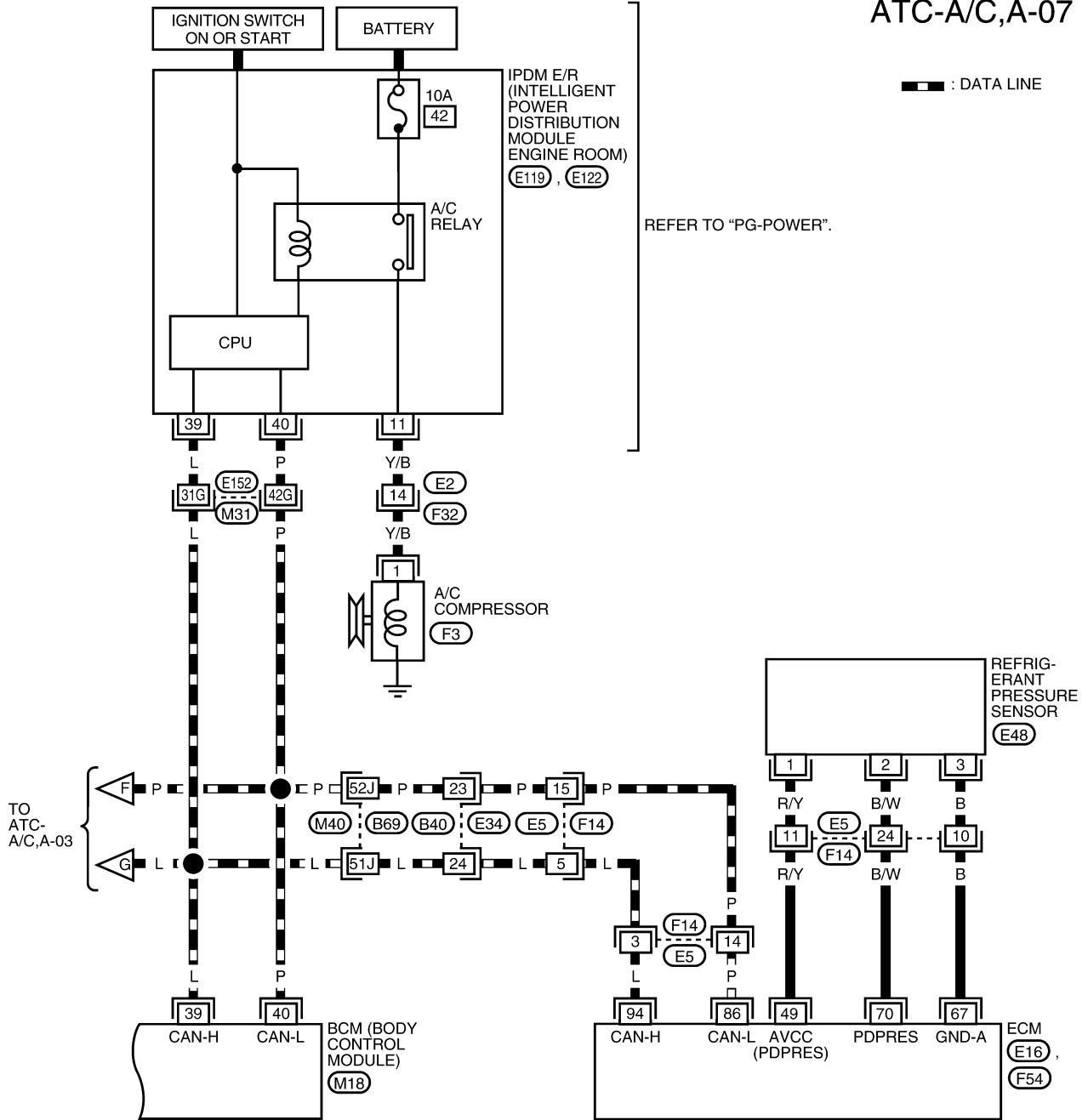


REFER TO THE FOLLOWING.
(M31) - SUPER MULTIPLE JUNCTION (SMJ)

WJWA0346E

TROUBLE DIAGNOSIS

ATC-A/C,A-07



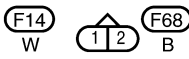
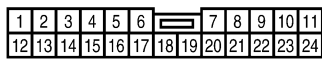
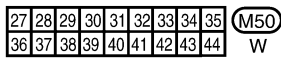
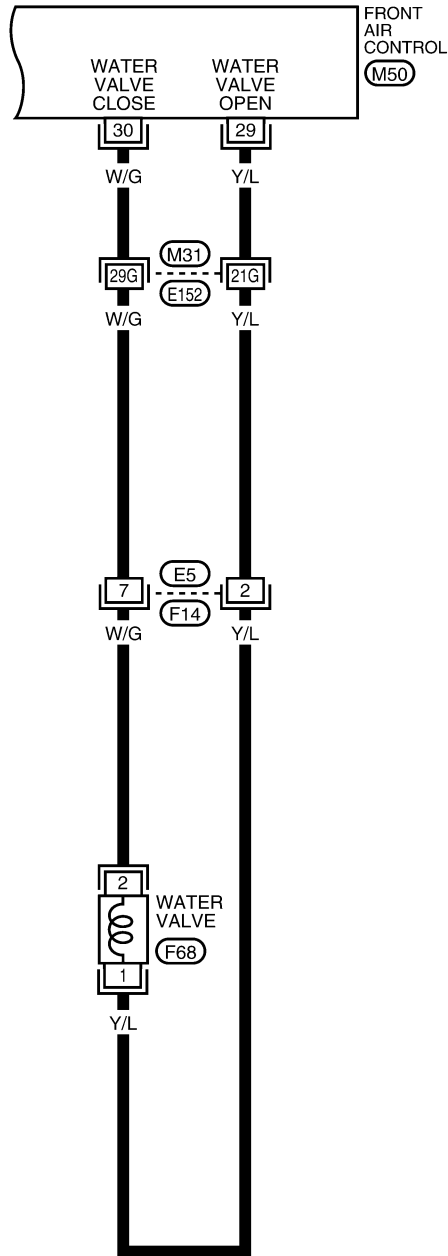
REFER TO THE FOLLOWING.
 (E16), (F54) - ELECTRICAL UNITS
 (M31), (M40) - SUPER MULTIPLE JUNCTION (SMJ)

WJWA0347E

TROUBLE DIAGNOSIS

ATC-A/C,A-08

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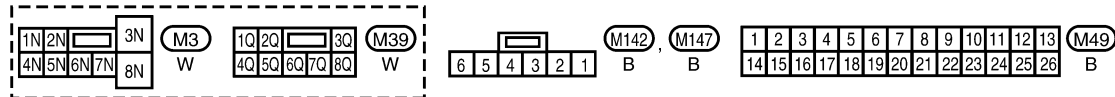
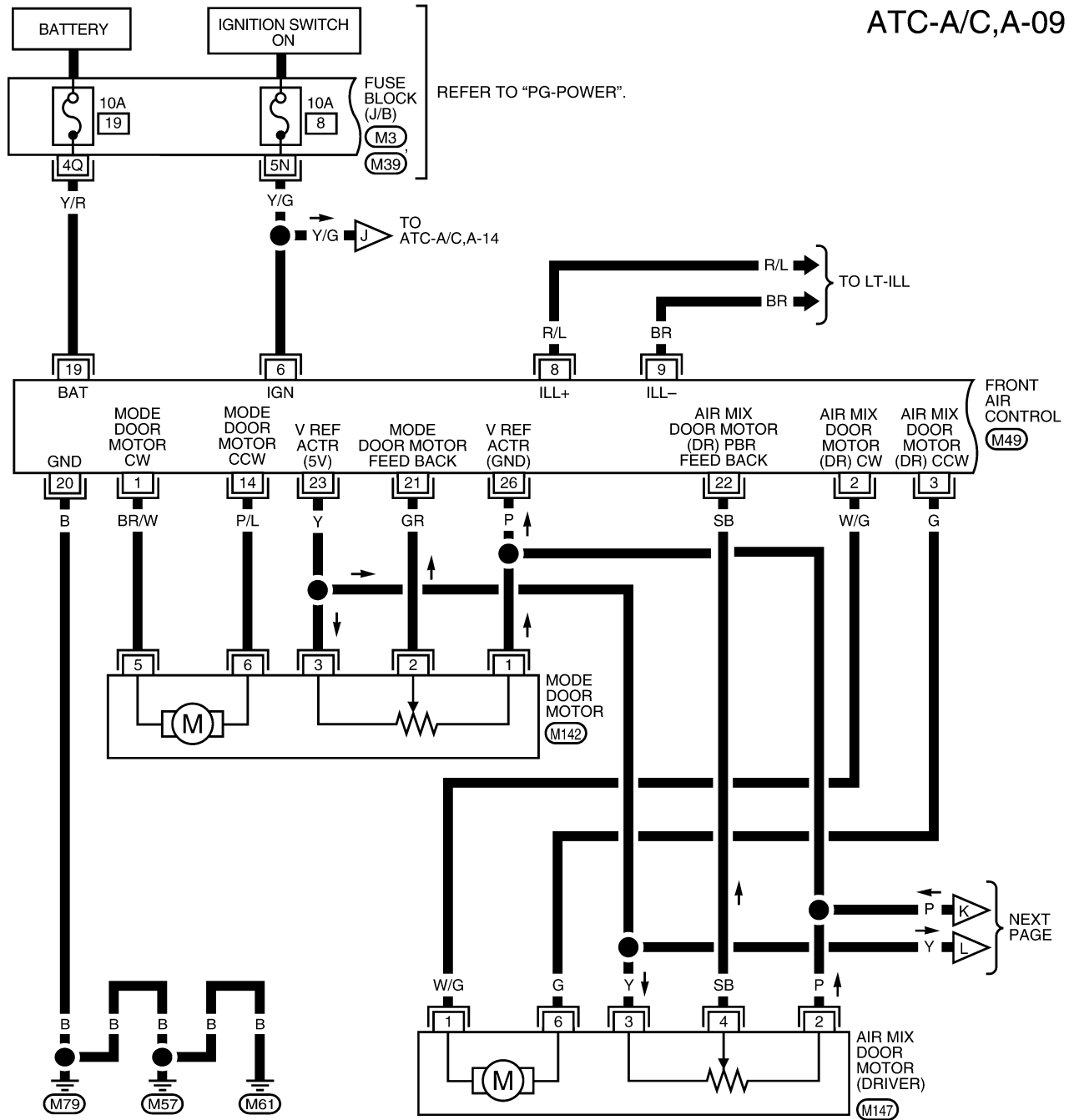
REFER TO THE FOLLOWING.
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

WJWA0348E

TROUBLE DIAGNOSIS

WITHOUT NAVI

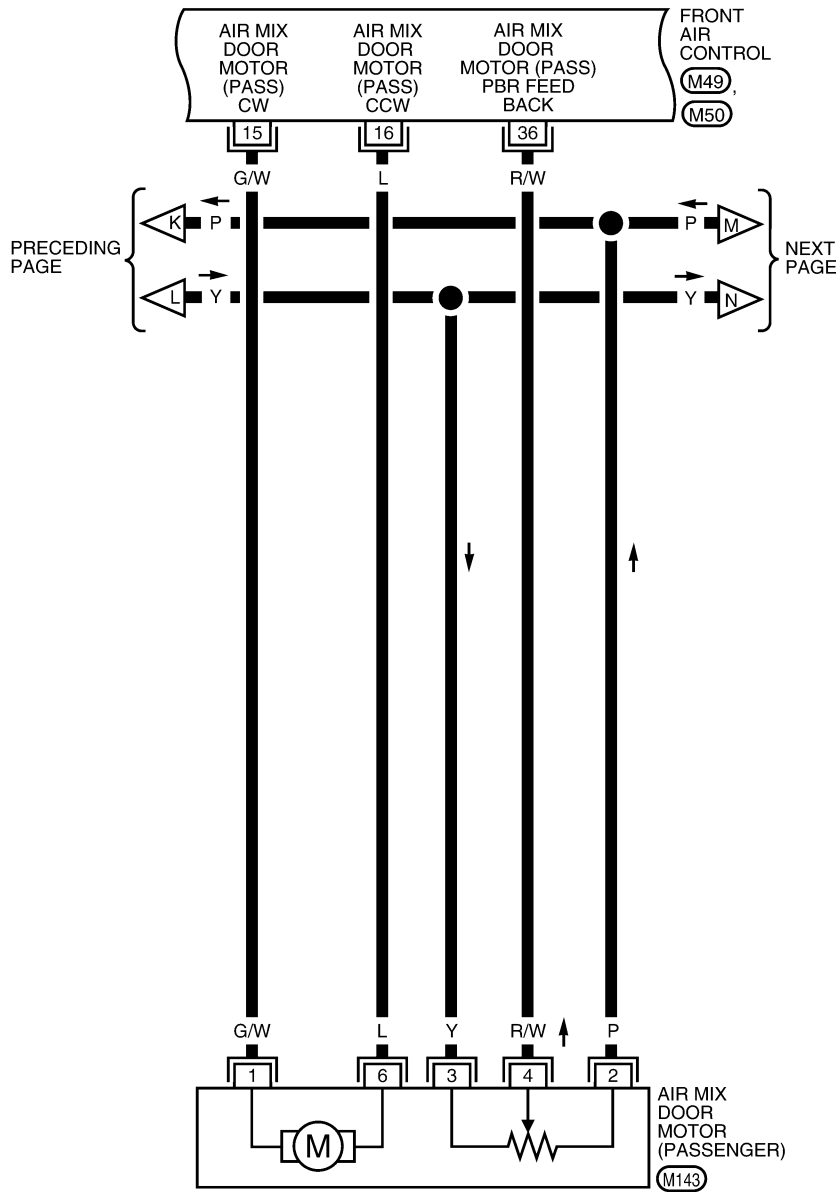
ATC-A/C,A-09



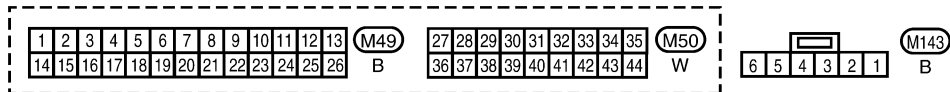
WJWA0350E

TROUBLE DIAGNOSIS

ATC-A/C,A-10



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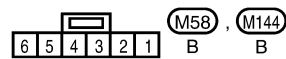
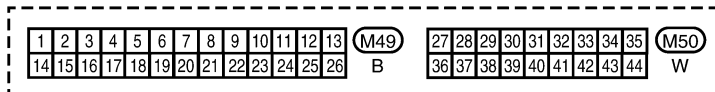
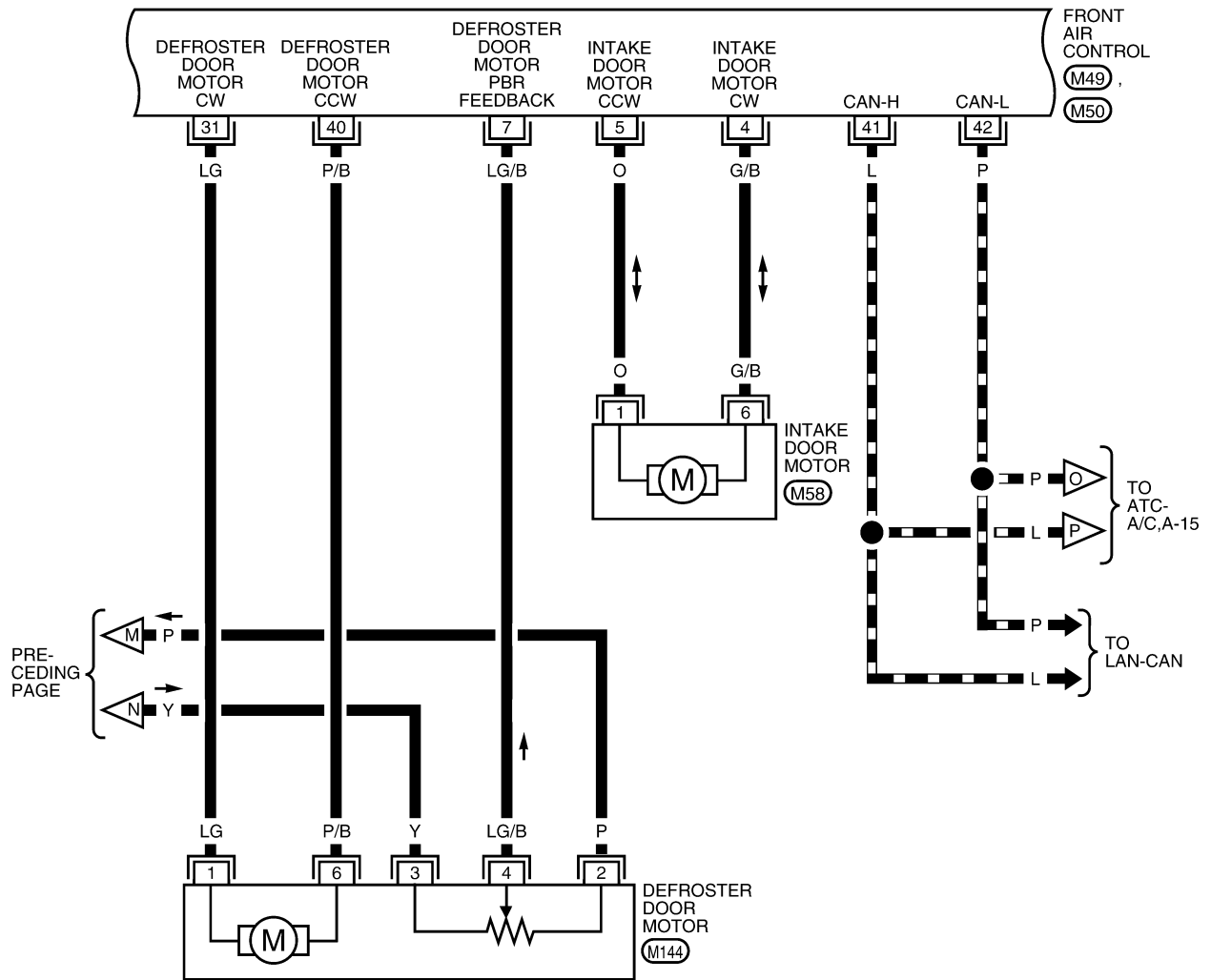


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TROUBLE DIAGNOSIS

ATC-A/C,A-11

▬ : DATA LINE

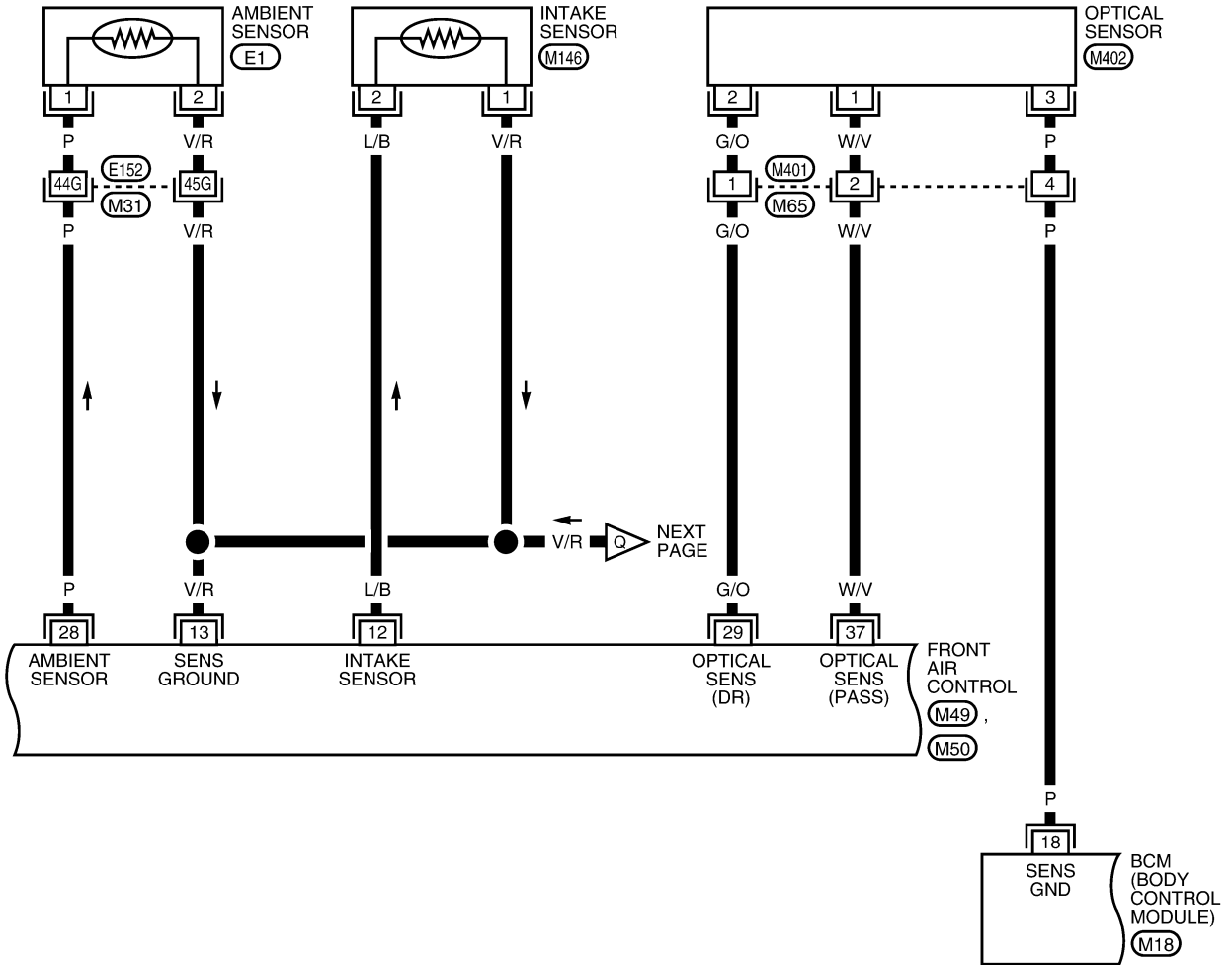


WJWA0352E

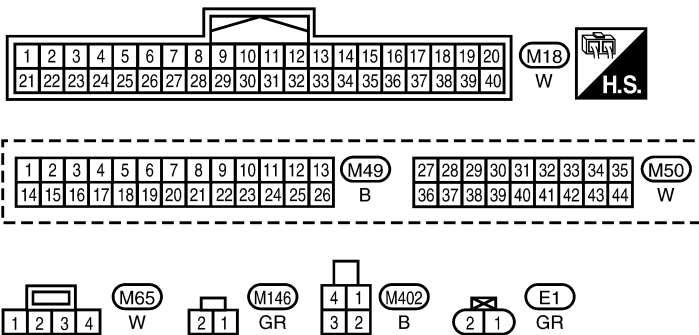
TROUBLE DIAGNOSIS

ATC-A/C,A-12

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ATC

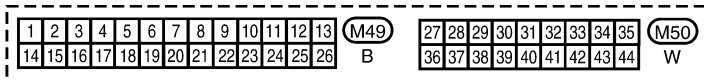
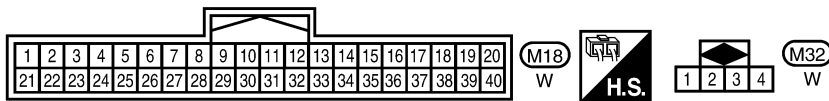
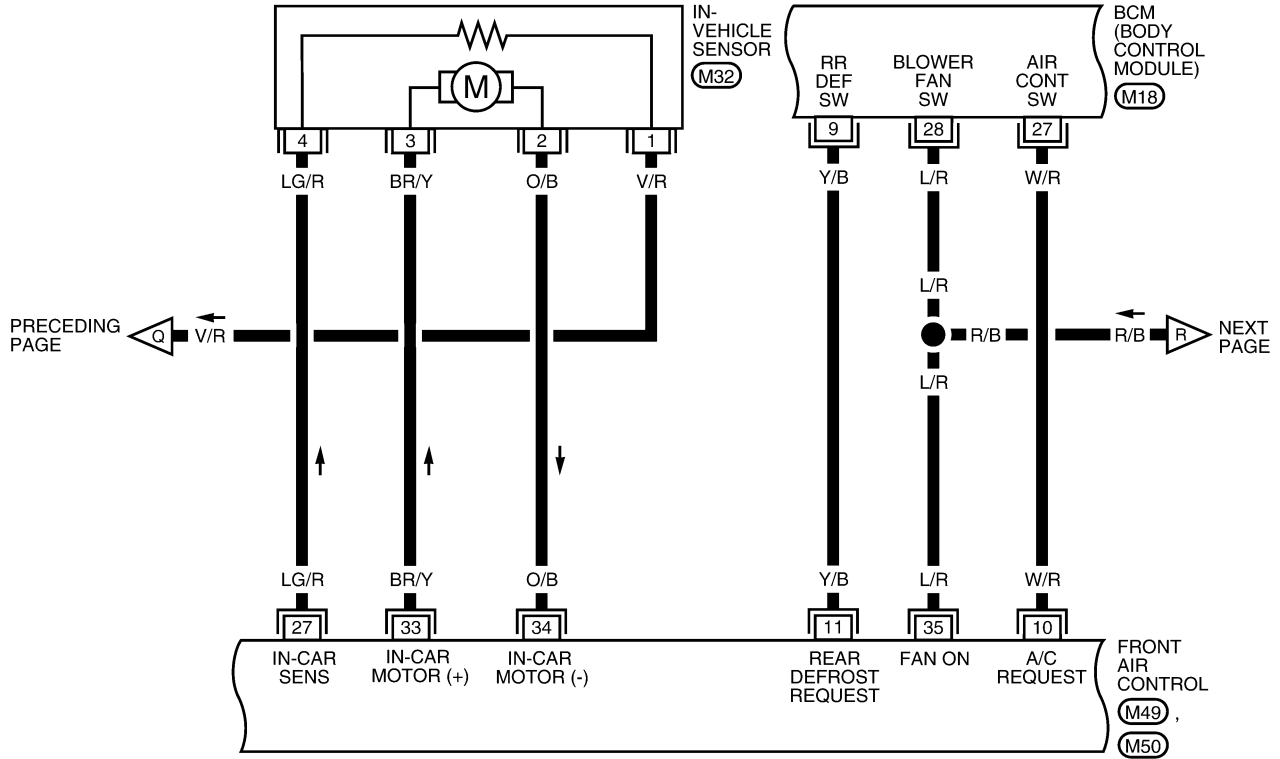


REFER TO THE FOLLOWING.
(M31) - SUPER MULTIPLE JUNCTION (SMJ)

WJWA0353E

TROUBLE DIAGNOSIS

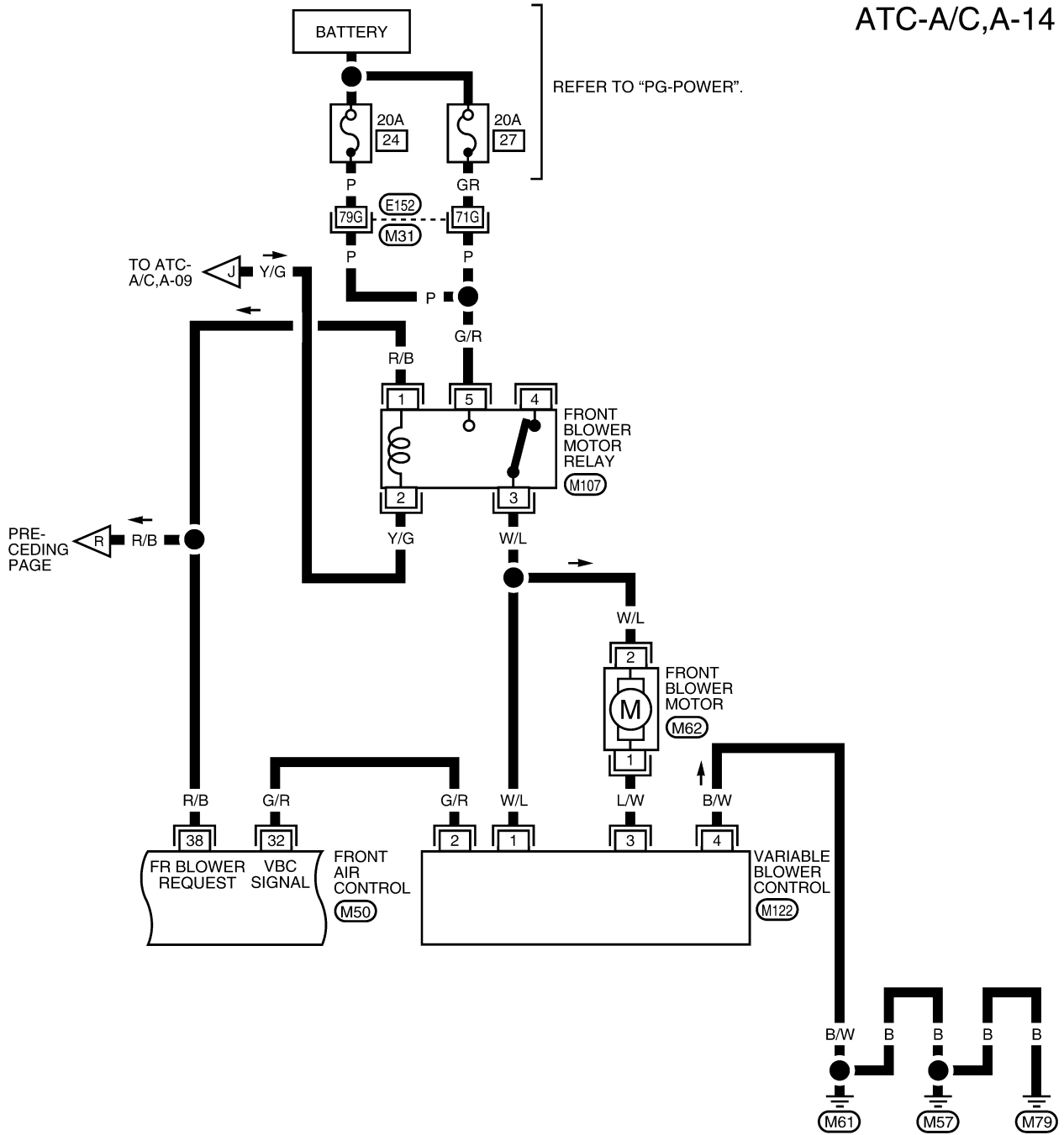
ATC-A/C,A-13



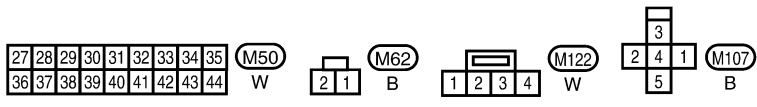
WJWA0354E

TROUBLE DIAGNOSIS

ATC-A/C,A-14



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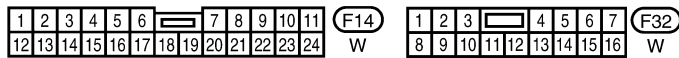
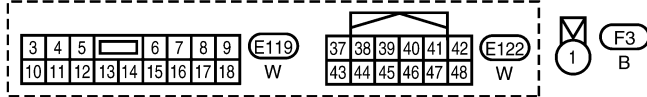
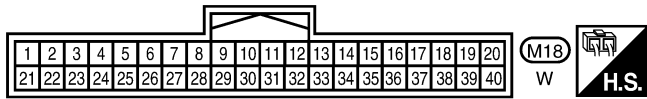
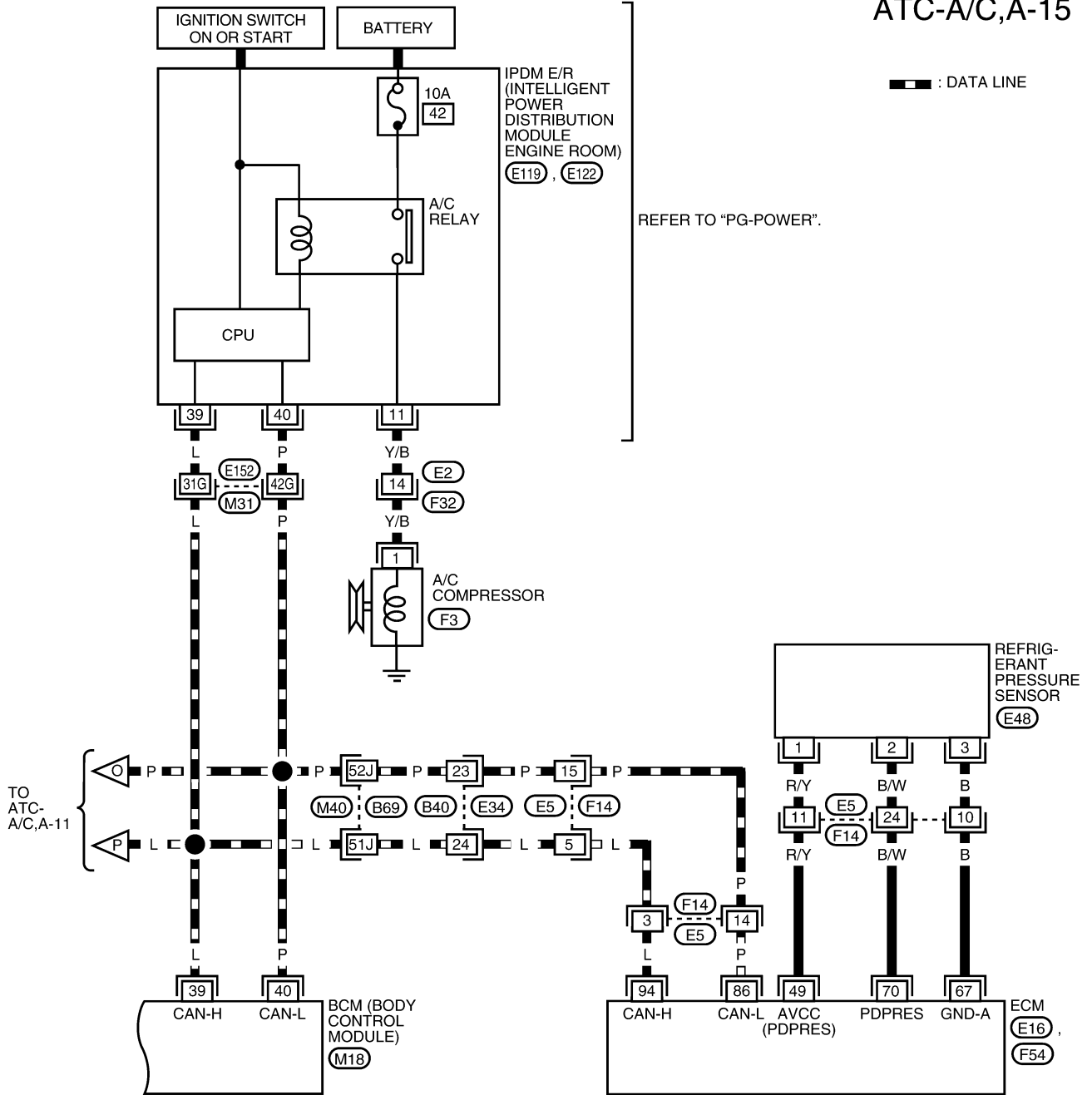


REFER TO THE FOLLOWING.
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

WJWA0355E

TROUBLE DIAGNOSIS

ATC-A/C,A-15



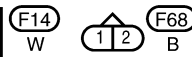
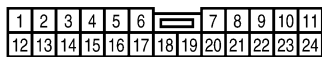
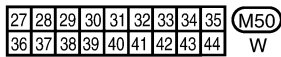
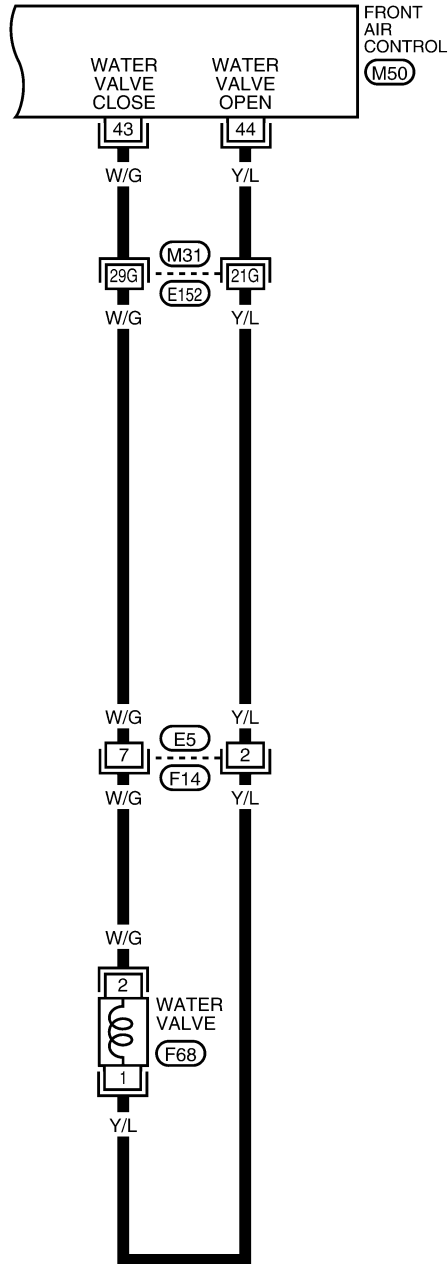
REFER TO THE FOLLOWING.
 (E16), (F54) - ELECTRICAL UNITS
 (M31), (M40) - SUPER MULTIPLE JUNCTION (SMJ)

WJWA0356E

TROUBLE DIAGNOSIS

ATC-A/C,A-16

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REFER TO THE FOLLOWING.
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

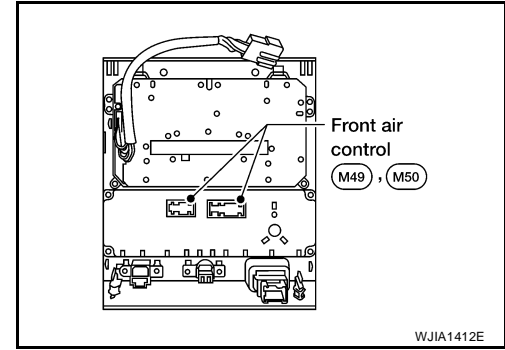
WJWA0357E

TROUBLE DIAGNOSIS

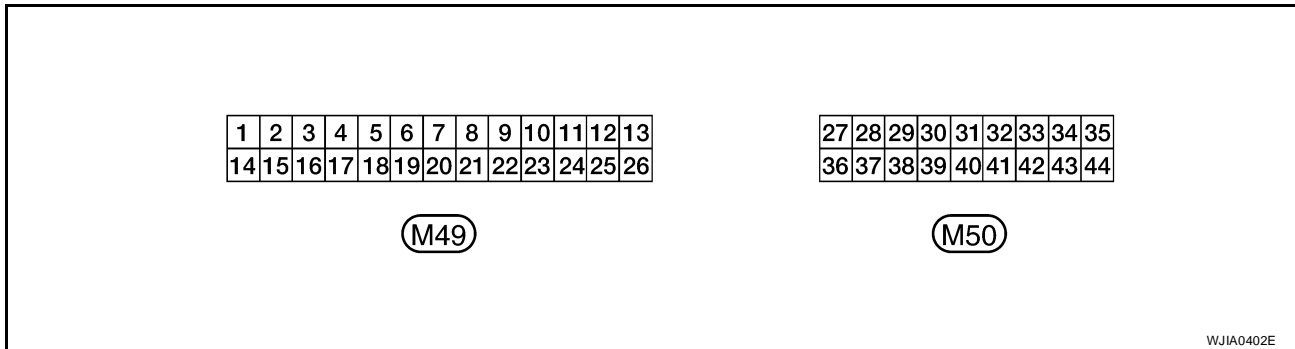
EJS004UI

Front Air Control Terminals and Reference Value

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



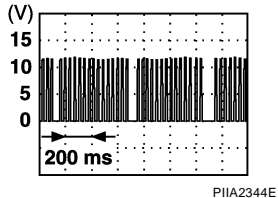
PIN CONNECTOR TERMINAL LAYOUT



TERMINALS AND REFERENCE VALUE FOR FRONT AIR CONTROL (WITH NAVI)

Terminal No.	Wire color	Item	Ignition switch	Condition	Voltage (V) (Approx.)
1	B	Ground	-	-	0V
2	Y	Sensor power	ON	-	5V
3	W/G	Air mix door motor (Driver) CW	ON	Clockwise rotation	Battery voltage
4	G	Air mix door motor (Driver) CCW	ON	Counterclockwise rotation	Battery voltage
5	BR/W	Mode door motor CW	ON	Clockwise rotation	Battery voltage
6	P/L	Mode door motor CCW	ON	Counterclockwise rotation	Battery voltage
7	O	Intake door motor CCW	ON	Counterclockwise rotation	Battery voltage
8	G/B	Intake door motor CW	ON	Clockwise rotation	Battery voltage
9	L/B	Intake sensor	ON	-	0 - 5V
10	L/R	Fan ON signal	ON	Blower switch OFF	5V
			ON	Blower switch ON	0V
11	Y/B	Rear defroster request	ON	-	Battery voltage
12	W/R	Compressor ON signal	ON	A/C switch OFF	5V
			ON	A/C switch ON	0V
13	G/R	Variable blower control	ON	-	0 - 5V
14	Y/G	Power supply for IGN	ON	-	Battery voltage
15	P	Sensor ground	ON	-	0V
16	GR	Mode door motor feedback	ON	-	0 - 5V
17	P	Ambient sensor	ON	-	0 - 5V
18	SB	Air mix door motor (Driver) feedback	ON	-	0 - 5V
19	LG	Defroster door motor CW	ON	Clockwise rotation	Battery voltage
20	P/B	Defroster door motor CCW	ON	Counterclockwise rotation	Battery voltage
21	V/R	Sensor return	ON	-	0 - 5V

TROUBLE DIAGNOSIS

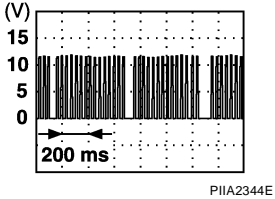
Terminal No.	Wire color	Item	Ignition switch	Condition	Voltage (V) (Approx.)
22	Y/R	Power supply for BAT	-	-	Battery voltage
23	R/L	Illumination +	ON	Park lamps ON	Battery voltage
24	BR	Illumination -	-	Park lamps ON	
25	LG/B	Defroster door motor feedback	ON	-	0 - 5V
26	R/B	Front blower request	ON	Front blower motor OFF	Battery voltage
				Front blower motor ON	0V
29	Y/L	Water valve	ON	Water valve open	Battery voltage
				Water valve closed	0V
30	W/G	Water valve	ON	Water valve open	0V
				Water valve closed	Battery voltage
31	W/V	Optical sensor (Passenger)	ON	-	0 - 5V
32	LG/R	In-vehicle sensor signal	ON	-	0 - 5V
34	L	CAN-H	ON	-	0 - 5V
35	P	CAN-L	ON	-	0 - 5V
36	G/W	Air mix door motor (Passenger) CW	ON	Clockwise rotation	Battery voltage
37	L	Air mix door motor (Passenger) CCW	ON	Counter clockwise rotation	Battery voltage
40	G/O	Optical sensor (Driver)	ON	-	0 - 5V
41	R/W	Air mix door motor (Passenger) feedback	ON	-	0 - 5V
43	BR/Y	In-vehicle sensor motor (+)	ON	-	Battery voltage
44	O/B	In-vehicle sensor motor (-)	ON	-	0V

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TROUBLE DIAGNOSIS

TERMINALS AND REFERENCE VALUE FOR FRONT AIR CONTROL (WITHOUT NAVI)

Terminal No.	Wire color	Item	Ignition switch	Condition	Voltage (V) (Approx.)
1	BR/W	Mode door motor CW	ON	Clockwise rotation	Battery voltage
2	W/G	Air mix door motor (Driver) CW	ON	Clockwise rotation	Battery voltage
3	G	Air mix door motor (Driver) CCW	ON	Counterclockwise rotation	Battery voltage
4	G/B	Intake door motor CW	ON	Clockwise rotation	Battery voltage
5	O	Intake door motor CCW	ON	Counterclockwise rotation	Battery voltage
6	Y/G	Power supply for IGN	ON	-	Battery voltage
7	LG/B	Defroster door motor feedback	ON	-	0 - 5V
8	R/L	Illumination +	ON	Park lamps ON	Battery voltage
9	BR	Illumination -	-	Park lamps ON	
10	W/R	Compressor ON signal	ON	A/C switch OFF	5V
			ON	A/C switch ON	0V
11	Y/B	Rear defroster request	ON	-	Battery voltage
12	L/B	Intake sensor	ON	-	0 - 5V
13	V/R	Sensor return	ON	-	0 - 5V
14	P/L	Mode door motor CCW	ON	Counterclockwise rotation	Battery voltage
15	G/W	Air mix door motor (Passenger) CW	ON	Clockwise rotation	Battery voltage
16	L	Air mix door motor (Passenger) CCW	ON	Counter clockwise rotation	Battery voltage
19	Y/R	Power supply for BAT	-	-	Battery voltage
20	B	Ground	-	-	0V
21	GR	Mode door motor feedback	ON	-	0 - 5V
22	SB	Air mix door motor (Driver) feedback	ON	-	0 - 5V
23	Y	Sensor power	ON	-	5V
26	P	Sensor ground	ON	-	0V
27	LG/R	In-vehicle sensor signal	ON	-	0 - 5V
28	P	Ambient sensor	ON	-	0 - 5V
29	G/O	Optical sensor (Driver)	ON	-	0 - 5V
31	LG	Defroster door motor CW	ON	Clockwise rotation	Battery voltage
32	G/R	Variable blower control	ON	-	0 - 5V
33	BR/Y	In-vehicle sensor motor (+)	ON	-	Battery voltage
34	O/B	In-vehicle sensor motor (-)	ON	-	0V
35	L/R	Fan ON signal	ON	Blower switch OFF	5V
			ON	Blower switch ON	0V
36	R/W	Air mix door motor (Passenger) feedback	ON	-	0 - 5V
37	W/V	Optical sensor (Passenger)	ON	-	0 - 5V
38	R/B	Front blower request	ON	Front blower motor OFF	Battery voltage
			ON	Front blower motor ON	0V
40	P/B	Defroster door motor CCW	ON	Counterclockwise rotation	Battery voltage

TROUBLE DIAGNOSIS

Terminal No.	Wire color	Item	Ignition switch	Condition	Voltage (V) (Approx.)	
41	L	CAN-H	ON	-	0 - 5V	A
42	P	CAN-L	ON	-	0 - 5V	B
43	W/G	Water valve	ON	Water valve open	0V	B
				Water valve closed	Battery voltage	
44	Y/L	Water valve	ON	Water valve open	Battery voltage	C
				Water valve closed	0V	

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TROUBLE DIAGNOSIS

EJS004UJ

A/C System Self-diagnosis Function DESCRIPTION

The self-diagnostic system diagnoses sensors, CAN system, battery voltage and stuck button on front air control. Refer to applicable sections (items) for details. Fault codes (if any are present) will be displayed in the ambient temperature display area (with navi) and displayed in the driver temp display area (non-navi). Refer to [ATC-61, "SELF-DIAGNOSIS CODE CHART"](#) .

Ignition must be ON to run self test.
Self test must be run at an ambient of at least 10°C(50°F).

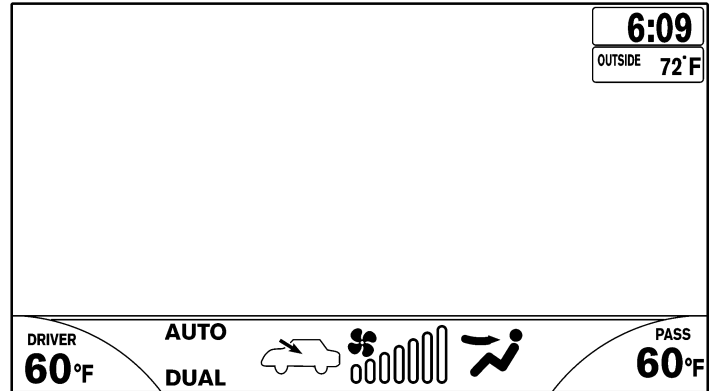
Self Test Via AV Switch w/navi Unit (color display)

Note: radio must be off.

1. On the AV switch, hold the memory "4" 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 "BACK" button on AV switch until display returns to its normal operation screen. HVAC system will be OFF.

Self Test Without Navi

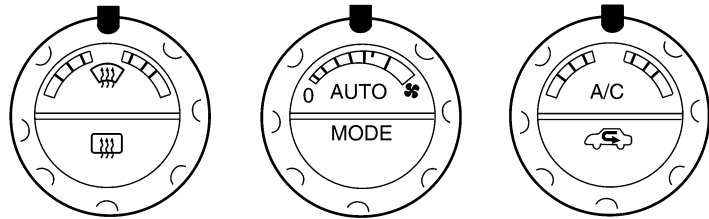
1. Press the AUTO button.
2. Twist the fan knob to the left & twist the passenger knob (either way) at the same time.
3. Release the knobs and then press the AUTO button within 2 seconds to start the self test.
4. The fan bars will flash on the display and then the fault codes will be displayed on the LCD. They will continue scrolling until diagnostic mode is exited.
5. To exit diagnostic mode, press any button (the system will turn OFF).



WITH NAVI



WITHOUT NAVI



WJIA1919E

TROUBLE DIAGNOSIS

SELF-DIAGNOSIS CODE CHART

Code No.	Reference page	
02	EE changed by calibration	ATC-159, "REMOVAL"
03	Battery voltage out of range	SC-4, "BATTERY"
12	Air mix door motor (Passenger) circuit failure	ATC-87, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR (PASSENGER)"
20	BCM not responding to A/C request	ATC-121, "DIAGNOSTIC PROCEDURE FOR MAGNET CLUTCH"
21	BCM not responding to rear defroster request	GW-95, "REAR WINDOW DEFOGGER"
22	Air mix door motor (Driver) circuit failure	ATC-79, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR (DRIVER)"
30	In-vehicle sensor circuit out of range (low)	ATC-147, "In-vehicle Sensor Circuit"
31	In-vehicle sensor circuit out of range (high)	
40	Ambient sensor circuit short	ATC-143, "Ambient Sensor Circuit"
41	Ambient sensor circuit open	
44	In-vehicle sensor motor circuit open	ATC-161, "IN-VEHICLE SENSOR"
46	In-vehicle sensor motor circuit short	
50	Optical sensor (Driver) circuit open or short	ATC-152, "Optical Sensor Circuit"
52	Optical sensor (Passenger) circuit open or short	
56	Intake sensor circuit short	ATC-155, "Intake Sensor Circuit"
57	Intake sensor circuit open	
62	Defroster door motor circuit failure	ATC-99, "Defroster Door Motor Circuit"
80	CAN bus fault	LAN-25, "CAN COMMUNICATION"
82	Intake door motor (driver) circuit malfunction	ATC-96, "DIAGNOSTIC PROCEDURE FOR INTAKE DOOR MOTOR"
90	Stuck button	ATC-159, "REMOVAL"
92	Mode door motor circuit failure	ATC-68, "Mode Door Motor Circuit"

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TROUBLE DIAGNOSIS

EJS004UK

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 MEMORY FUNCTION

1. Set the temperature to 90°F or 32°C.
2. Turn front blower control dial counterclockwise until system shuts OFF.
3. Turn ignition switch OFF.
4. Turn ignition switch ON.
5. Press the AUTO switch.
6. Confirm that the set temperature remains at previous temperature.
7. Turn front blower control counterclockwise until system shuts OFF.

If NG, go to trouble diagnosis procedure for [ATC-139, "Memory Function"](#).

If OK, continue with next check.


CHECKING BLOWER

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

If NG, go to trouble diagnosis procedure for [ATC-110, "DIAGNOSTIC PROCEDURE FOR BLOWER MOTOR"](#) [ATC-110, "DIAGNOSTIC PROCEDURE FOR BLOWER MOTOR"](#).

If OK, continue with next check.

CHECKING DISCHARGE AIR



1. Press MODE switch four times and the DEF  switch.
2. Each position indicator should change shape (on display).
3. Confirm that discharge air comes out according to the air distribution table. Refer to [ATC-27, "Discharge Air Flow"](#).






Mode door position is checked in the next step.

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

If OK, continue the check.



NOTE:

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

Discharge air flow			
Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	100%	–	–
	50%	50%	–
	–	75%(100%)	25% (–)
	–	60%	40%
	–	–	100%

() : Manually control WJIA0528E





CHECKING RECIRCULATION (, ONLY)

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 [ATC-94, "Intake Door Motor Circuit"](#).

If OK, continue the 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. REC () is not allowed in DEF () D/F () or FOOT () .

CHECKING TEMPERATURE DECREASE

1. Rotate temperature control dial (driver side or passenger side) counterclockwise until 16°C (60°F) is displayed.
2. Check for cold air at appropriate discharge air outlets.

TROUBLE DIAGNOSIS

If NG, listen for sound of air mix door motor operation. If OK, go to trouble diagnosis procedure for [ATC-129, "Insufficient Cooling"](#) . If air mix door motor appears to be malfunctioning, go to [ATC-79, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(DRIVER\)"](#) or [ATC-87, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(PASSENGER\)"](#) .

If OK, continue the check.

CHECKING TEMPERATURE INCREASE

1. Rotate temperature control dial clockwise (driver side or passenger side) until 32°C (90°F) is displayed.
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 [ATC-136, "Insufficient Heating"](#) . If air mix door motor appears to be malfunctioning, go to [ATC-79, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(DRIVER\)"](#) or [ATC-87, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(PASSENGER\)"](#) .

If OK, continue with next check.

CHECK A/C SWITCH

1. Press A/C switch when AUTO switch is ON, or in manual mode.
2. A/C switch indicator will turn ON.
 - Confirm that the compressor clutch engages (sound or visual inspection).

NOTE:

If current mode setting is DEF or D/F, compressor clutch may already be engaged.

If NG, go to trouble diagnosis procedure for [ATC-120](#) .

If OK, continue with next check.

CHECKING AUTO MODE

1. Press AUTO switch.
2. Display should indicate AUTO.
 - If ambient temperature is warm, and selected temperature is cool, confirm that the compressor clutch engages (sound or visual inspection). (Discharge air and blower speed will depend on ambient, in-vehicle, and set temperatures.)

If NG, go to trouble diagnosis procedure for [ATC-64, "Power Supply and Ground Circuit for Front Air Control"](#) , then if necessary, trouble diagnosis procedure for [ATC-120, "Magnet Clutch Circuit"](#) .

If all operational checks are OK (symptom cannot be duplicated), go to malfunction Simulation Tests in [ATC-35, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#) and perform tests as outlined to simulate driving conditions environment. If symptom appears. Refer to [ATC-35, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#) , [ATC-35, "SYMPTOM TABLE"](#) and perform applicable trouble diagnosis procedures.

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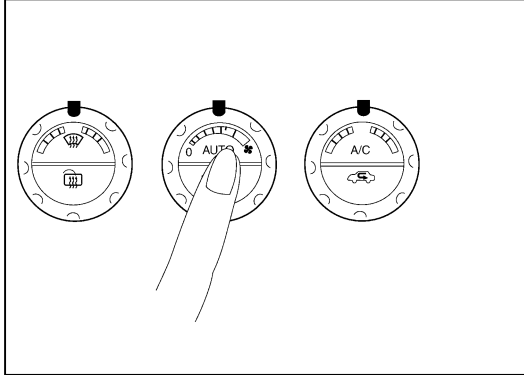
EJS004UM

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 – AUTO mode

- Press AUTO switch.
- Display should indicate AUTO.
Confirm that the compressor clutch engages (Sound or visual inspection).
(Discharge air and blower speed will depend on ambient, in-vehicle and set temperatures.)

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 (*3).

*1 [ATC-64, "Power Supply and Ground Circuit for Front Air Control"](#)

*2 [ATC-62, "Operational Check"](#)

*3 [ATC-159, "CONTROL UNIT"](#)

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TROUBLE DIAGNOSIS

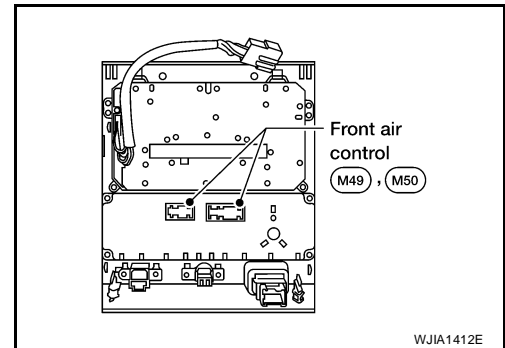
COMPONENT DESCRIPTION

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 motor, defroster door motor, blower motor and compressor are then controlled.

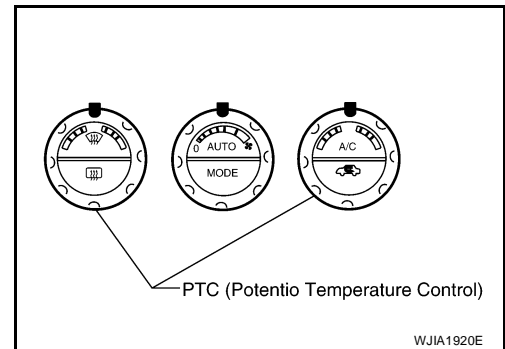
The front air control is unitized with control mechanisms. When the various switches and temperature dials are operated, data is input to the front air control.

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



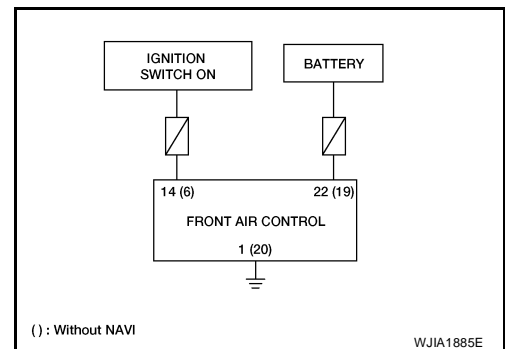
Potential Temperature Control (PTC)

There are two PTCs (passenger and driver) built into the front air control. They can be set at an interval of 0.5°C (1.0°F) in the 16°C (60°F) to 32°C (90°F) temperature range by rotating the temperature dial. The set temperature is displayed.



DIAGNOSTIC PROCEDURE FOR A/C SYSTEM

SYMPTOM: A/C system does not come on.



1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

YES or NO

YES >> GO TO 2.

NO >> GO TO 4.

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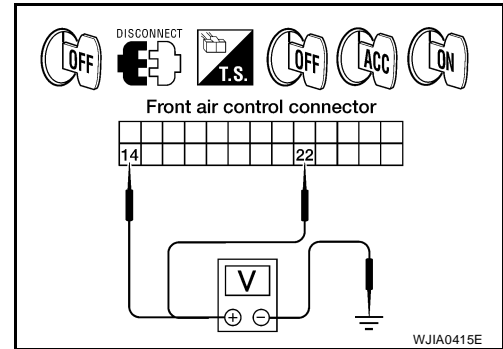
ATC

TROUBLE DIAGNOSIS

2. 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 and 22, and ground.

Terminals		Ignition switch position			
(+)		(-)	OFF	ACC	ON
Front air control connector	Terminal No.				
M49	14	Ground	Approx. 0V	Approx. 0V	Battery voltage
M49	22		Battery voltage	Battery voltage	Battery voltage



OK or NG

OK >> GO TO 3.

NG >> Check 10A fuses [Nos. 8 and 19, located in the fuse block (J/B)]. Refer to [PG-80. "FUSE BLOCK-JUNCTION BOX \(J/B\)"](#).

- 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.

3. CHECK GROUND CIRCUIT FOR FRONT AIR CONTROL

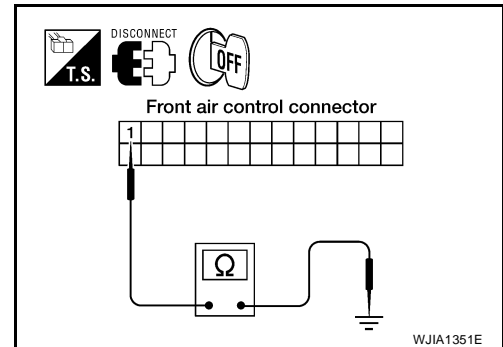
1. Turn ignition switch OFF.
2. Check continuity between front air control harness connector M49 terminal 1 and ground.

1 - Ground : Continuity should exist.

OK or NG

OK >> Replace front air control. Refer to [ATC-159. "REMOVAL"](#).

NG >> Repair harness or connector.

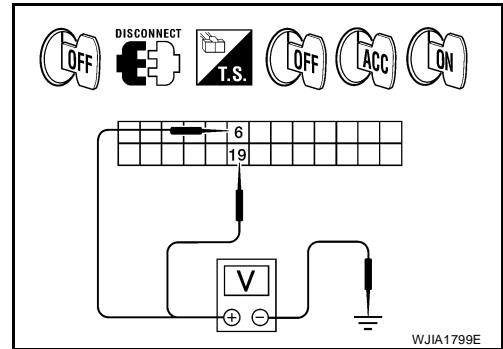


TROUBLE DIAGNOSIS

4. 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 6 and 19, and ground.

Terminals		Ignition switch position			
(+)		(-)	OFF	ACC	ON
Front air control connector	Terminal No.				
M49	6	Ground	Approx. 0V	Approx. 0V	Battery voltage
M49	19		Battery voltage	Battery voltage	Battery voltage



OK or NG

OK >> GO TO 5.

NG >> Check 10A fuses [Nos. 8 and 19, located in the fuse block (J/B)]. Refer to [PG-80, "FUSE BLOCK-JUNCTION BOX \(J/B\)"](#).

- 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.

5. CHECK GROUND CIRCUIT FOR FRONT AIR CONTROL

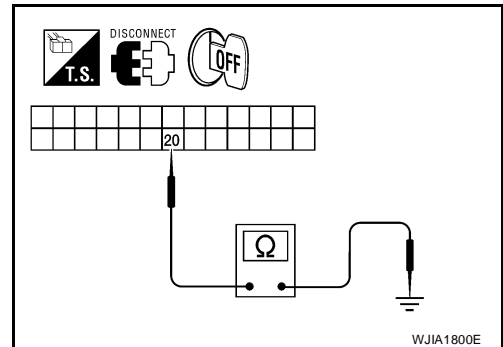
1. Turn ignition switch OFF.
2. Check continuity between front air control harness connector M49 terminal 20 and ground.

20 - Ground : Continuity should exist.

OK or NG

OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).

NG >> Repair harness or connector.



TROUBLE DIAGNOSIS

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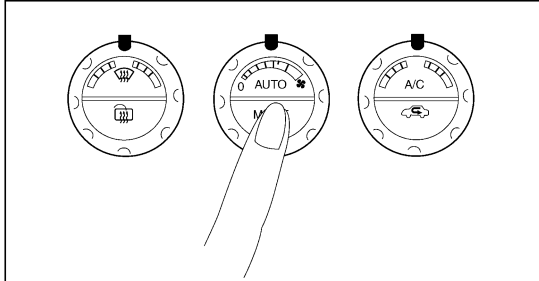
Mode Door Motor Circuit

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

- Press mode switch four times and DEF switch.
- Each position indicator should change shape. (on display)

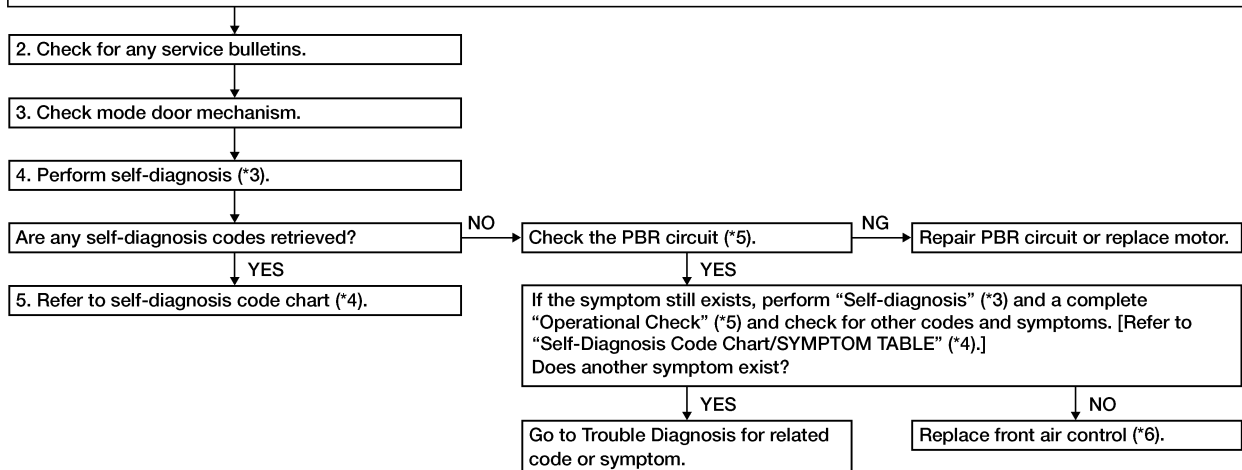
Discharge air flow

Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	100%	–	–
	50%	50%	–
	–	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 [ATC-27, "Discharge Air Flow"](#)

*2 [ATC-62, "Operational Check"](#)

*3 [ATC-60, "A/C System Self-diagnosis Function"](#)

*4 [ATC-60, "A/C System Self-diagnosis Function"](#)

*5 [ATC-70, "DIAGNOSTIC PROCEDURE FOR MODE DOOR MOTOR"](#)

*6 [ATC-159, "REMOVAL"](#)

TROUBLE DIAGNOSIS

SYSTEM DESCRIPTION

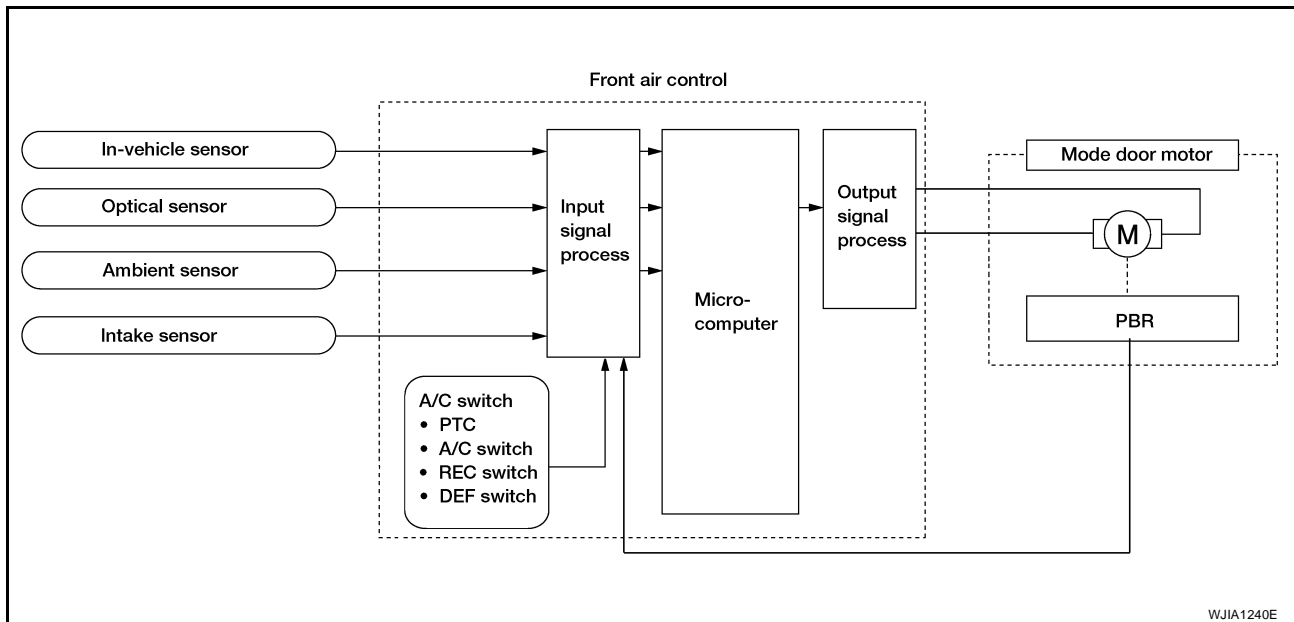
Component Parts

Mode door control system components are:

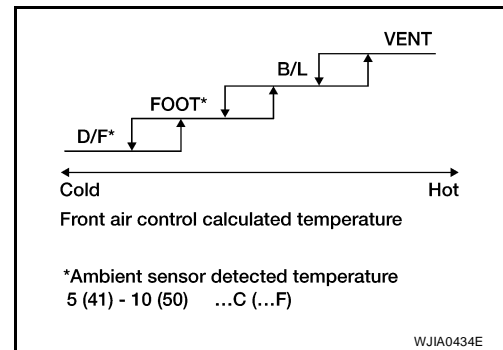
- Front air control
- Mode door motor
- PBR (built into mode door motor)
- In-vehicle sensor
- Ambient sensor
- Optical sensor
- Intake sensor

System Operation

The mode door position (vent, B/L, foot, D/F, 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. In AUTO mode the mode door position is set by the front air control which determines the proper position based on inputs from the in-vehicle sensor, ambient sensor, optical sensor, intake sensor, and the temperature selected by the driver or passenger.



Mode Door Control Specification

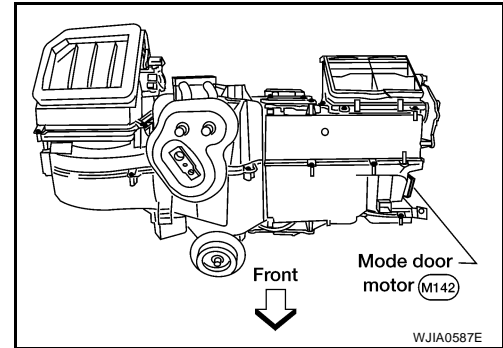


TROUBLE DIAGNOSIS

COMPONENT DESCRIPTION

Mode Door Motor

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



DIAGNOSTIC PROCEDURE FOR MODE DOOR MOTOR

1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

YES or NO

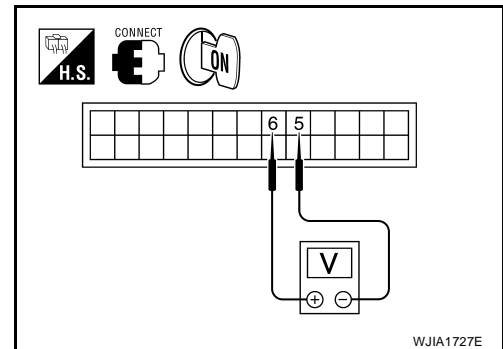
YES >> GO TO 2.

NO >> GO TO 14.

2. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Press the mode switch to the 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 (↵) mode.

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



OK or NG

OK >> GO TO 4.

NG >> GO TO 3.

3. CHECK MODE 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 5, 6 and ground.

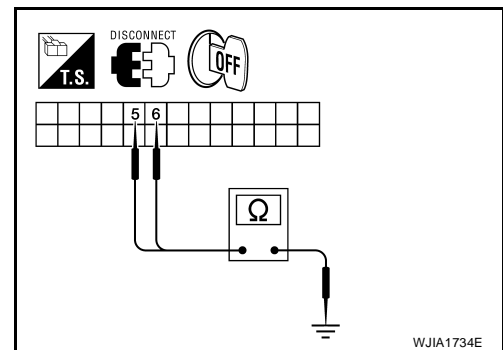
5 - Ground : Continuity should not exist.

6 - Ground : Continuity should not exist.

OK or NG

OK >> Replace front air control. Refer to [ATC-159](#).
"REMOVAL".

NG >> Repair or replace harness as necessary.

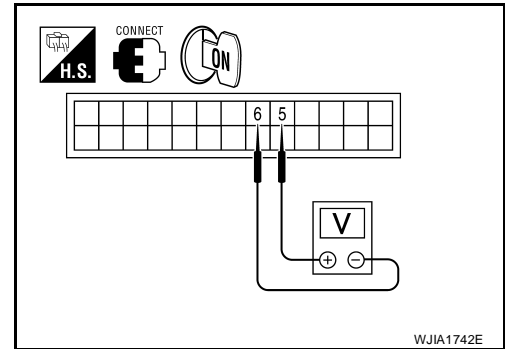


TROUBLE DIAGNOSIS

4. CHECK FRONT AIR CONTROL FOR GROUND AND POWER

1. Press the mode switch to the 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 () mode.

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



OK or NG

- OK >> GO TO 5.
 NG >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).

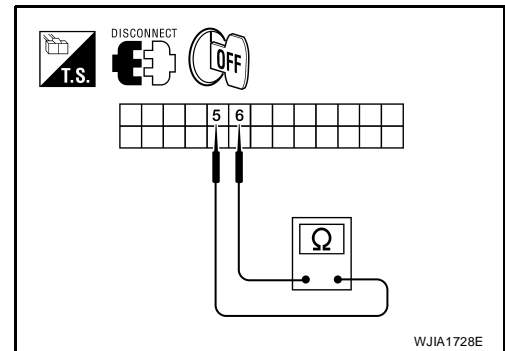
5. CHECK MODE DOOR MOTOR AND CIRCUITS FOR OPEN

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 7.
 NG >> GO TO 6.



6. CHECK MODE DOOR MOTOR CIRCUITS FOR OPEN

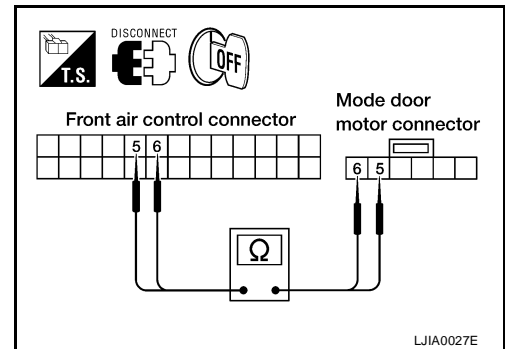
1. Disconnect the mode door motor harness connector.
2. Check continuity between front air control harness connector M49 terminal 5, 6 and the mode door motor harness connector terminal 5, 6.

5 - 5 : Continuity should exist.

6 - 6 : Continuity should exist.

OK or NG

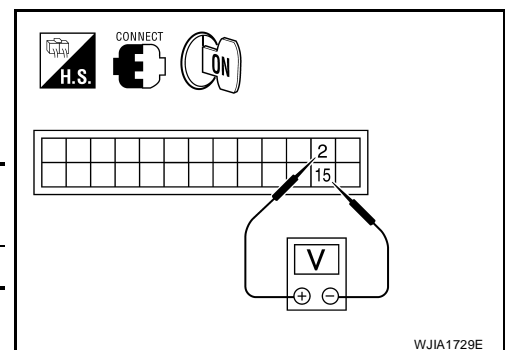
- OK >> Replace mode door motor. Refer to [ATC-173, "MODE DOOR MOTOR"](#).
 NG >> Repair or replace harness as necessary.



7. 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 9.
 NG >> GO TO 8.

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TROUBLE DIAGNOSIS

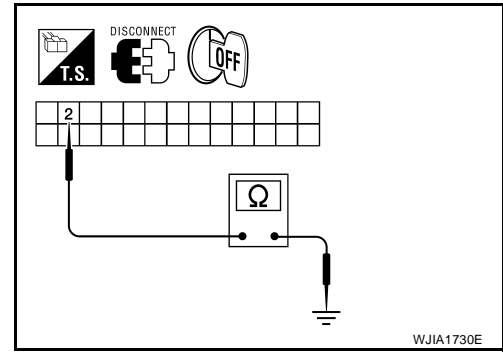
8. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND

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 [ATC-159, "REMOVAL"](#).
- NG >> Repair or replace harness as necessary.



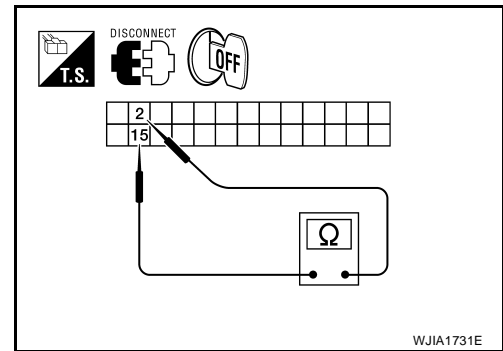
9. CHECK PBR REFERENCE VOLTAGE AND GROUND CIRCUITS

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 11.
- NG >> GO TO 10



10. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR OPEN

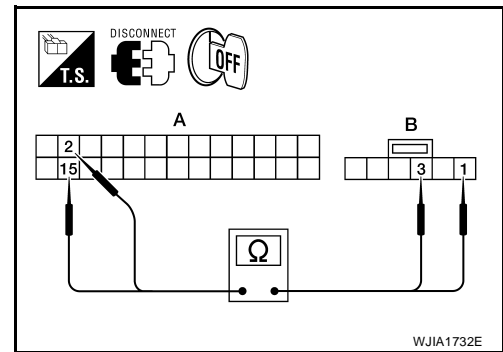
1. Disconnect the mode door motor harness connector.
2. Check continuity between mode door motor harness connector (B) M142 terminal 3, 1 and front air control harness connector (A) M49 terminal 2, 15.

2 - 3 : Continuity should exist.

15 - 1 : Continuity should exist.

OK or NG

- OK >> Replace mode door motor. Refer to [ATC-173, "MODE DOOR MOTOR"](#).
- NG >> Repair or replace harness as necessary.



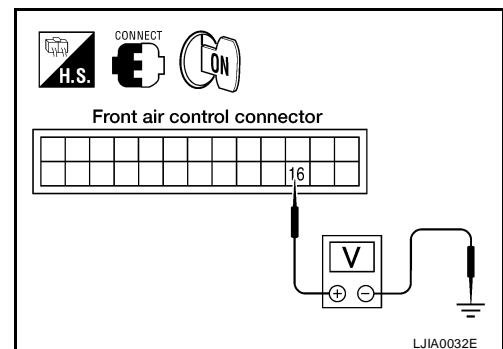
11. CHECK PBR FEEDBACK VOLTAGE

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. 1V - 4.5V

OK or NG

- OK >> GO TO 13.
- NG >> GO TO 12.



TROUBLE DIAGNOSIS

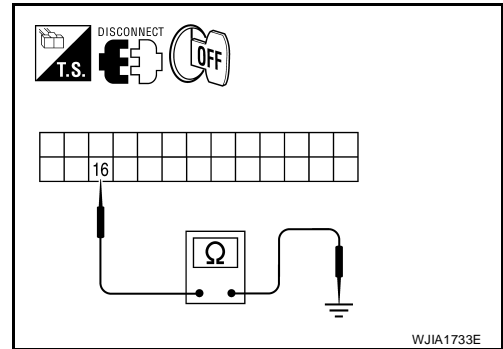
12. CHECK PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT TO GROUND

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 [ATC-159, "REMOVAL"](#).
- NG >> Repair or replace harness as necessary.



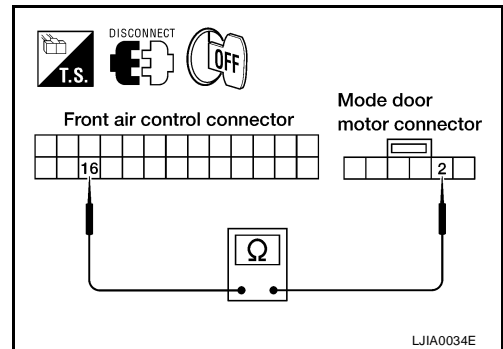
13. CHECK PBR FEEDBACK CIRCUIT FOR OPEN

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 M142 terminal 2 and front air control harness connector M49 terminal 16.

Continuity should exist.

OK or NG

- OK >> Replace mode door motor. Refer to [ATC-173, "MODE DOOR MOTOR"](#).
- NG >> Repair or replace harness as necessary.



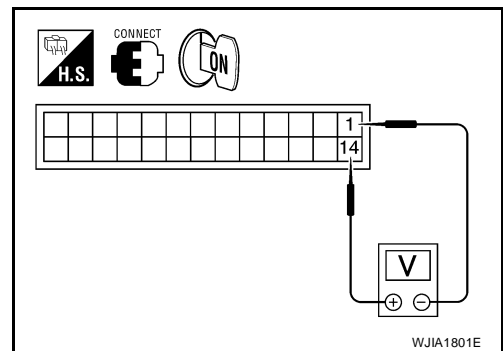
14. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Press the mode switch to the B/L (↺) mode.
3. Check voltage between front air control harness connector M49 terminal 1 and terminal 14 while pressing the mode switch to the floor (↵) mode.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	14	1	Press mode switch	Battery voltage

OK or NG

- OK >> GO TO 16
- NG >> GO TO 15



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TROUBLE DIAGNOSIS

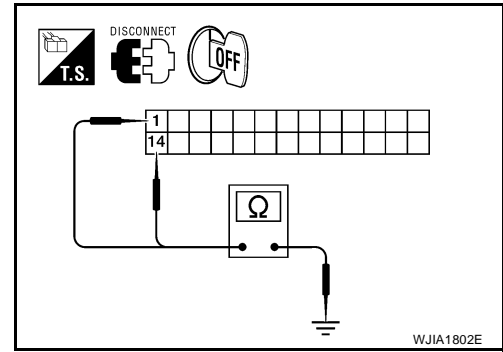
15. CHECK MODE DOOR MOTOR CIRCUITS FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 1, 14 and ground.

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

OK or NG

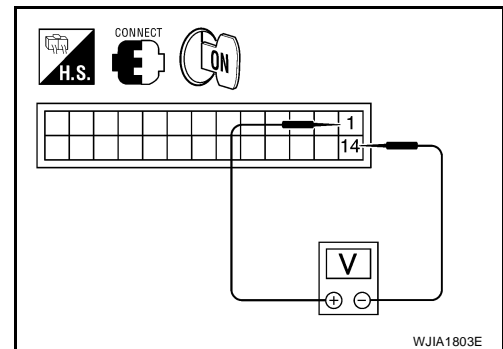
- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
- NG >> Repair or replace harness as necessary.



16. 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 1 and terminal 14 while pressing the mode switch to the vent (V) mode.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	1	14	Press mode switch	Battery voltage



OK or NG

- OK >> GO TO 17.
- NG >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).

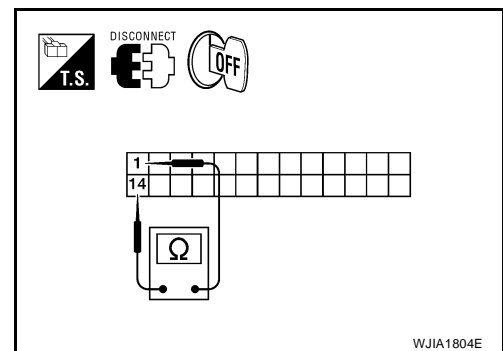
17. CHECK MODE DOOR MOTOR AND CIRCUITS FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 1 and terminal 14.

Continuity should exist.

OK or NG

- OK >> GO TO 19.
- NG >> GO TO 18.



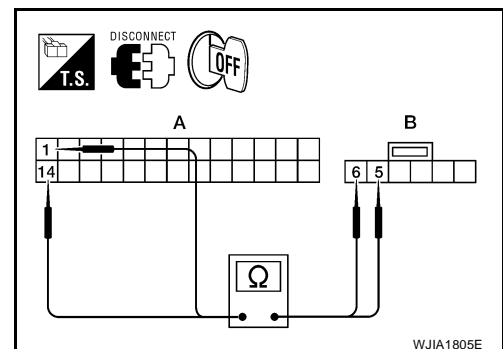
18. CHECK MODE DOOR MOTOR CIRCUITS FOR OPEN

1. Disconnect the mode door motor harness connector.
2. Check continuity between front air control harness connector (A) M49 terminal 1, 14 and the mode door motor harness connector (B) M142 terminal 5, 6.

1 - 5 : Continuity should exist.
14 - 6 : Continuity should exist.

OK or NG

- OK >> Replace mode door motor. Refer to [ATC-173, "MODE DOOR MOTOR"](#).
- NG >> Repair or replace harness as necessary.



TROUBLE DIAGNOSIS

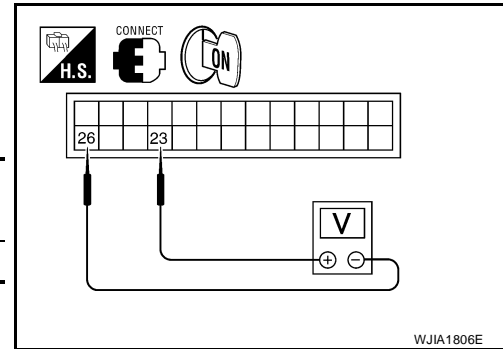
19. CHECK FRONT AIR CONTROL FOR PBR POWER AND GROUND

1. Reconnect front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M49 terminal 23 and terminal 26.

Connector	Terminals		Voltage (Approx.)
	(+)	(-)	
Front air control: M49	23	26	5V

OK or NG

- OK >> GO TO 21.
 NG >> GO TO 20.



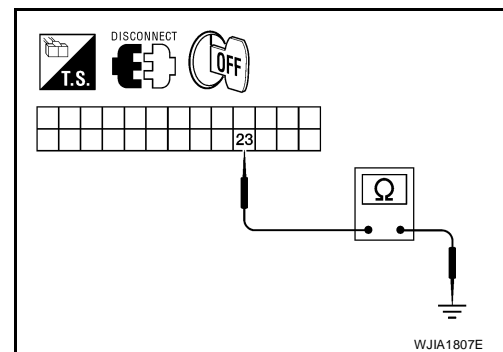
20. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 23 and ground.

Continuity should not exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
 NG >> Repair or replace harness as necessary.



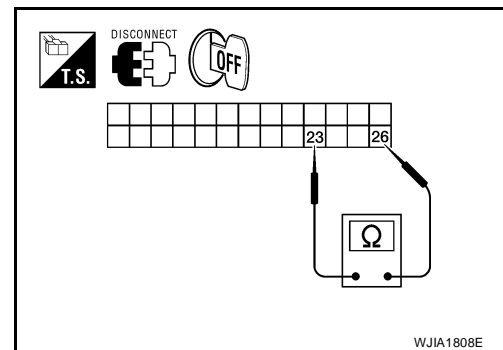
21. CHECK PBR REFERENCE VOLTAGE AND GROUND CIRCUITS

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 23 and terminal 26.

Continuity should exist.

OK or NG

- OK >> GO TO 23.
 NG >> GO TO 22.



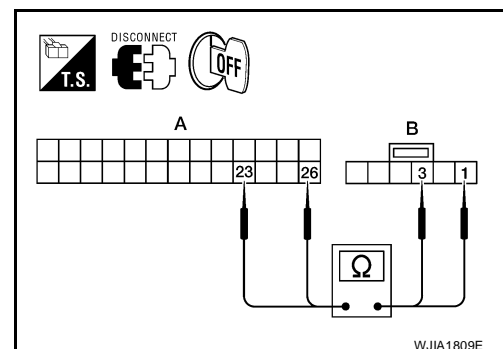
22. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR OPEN

1. Disconnect the mode door motor harness connector.
2. Check continuity between mode door motor harness connector (B) M142 terminal 3, 1 and front air control harness connector (A) M49 terminal 23, 26.

- 23 - 3 : Continuity should exist.**
26 - 1 : Continuity should exist.

OK or NG

- OK >> Replace mode door motor. Refer to [ATC-173, "MODE DOOR MOTOR"](#).
 NG >> Repair or replace harness as necessary.



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TROUBLE DIAGNOSIS

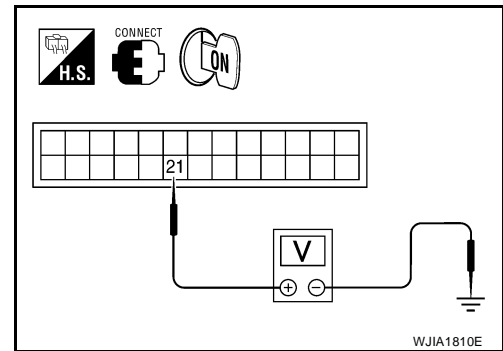
23. CHECK PBR FEEDBACK VOLTAGE

1. Reconnect the front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M49 terminal 21 and ground while cycling mode switch through all modes.

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

OK or NG

- OK >> GO TO 25.
NG >> GO TO 24.



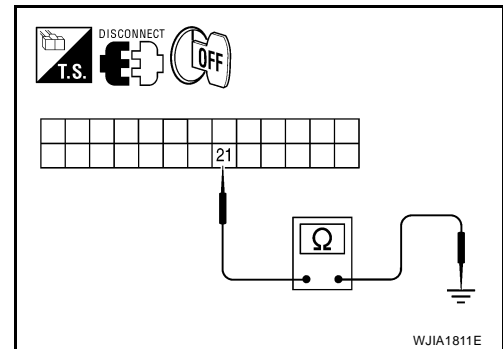
24. CHECK PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 21 and ground.

Continuity should not exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
NG >> Repair or replace harness as necessary.



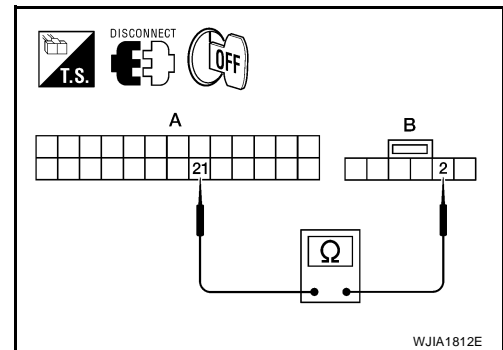
25. CHECK PBR FEEDBACK CIRCUIT FOR OPEN

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 M142 terminal 2 and front air control harness connector M49 terminal 21.

Continuity should exist.

OK or NG

- OK >> Replace mode door motor. Refer to [ATC-173, "MODE DOOR MOTOR"](#).
NG >> Repair or replace harness as necessary.



TROUBLE DIAGNOSIS

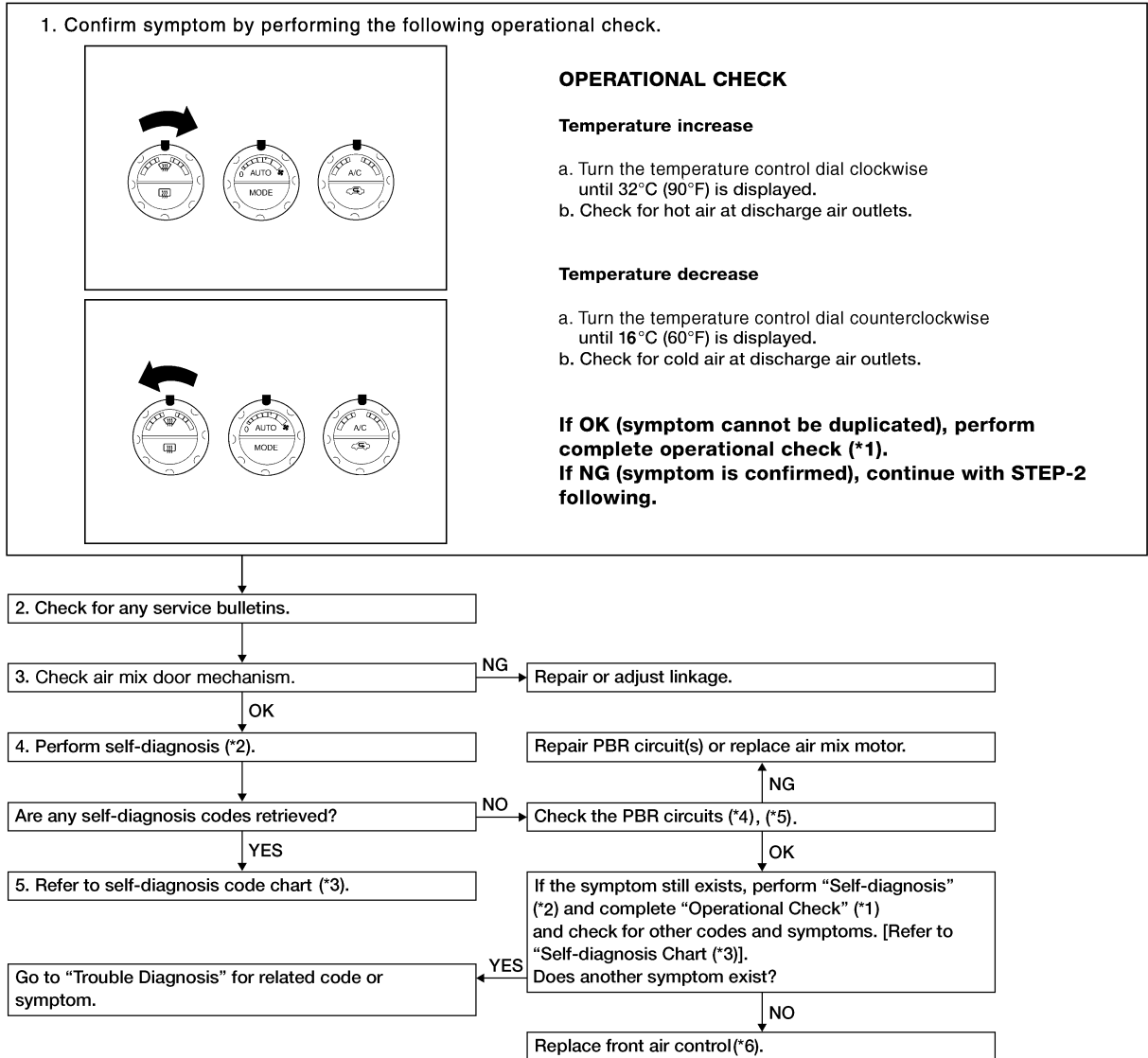
EJS004UO

Air Mix Door Motor Circuit

SYMPTOM:

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

INSPECTION FLOW



*1 [ATC-62, "Operational Check"](#)

*4 [ATC-79, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(DRIVER\)".](#)

*2 [ATC-60, "A/C System Self-diagnosis Function"](#)

*5 [ATC-87, "DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR \(PASSENGER\)".](#)

*3 [ATC-61, "SELF-DIAGNOSIS CODE CHART"](#)

*6 [ATC-159, "CONTROL UNIT"](#)

WJIA1938E

TROUBLE DIAGNOSIS

SYSTEM DESCRIPTION

Component Parts

Air mix door control system components are:

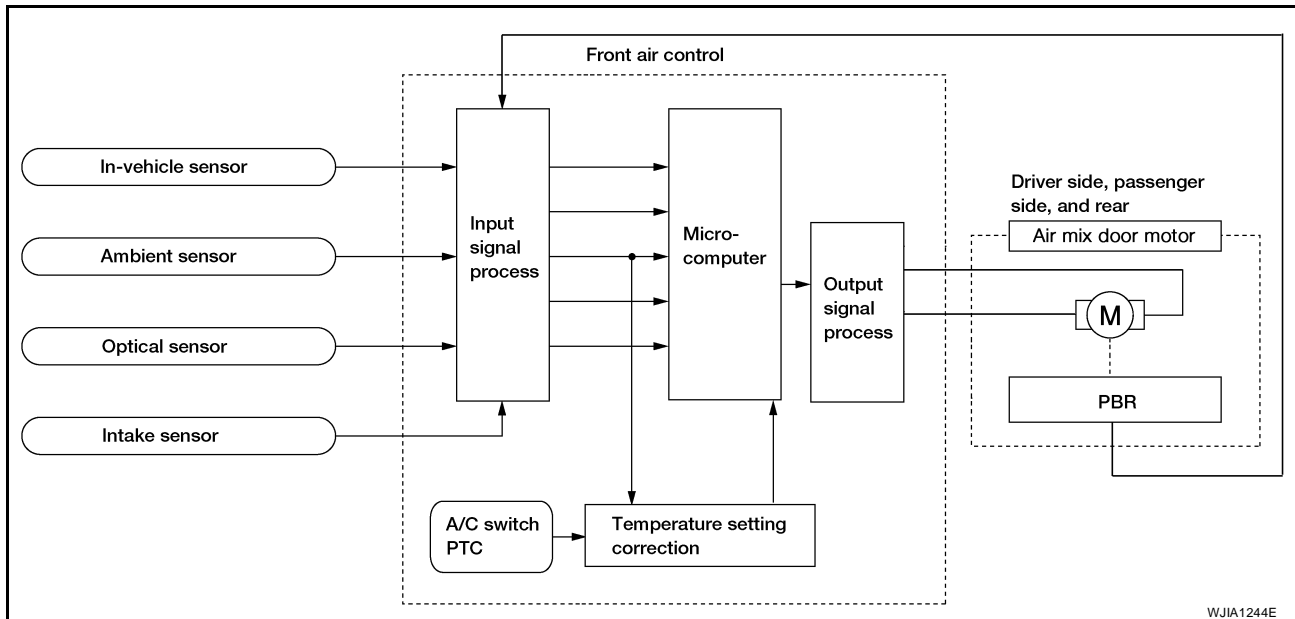
- Front air control.
- Air mix door motors (Driver, Passenger, and rear)
- PBR (built-into air mix door motors)
- In-vehicle sensor
- Ambient sensor
- Optical sensor
- Intake sensor

System Operation

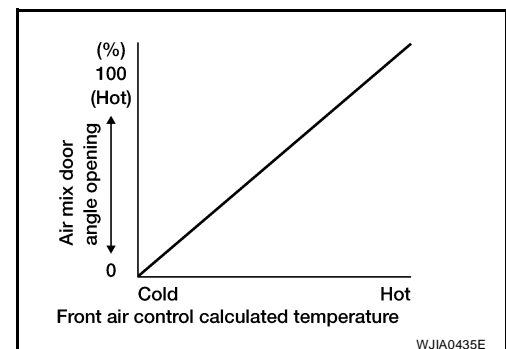
The front air control receives data from the temperature selected by the driver side, passenger side, and rear. The front air control then applies a voltage to one circuit of the appropriate air mix door motor, while ground is applied to the other circuit, causing the appropriate air mix door motor to 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.

In AUTO mode the air mix, intake, mode door, and defrost door positions are set by the front air control which determines the proper position based on inputs from the in-vehicle sensor, ambient sensor, optical sensor, intake sensor, and the temperature selected by the driver and front and rear passengers.

Subsequently, HOT/COLD or DEFROST/VENT or FRESH/RECIRCULATION operation is selected. The new door position data is returned to the front air control.



Air Mix Door Control Specification

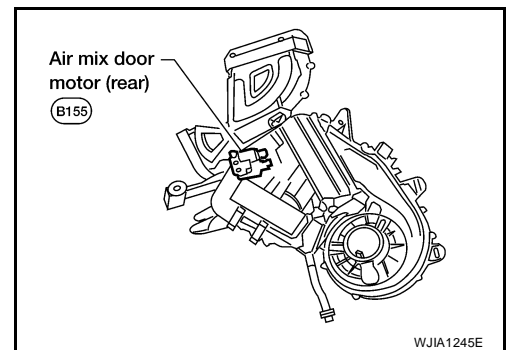
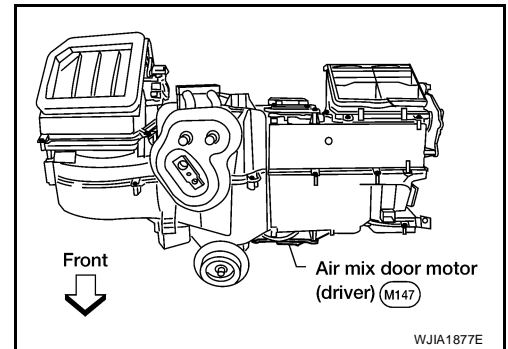
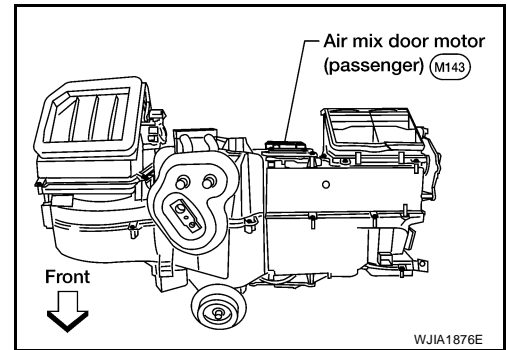


TROUBLE DIAGNOSIS

COMPONENT DESCRIPTION

Air Mix Door Motors

The driver and front passenger air mix door motors are attached to the front heater & cooling unit assembly. The rear air mix door motor is attached to the rear heater & cooling unit assembly. 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.



DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR (DRIVER)

1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

YES or NO

YES >> GO TO 2.

NO >> GO TO 14.

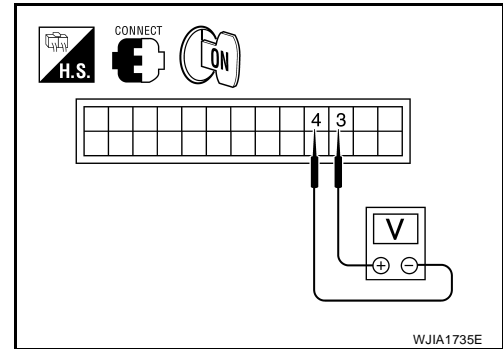
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TROUBLE DIAGNOSIS

2. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Rotate temperature control dial (driver) to 32°C (90°F).
3. Check voltage between front air control harness connector M49 terminal 3 and terminal 4 while rotating temperature control dial (driver) to 16°C (60°F).

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



OK or NG

- OK >> GO TO 4.
 NG >> GO TO 3.

3. CHECK AIR MIX DOOR MOTOR (DRIVER) CIRCUITS FOR SHORT TO GROUND

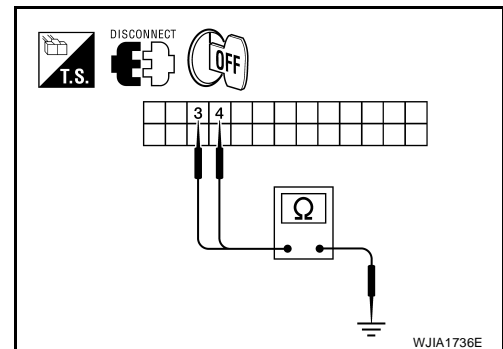
1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 3, 4 and ground.

3 - Ground : Continuity should not exist.

4 - Ground : Continuity should not exist.

OK or NG

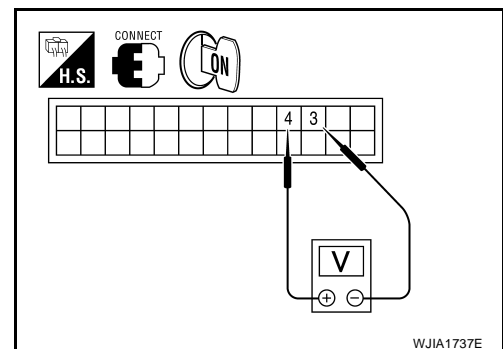
- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
 NG >> Repair or replace harness as necessary.



4. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Rotate temperature control dial (driver) to 32°C (90°F).
3. Check voltage between front air control harness connector M49 terminal 3 and terminal 4 while rotating temperature control dial (driver) to 16°C (60°F).

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



OK or NG

- OK >> GO TO 5.
 NG >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).

TROUBLE DIAGNOSIS

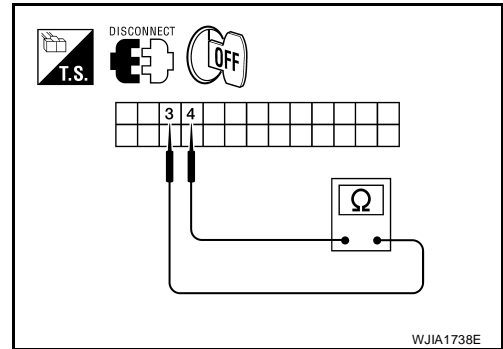
5. CHECK AIR MIX DOOR MOTOR (DRIVER) CIRCUITS FOR OPEN

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 7.
 NG >> GO TO 6.



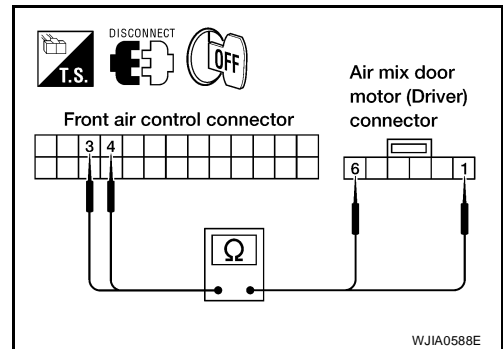
6. CHECK AIR MIX DOOR MOTOR (DRIVER) CIRCUITS FOR OPEN

1. Disconnect the air mix door motor (driver) harness connector.
2. Check continuity between front air control harness connector M49 terminal 3, 4 and the air mix door motor (driver) harness connector M147 terminal 1, 6.

3 - 1 : Continuity should exist.
4 - 6 : Continuity should exist.

OK or NG

- OK >> Replace air mix door motor (driver). Refer to [ATC-174, "AIR MIX DOOR MOTOR \(DRIVER\)"](#).
 NG >> Repair or replace harness as necessary.



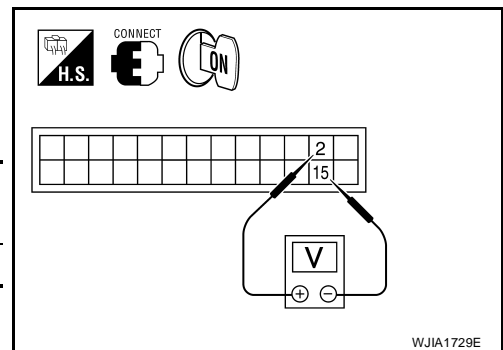
7. CHECK FRONT AIR CONTROL FOR PBR POWER AND GROUND

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 9.
 NG >> GO TO 8.



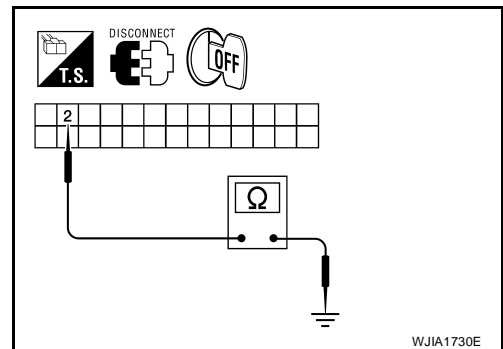
8. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND

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 [ATC-159, "REMOVAL"](#).
 NG >> Repair or replace harness as necessary.



TROUBLE DIAGNOSIS

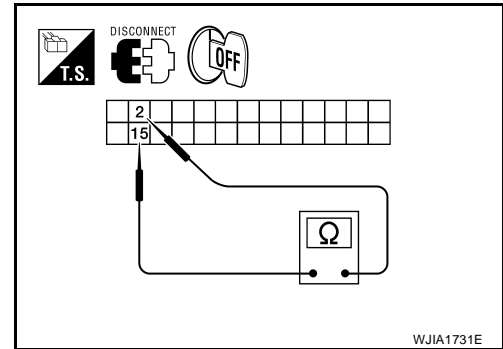
9. CHECK PBR REFERENCE VOLTAGE AND GROUND CIRCUITS

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 11.
NG >> GO TO 10.



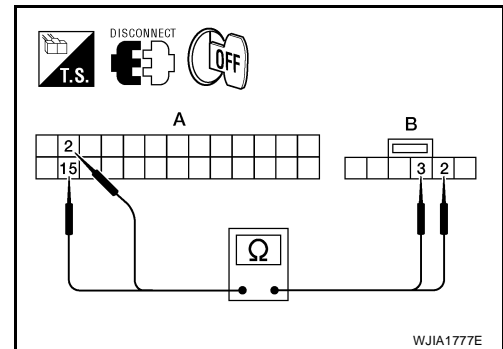
10. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR OPEN

1. Disconnect the air mix door motor (driver) harness connector.
2. Check continuity between air mix door motor (driver) harness connector M147 (B) terminal 3, 2 and front air control harness connector M49 (A) terminal 2, 15.

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

OK or NG

- OK >> Replace air mix door motor (driver). Refer to [ATC-174](#), "[AIR MIX DOOR MOTOR \(DRIVER\)](#)".
NG >> Repair or replace harness as necessary.



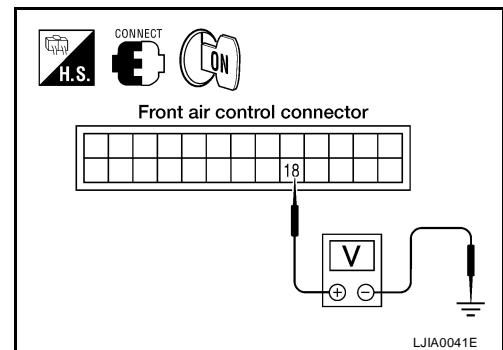
11. CHECK PBR FEEDBACK VOLTAGE

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 32°C (90°F) to 16°C (60°F).

Voltage : Approx. .5V - 4.5V

OK or NG

- OK >> GO TO 13.
NG >> GO TO 12.



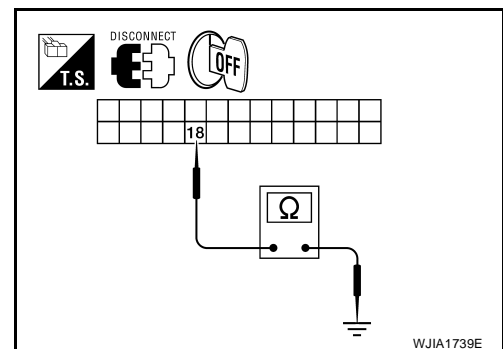
12. CHECK PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT TO GROUND

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 [ATC-159](#), "[REMOVAL](#)".
NG >> Repair or replace harness as necessary.



TROUBLE DIAGNOSIS

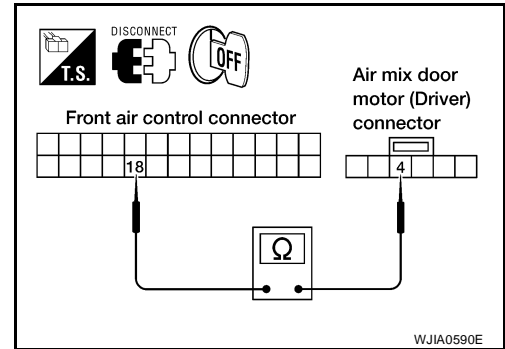
13. CHECK PBR FEEDBACK CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the air mix door motor (driver) harness connector and front air control harness connector.
3. Check continuity between air mix door motor (driver) harness connector M147 terminal 4 and front air control harness connector M149 terminal 18.

Continuity should exist.

OK or NG

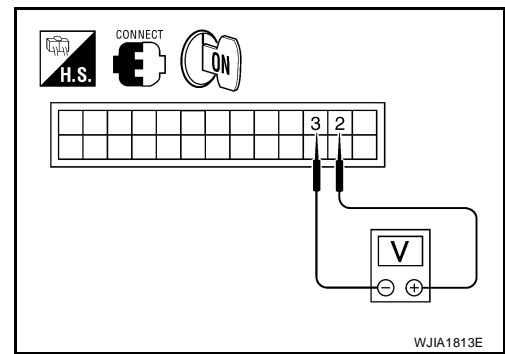
- OK >> Replace air mix door motor (driver). Refer to [ATC-174, "AIR MIX DOOR MOTOR \(DRIVER\)"](#).
- NG >> Repair or replace harness as necessary.



14. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Rotate temperature control dial (driver) to 32°C (90°F).
3. Check voltage between front air control harness connector M49 terminal 2 and terminal 3 while rotating temperature control dial (driver) to 16°C (60°F).

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	2	3	Rotate temp control dial	Battery voltage



OK or NG

- OK >> GO TO 16.
- NG >> GO TO 15.

15. CHECK AIR MIX DOOR MOTOR (DRIVER) CIRCUITS FOR SHORT TO GROUND

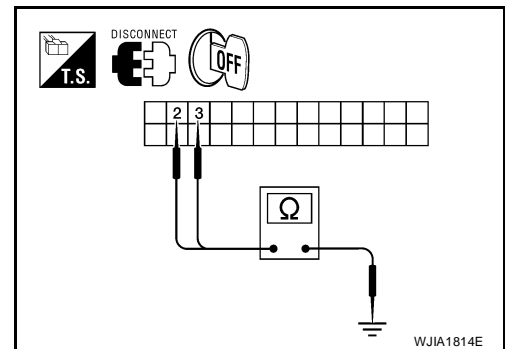
1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 2, 3 and ground.

3 - Ground : Continuity should not exist.

2 - Ground : Continuity should not exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
- NG >> Repair or replace harness as necessary.



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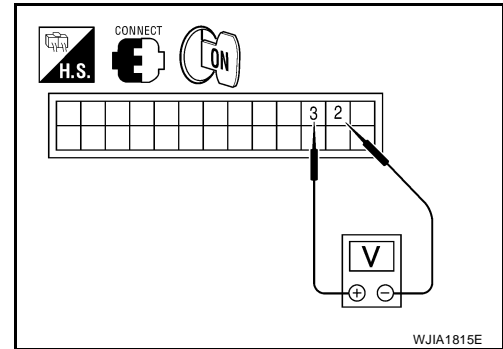
ATC

TROUBLE DIAGNOSIS

16. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Rotate temperature control dial (driver) to 32°C (90°F).
3. Check voltage between front air control harness connector M49 terminal 2 and terminal 3 while rotating temperature control dial (driver) to 16°C (60°F).

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	3	2	Rotate temp control dial	Battery voltage



OK or NG

- OK >> GO TO 17.
 NG >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).

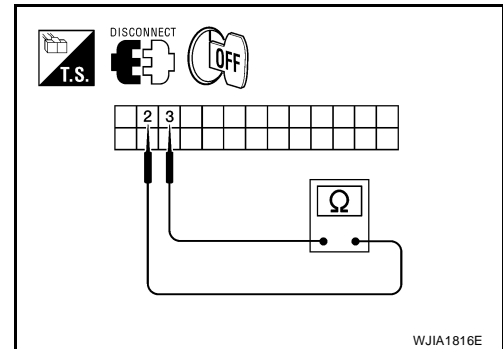
17. CHECK AIR MIX DOOR MOTOR (DRIVER) CIRCUITS FOR OPEN

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

Continuity should exist.

OK or NG

- OK >> GO TO 19.
 NG >> GO TO 18.



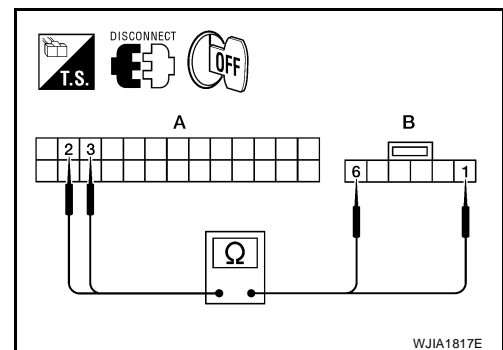
18. CHECK AIR MIX DOOR MOTOR (DRIVER) CIRCUITS FOR OPEN

1. Disconnect the air mix door motor (driver) harness connector.
2. Check continuity between front air control harness connector M49 (A) terminal 2, 3 and the air mix door motor (driver) harness connector M147 (B) terminal 1, 6.

2 - 1 : Continuity should exist.
3 - 6 : Continuity should exist.

OK or NG

- OK >> Replace air mix door motor (driver). Refer to [ATC-174, "AIR MIX DOOR MOTOR \(DRIVER\)"](#).
 NG >> Repair or replace harness as necessary.



TROUBLE DIAGNOSIS

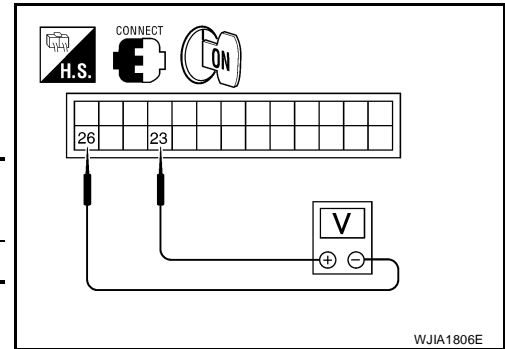
19. CHECK FRONT AIR CONTROL FOR PBR POWER AND GROUND

1. Reconnect front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M49 terminal 23 and terminal 26.

Connector	Terminals		Voltage (Approx.)
	(+)	(-)	
Front air control: M49	23	26	5V

OK or NG

- OK >> GO TO 21.
 NG >> GO TO 20.



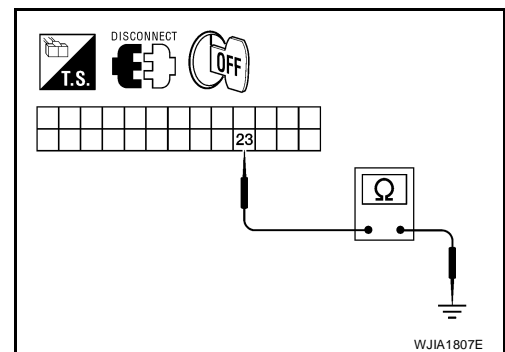
20. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 23 and ground.

Continuity should not exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
 NG >> Repair or replace harness as necessary.



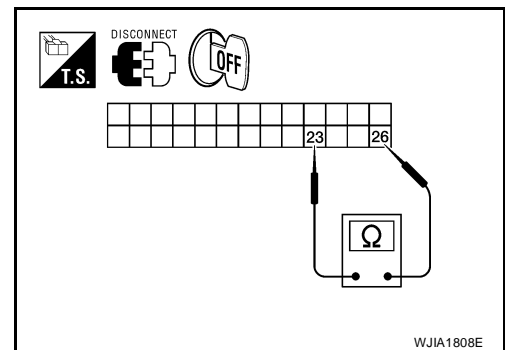
21. CHECK PBR REFERENCE VOLTAGE AND GROUND CIRCUITS

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 23 and terminal 26.

Continuity should exist.

OK or NG

- OK >> GO TO 23.
 NG >> GO TO 22.



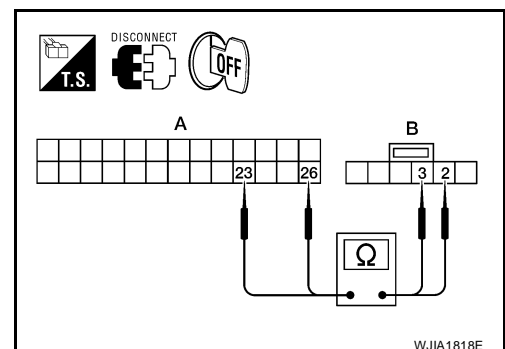
22. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR OPEN

1. Disconnect the air mix door motor (driver) harness connector.
2. Check continuity between air mix door motor (driver) harness connector M147 (B) terminal 3, 2 and front air control harness connector M49 (A) terminal 23, 26.

- 23 - 3 : Continuity should exist.**
26 - 2 : Continuity should exist.

OK or NG

- OK >> Replace air mix door motor (driver). Refer to [ATC-174, "AIR MIX DOOR MOTOR \(DRIVER\)"](#).
 NG >> Repair or replace harness as necessary.



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TROUBLE DIAGNOSIS

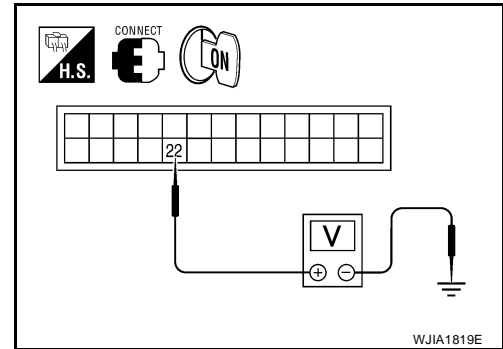
23. CHECK PBR FEEDBACK VOLTAGE

1. Reconnect the front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M49 terminal 22 and ground while rotating temperature control dial from 32°C (90°F) to 16°C (60°F).

Voltage : Approx. .5V - 4.5V

OK or NG

- OK >> GO TO 25.
NG >> GO TO 24.



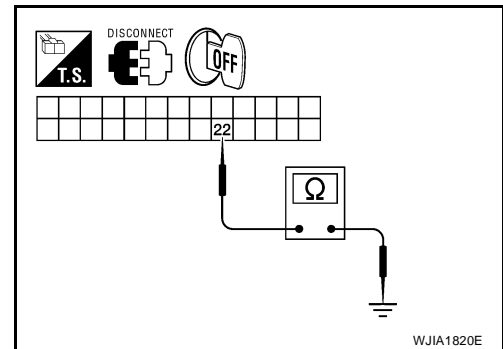
24. CHECK PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 22 and ground.

Continuity should not exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159](#), "[REMOVAL](#)".
NG >> Repair or replace harness as necessary.



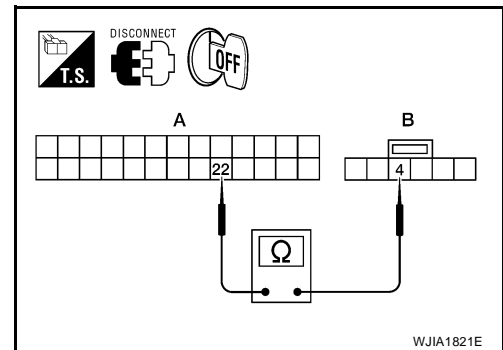
25. CHECK PBR FEEDBACK CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the air mix door motor (driver) harness connector and front air control harness connector.
3. Check continuity between air mix door motor (driver) harness connector M147 (B) terminal 4 and front air control harness connector M49 (A) terminal 22.

Continuity should exist.

OK or NG

- OK >> Replace air mix door motor (driver). Refer to [ATC-174](#), "[AIR MIX DOOR MOTOR \(DRIVER\)](#)".
NG >> Repair or replace harness as necessary.



TROUBLE DIAGNOSIS

DIAGNOSTIC PROCEDURE FOR AIR MIX DOOR MOTOR (PASSENGER)

1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

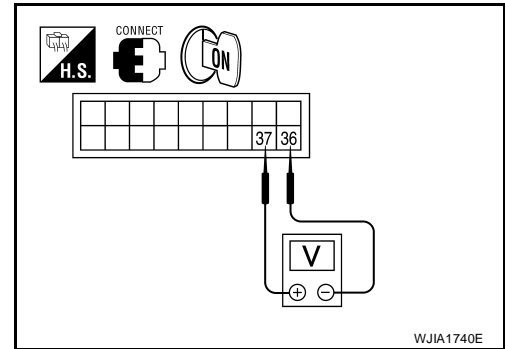
YES or NO

- YES >> GO TO 2.
- NO >> GO TO 14.

2. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Rotate temperature control dial (passenger) to 32°C (90°F).
3. Check voltage between front air control harness connector M50 terminal 36 and terminal 37 while rotating temperature control dial (passenger) to 16°C (60°F).

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M50	37	36	Rotate temp control dial	Battery voltage



OK or NG

- OK >> GO TO 4.
- NG >> GO TO 3.

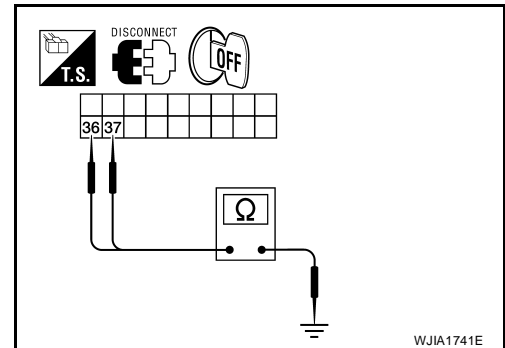
3. CHECK AIR MIX DOOR MOTOR (PASSENGER) CIRCUITS FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M50 terminal 36, 37 and ground.

- 36 - Ground : Continuity should not exist.**
- 37 - Ground : Continuity should not exist.**

OK or NG

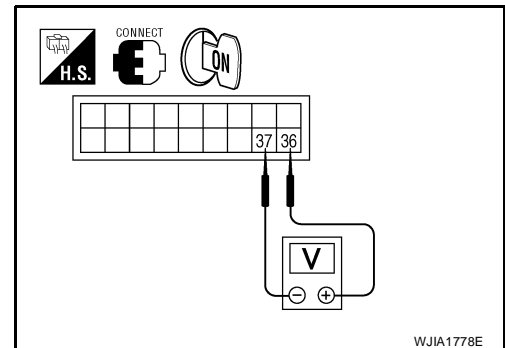
- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
- NG >> Repair or replace harness as necessary.



4. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Rotate temperature control dial (passenger) to 16°C (60°F).
3. Check voltage between front air control harness connector M50 terminal 36 and terminal 37 while rotating temperature control dial (passenger) to 32°C (90°F).

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M50	36	37	Rotate temp control dial	Battery voltage



OK or NG

- OK >> GO TO 5.
- NG >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).

TROUBLE DIAGNOSIS

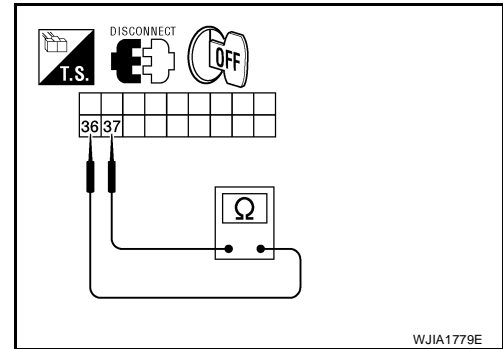
5. CHECK AIR MIX DOOR MOTOR (PASSENGER) CIRCUITS FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M50 terminal 36 and terminal 37.

Continuity should exist.

OK or NG

- OK >> GO TO 7.
 NG >> GO TO 6.



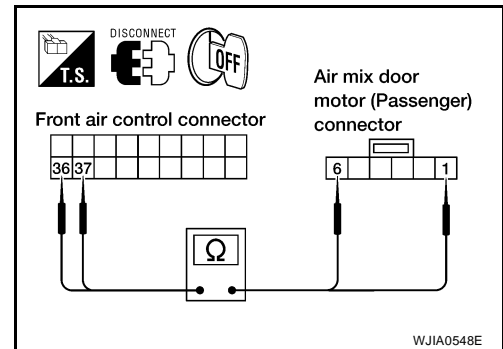
6. CHECK AIR MIX DOOR MOTOR (PASSENGER) CIRCUITS FOR OPEN

1. Disconnect the air mix door motor (passenger) harness connector.
2. Check continuity between front air control harness connector M50 terminal 36, 37 and the air mix door motor (passenger) harness connector M143 terminal 1, 6.

36 - 1 : Continuity should exist.
37 - 6 : Continuity should exist.

OK or NG

- OK >> Replace air mix door motor (passenger). Refer to [ATC-175, "AIR MIX DOOR MOTOR \(PASSENGER\)"](#).
 NG >> Repair or replace harness as necessary.



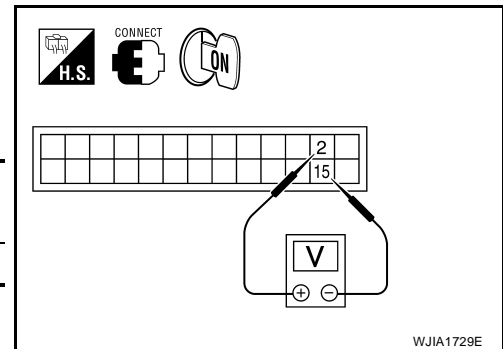
7. CHECK FRONT AIR CONTROL FOR PBR POWER AND GROUND

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 9.
 NG >> GO TO 8.



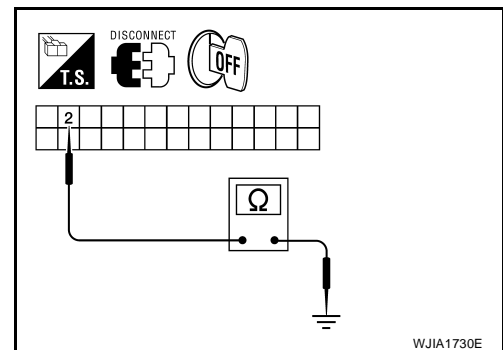
8. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND

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 [ATC-159, "REMOVAL"](#).
 NG >> Repair or replace harness as necessary.



TROUBLE DIAGNOSIS

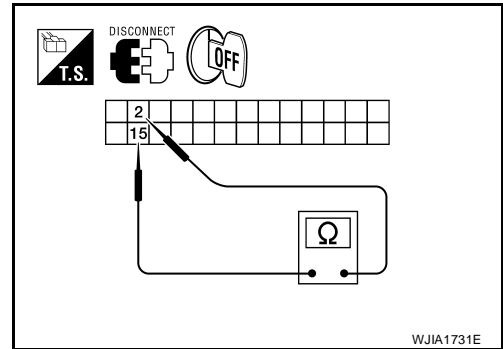
9. CHECK PBR REFERENCE VOLTAGE AND GROUND CIRCUITS

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 11.
NG >> GO TO 10.



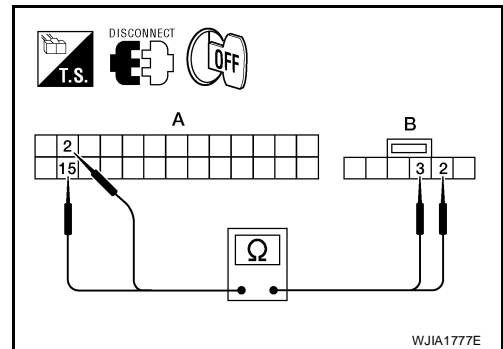
10. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR OPEN

1. Disconnect the air mix door motor (passenger) harness connector.
2. Check continuity between air mix door motor (passenger) harness connector M143 (B) terminal 3, 2 and front air control harness connector M49 (A) terminal 2, 15.

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

OK or NG

- OK >> Replace air mix door motor (passenger). Refer to [ATC-175, "AIR MIX DOOR MOTOR \(PASSENGER\)"](#).
NG >> Repair or replace harness as necessary.



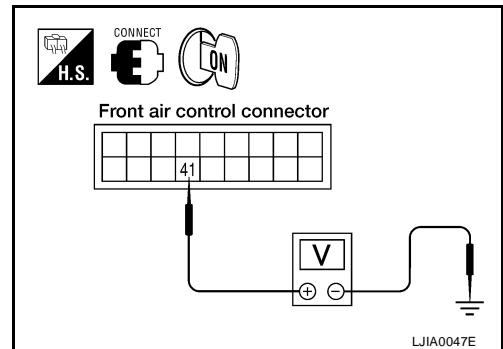
11. CHECK PBR FEEDBACK VOLTAGE

1. Reconnect the front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M50 terminal 41 and ground while rotating temperature control dial (passenger) from 32°C (90°F) to 16°C (60°F).

Voltage : Approx. .5V - 4.5V

OK or NG

- OK >> GO TO 13.
NG >> GO TO 12.



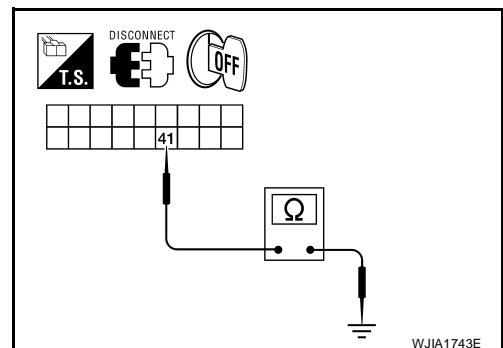
12. CHECK PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect front air control harness connector.
3. Check continuity between front air control harness connector M50 terminal 41 and ground.

Continuity should not exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
NG >> Repair or replace harness as necessary.



TROUBLE DIAGNOSIS

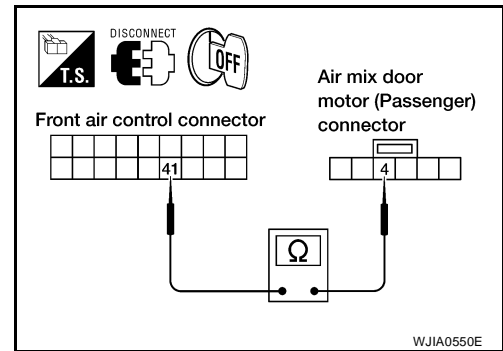
13. CHECK PBR FEEDBACK CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the air mix door motor (passenger) harness connector and front air control harness connector.
3. Check continuity between air mix door motor (passenger) harness connector M143 terminal 4 and front air control harness connector M50 terminal 41.

Continuity should exist.

OK or NG

- OK >> Replace air mix door motor (passenger). Refer to [ATC-175, "AIR MIX DOOR MOTOR \(PASSENGER\)"](#).
- NG >> Repair or replace harness as necessary.

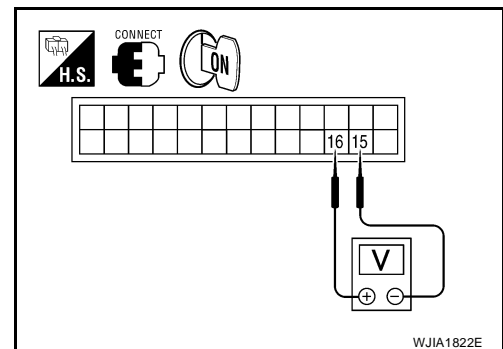


WJIA0550E

14. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Rotate temperature control dial (passenger) to 32°C (90°F).
3. Check voltage between front air control harness connector M49 terminal 15 and terminal 16 while rotating temperature control dial (passenger) to 16°C (60°F).

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	16	15	Rotate temp control dial	Battery voltage



WJIA1822E

OK or NG

- OK >> GO TO 16.
- NG >> GO TO 15.

15. CHECK AIR MIX DOOR MOTOR (PASSENGER) CIRCUITS FOR SHORT TO GROUND

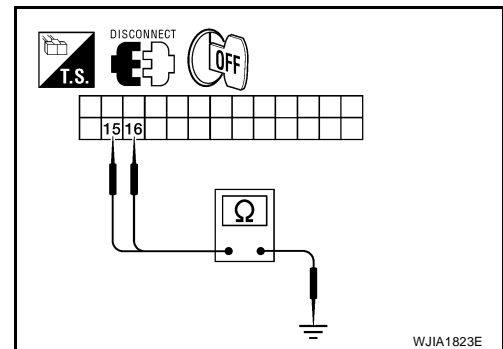
1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 15, 16 and ground.

15 - Ground : Continuity should not exist.

16 - Ground : Continuity should not exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
- NG >> Repair or replace harness as necessary.



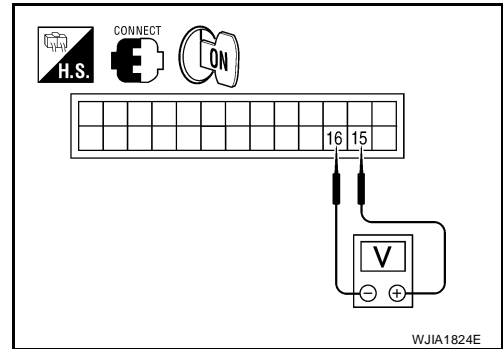
WJIA1823E

TROUBLE DIAGNOSIS

16. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Rotate temperature control dial (passenger) to 16°C (60°F).
3. Check voltage between front air control harness connector M49 terminal 15 and terminal 16 while rotating temperature control dial (passenger) to 32°C (90°F).

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	15	16	Rotate temp control dial	Battery voltage



OK or NG

- OK >> GO TO 17.
 NG >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).

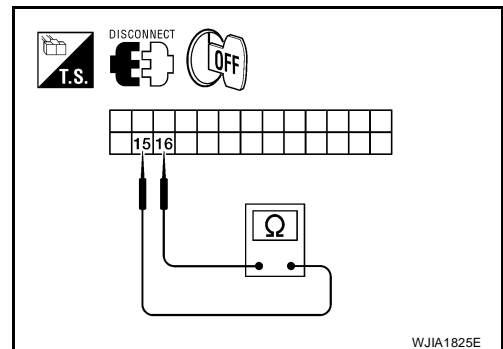
17. CHECK AIR MIX DOOR MOTOR (PASSENGER) CIRCUITS FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 15 and terminal 16.

Continuity should exist.

OK or NG

- OK >> GO TO 19.
 NG >> GO TO 18.



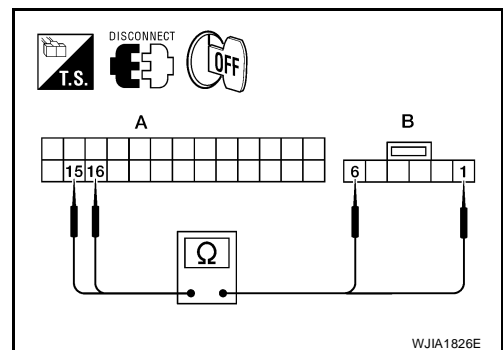
18. CHECK AIR MIX DOOR MOTOR (PASSENGER) CIRCUITS FOR OPEN

1. Disconnect the air mix door motor (passenger) harness connector.
2. Check continuity between front air control harness connector M49 (A) terminal 15, 16 and the air mix door motor (passenger) harness connector M143 (B) terminal 1, 6.

- 15 - 1 : Continuity should exist.**
16 - 6 : Continuity should exist.

OK or NG

- OK >> Replace air mix door motor (passenger). Refer to [ATC-175, "AIR MIX DOOR MOTOR \(PASSENGER\)"](#).
 NG >> Repair or replace harness as necessary.



TROUBLE DIAGNOSIS

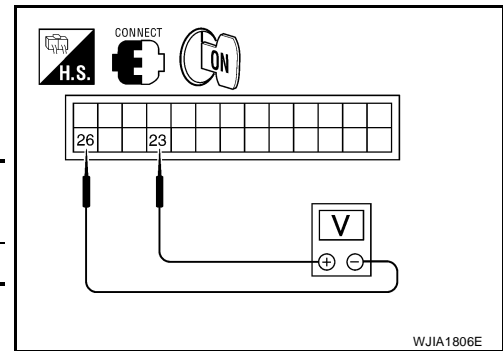
19. CHECK FRONT AIR CONTROL FOR PBR POWER AND GROUND

1. Reconnect front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M49 terminal 23 and terminal 26.

Connector	Terminals		Voltage (Approx.)
	(+)	(-)	
Front air control: M49	23	26	5V

OK or NG

- OK >> GO TO 21.
 NG >> GO TO 20.



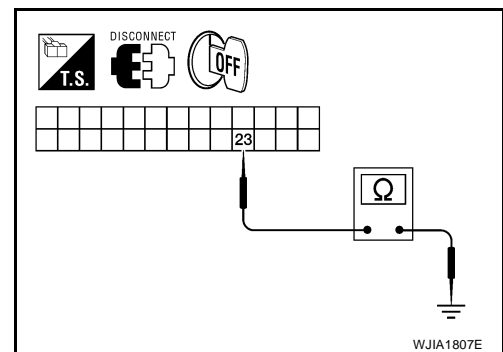
20. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 23 and ground.

Continuity should not exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
 NG >> Repair or replace harness as necessary.



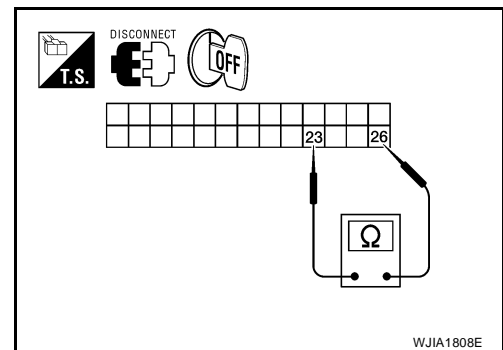
21. CHECK PBR REFERENCE VOLTAGE AND GROUND CIRCUITS

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 23 and terminal 26.

Continuity should exist.

OK or NG

- OK >> GO TO 23.
 NG >> GO TO 22.



22. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR OPEN

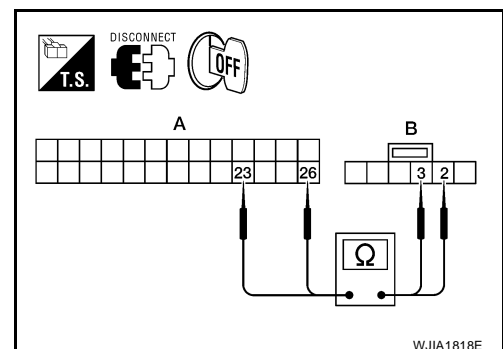
1. Disconnect the air mix door motor (passenger) harness connector.
2. Check continuity between air mix door motor (passenger) harness connector M143 (B) terminal 3, 2 and front air control harness connector M49 (A) terminal 23, 26.

23 - 3 : Continuity should exist.

26 - 2 : Continuity should exist.

OK or NG

- OK >> Replace air mix door motor (passenger). Refer to [ATC-175, "AIR MIX DOOR MOTOR \(PASSENGER\)"](#).
 NG >> Repair or replace harness as necessary.



TROUBLE DIAGNOSIS

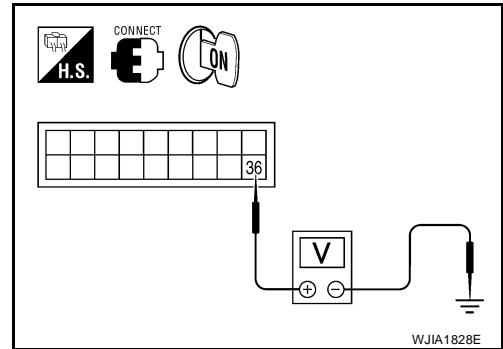
23. CHECK PBR FEEDBACK VOLTAGE

1. Reconnect the front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M50 terminal 36 and ground while rotating temperature control dial (passenger) from 60°C (90°F) to 16°C (60°F).

Voltage : Approx. .5V - 4.5V

OK or NG

- OK >> GO TO 25.
NG >> GO TO 24.



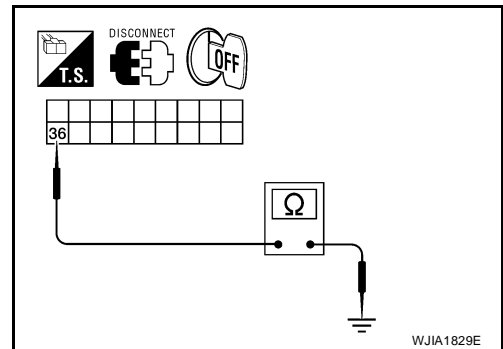
24. CHECK PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect front air control harness connector.
3. Check continuity between front air control harness connector M50 terminal 36 and ground.

Continuity should not exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159](#), "[REMOVAL](#)".
NG >> Repair or replace harness as necessary.



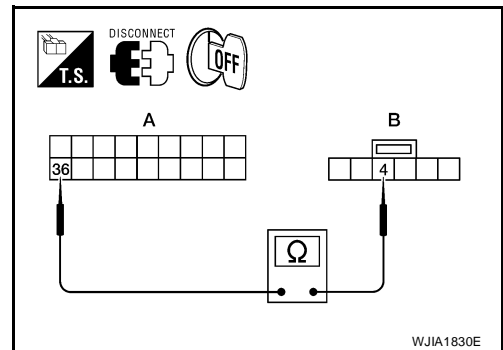
25. CHECK PBR FEEDBACK CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the air mix door motor (passenger) harness connector and front air control harness connector.
3. Check continuity between air mix door motor (passenger) harness connector M143 (B) terminal 4 and front air control harness connector M50 (A) terminal 36.

Continuity should exist.

OK or NG

- OK >> Replace air mix door motor (passenger). Refer to [ATC-175](#), "[AIR MIX DOOR MOTOR \(PASSENGER\)](#)".
NG >> Repair or replace harness as necessary.



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TROUBLE DIAGNOSIS

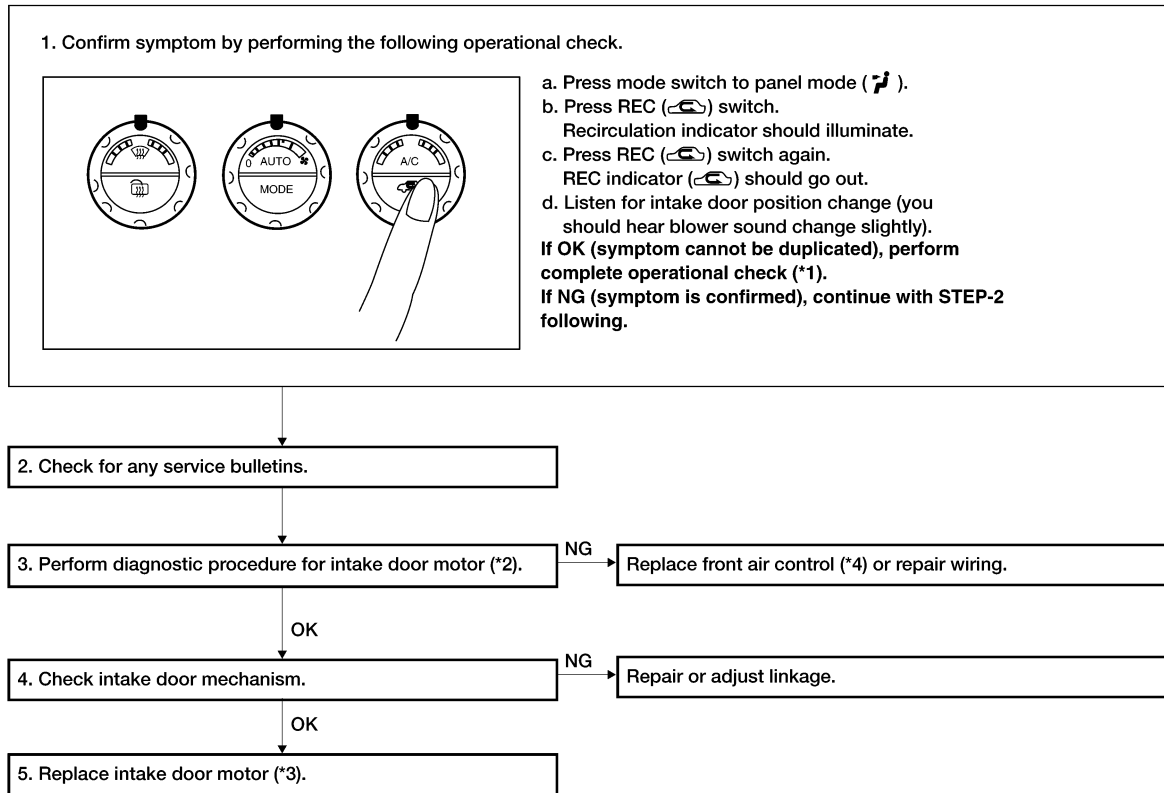
EJS004UP

Intake Door Motor Circuit

SYMPTOM:

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

INSPECTION FLOW



*1 [ATC-62, "Operational Check"](#)

*2 [ATC-94, "Intake Door Motor Circuit"](#)

*3 [ATC-172, "INTAKE DOOR MOTOR"](#)

*4 [ATC-159, "CONTROL UNIT"](#)

WJIA1939E

TROUBLE DIAGNOSIS

SYSTEM DESCRIPTION

Component Parts

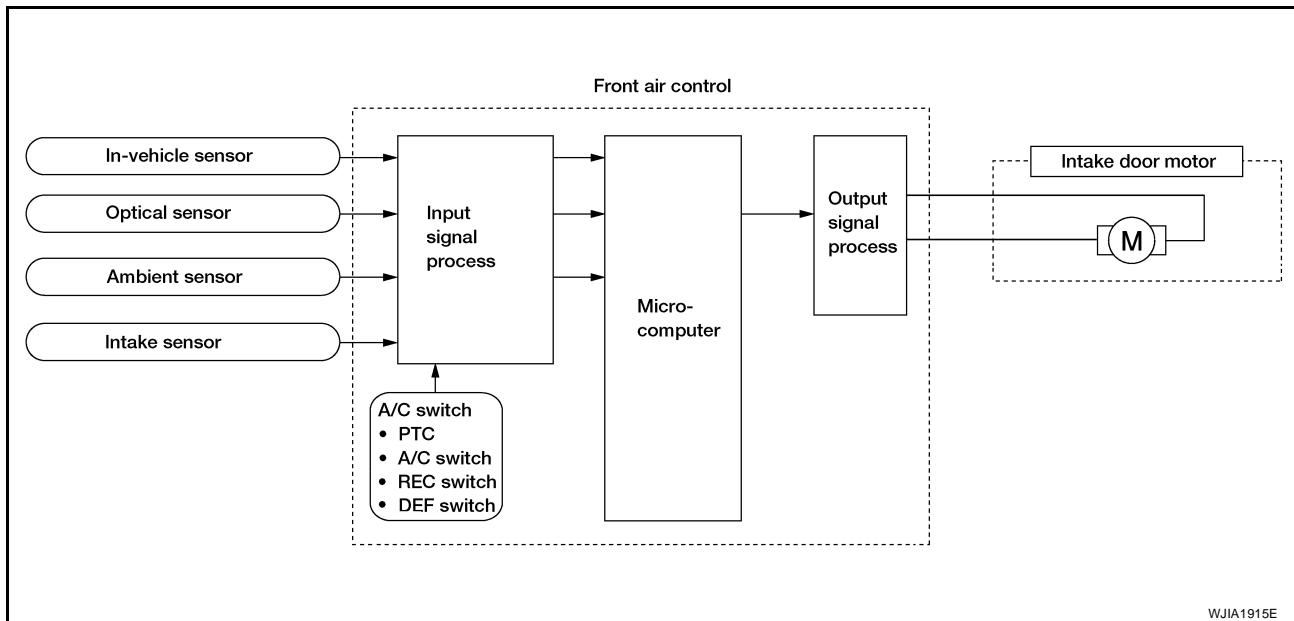
Intake door control system components are:

- Front air control
- Intake door motor (PRB built into the intake door motor)
- In-vehicle sensor
- Ambient sensor
- Optical sensor
- Intake sensor

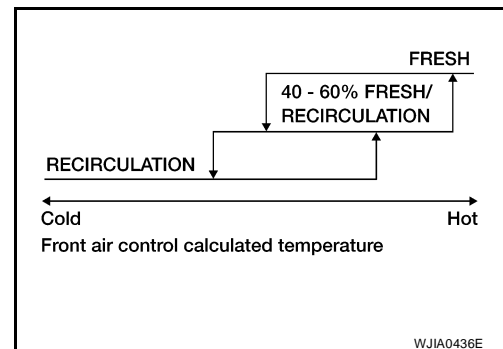
System Operation

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

In the AUTO mode, the front air control determines the intake door position based on the ambient temperature, the intake air temperature and the in-vehicle temperature. When the DEFROST, or OFF switches are pushed, the front air control sets the intake door at the fresh position.



Intake Door Control Specification

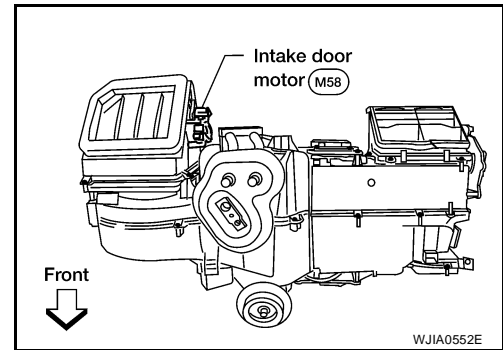


TROUBLE DIAGNOSIS

COMPONENT DESCRIPTION

Intake door motor

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



DIAGNOSTIC PROCEDURE FOR INTAKE DOOR MOTOR

1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

YES or NO

YES >> GO TO 2.

NO >> GO TO 7.

2. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

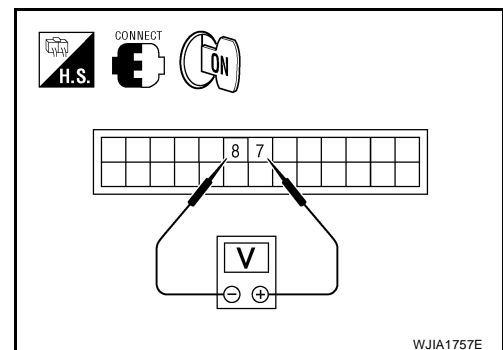
1. Turn ignition switch ON.
2. Check voltage between front air control harness connector M49 terminal 7 and terminal 8 while placing the HVAC system into self-diagnostic mode.

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

OK or NG

OK >> GO TO 4.

NG >> GO TO 3.



3. CHECK INTAKE 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 7, 8 and ground.

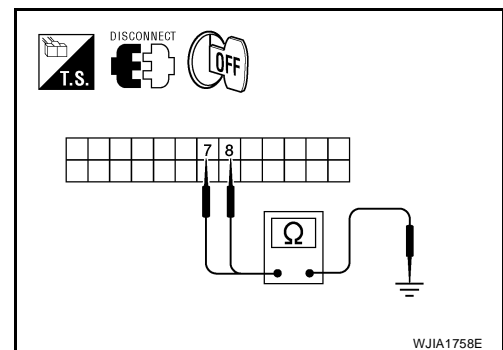
7 - Ground : Continuity should not exist.

8 - Ground : Continuity should not exist.

OK or NG

OK >> Replace front air control. Refer to [ATC-159](#).
"REMOVAL".

NG >> Repair or replace harness as necessary.



TROUBLE DIAGNOSIS

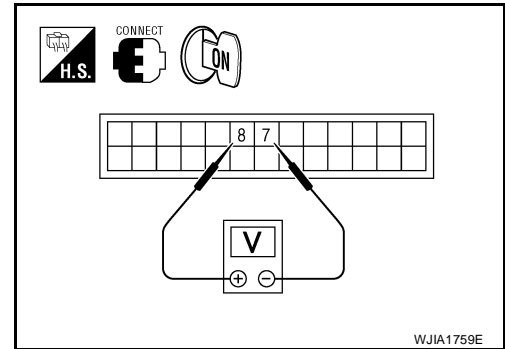
4. CHECK FRONT AIR CONTROL FOR GROUND AND POWER

1. Press the BACK 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 5.
 NG >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).



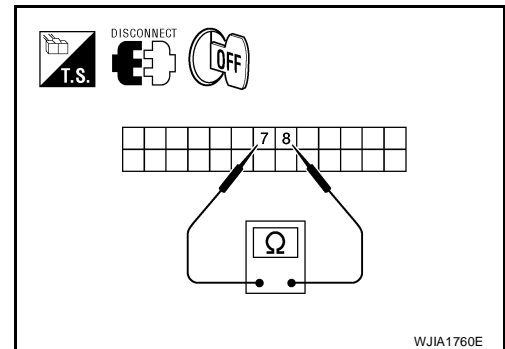
5. CHECK INTAKE DOOR MOTOR AND CIRCUITS FOR OPEN

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

Continuity should exist.

OK or NG

- OK >> Replace intake door motor. Refer to [ATC-172, "INTAKE DOOR MOTOR"](#).
 NG >> GO TO 6.



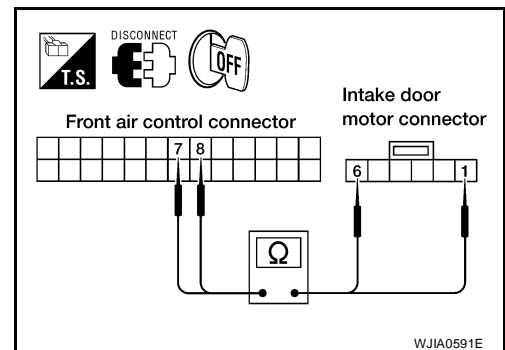
6. CHECK INTAKE DOOR MOTOR CIRCUITS FOR OPEN

1. Disconnect the intake door motor harness connector.
2. Check continuity between front air control harness connector M49 terminal 7, 8 and the intake door motor harness connector M58 terminal 1, 6.

1 - 7 : Continuity should exist.
6 - 8 : Continuity should exist.

OK or NG

- OK >> Replace intake door motor. Refer to [ATC-172, "INTAKE DOOR MOTOR"](#).
 NG >> Repair or replace harness as necessary.



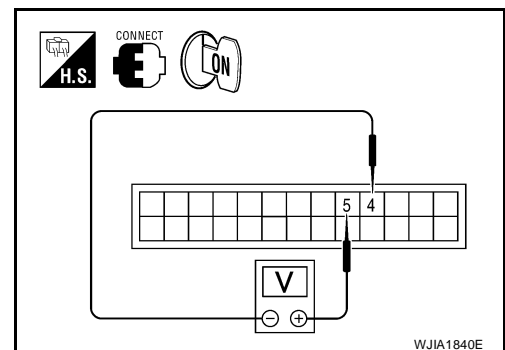
7. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Check voltage between front air control harness connector M49 terminal 5 and terminal 4 while placing the HVAC system into self-diagnostic mode.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	5	4	Self-diagnostic mode	Battery voltage

OK or NG

- OK >> GO TO 9.
 NG >> GO TO 8.



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TROUBLE DIAGNOSIS

8. CHECK INTAKE 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 5, 4 and ground.

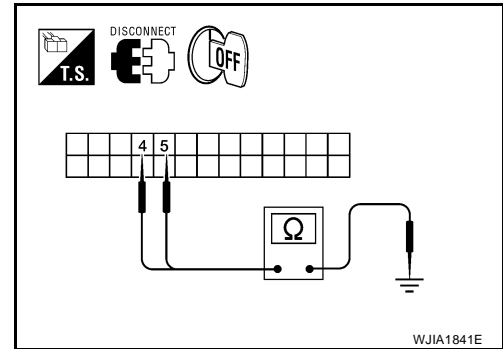
5 - Ground : Continuity should not exist.

4 - Ground : Continuity should not exist.

OK or NG

OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).

NG >> Repair or replace harness as necessary.



WJIA1841E

9. CHECK FRONT AIR CONTROL FOR GROUND AND POWER

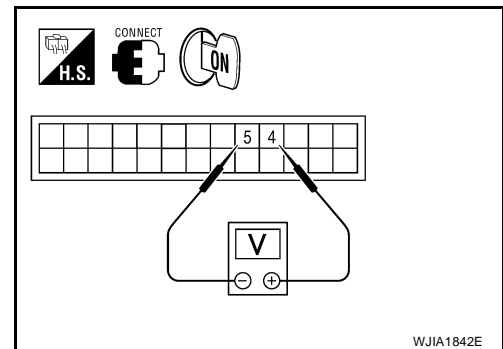
1. Press the BACK button to back out of self-diagnostic mode.
2. Check voltage between front air control harness connector M49 terminal 5 and terminal 4 while placing the HVAC system into self-diagnostic mode.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	4	5	Self-diagnostic mode	Battery voltage

OK or NG

OK >> GO TO 10.

NG >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).



WJIA1842E

10. CHECK INTAKE DOOR MOTOR AND CIRCUITS FOR OPEN

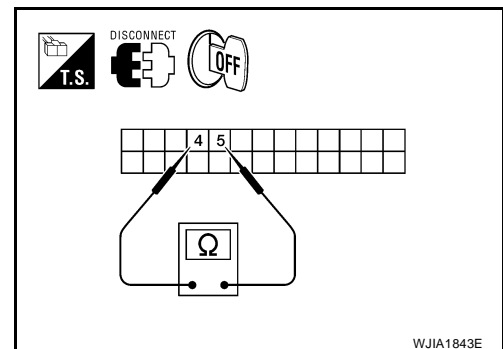
1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 4 and terminal 5.

Continuity should exist.

OK or NG

OK >> Replace intake door motor. Refer to [ATC-172, "INTAKE DOOR MOTOR"](#).

NG >> GO TO 11.



WJIA1843E

11. CHECK INTAKE DOOR MOTOR CIRCUITS FOR OPEN

1. Disconnect the intake door motor harness connector.
2. Check continuity between front air control harness connector M49 (A) terminal 5, 4 and the intake door motor harness connector M58 (B) terminal 1, 6.

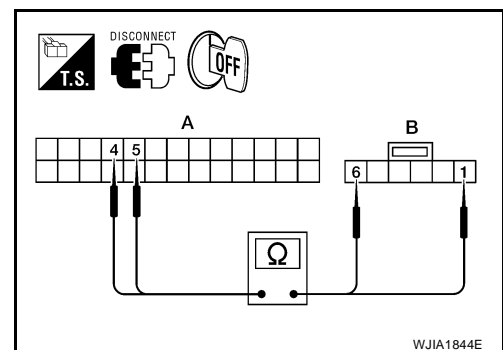
1 - 5 : Continuity should exist.

6 - 4 : Continuity should exist.

OK or NG

OK >> Replace intake door motor. Refer to [ATC-172, "INTAKE DOOR MOTOR"](#).

NG >> Repair or replace harness as necessary.



WJIA1844E

TROUBLE DIAGNOSIS

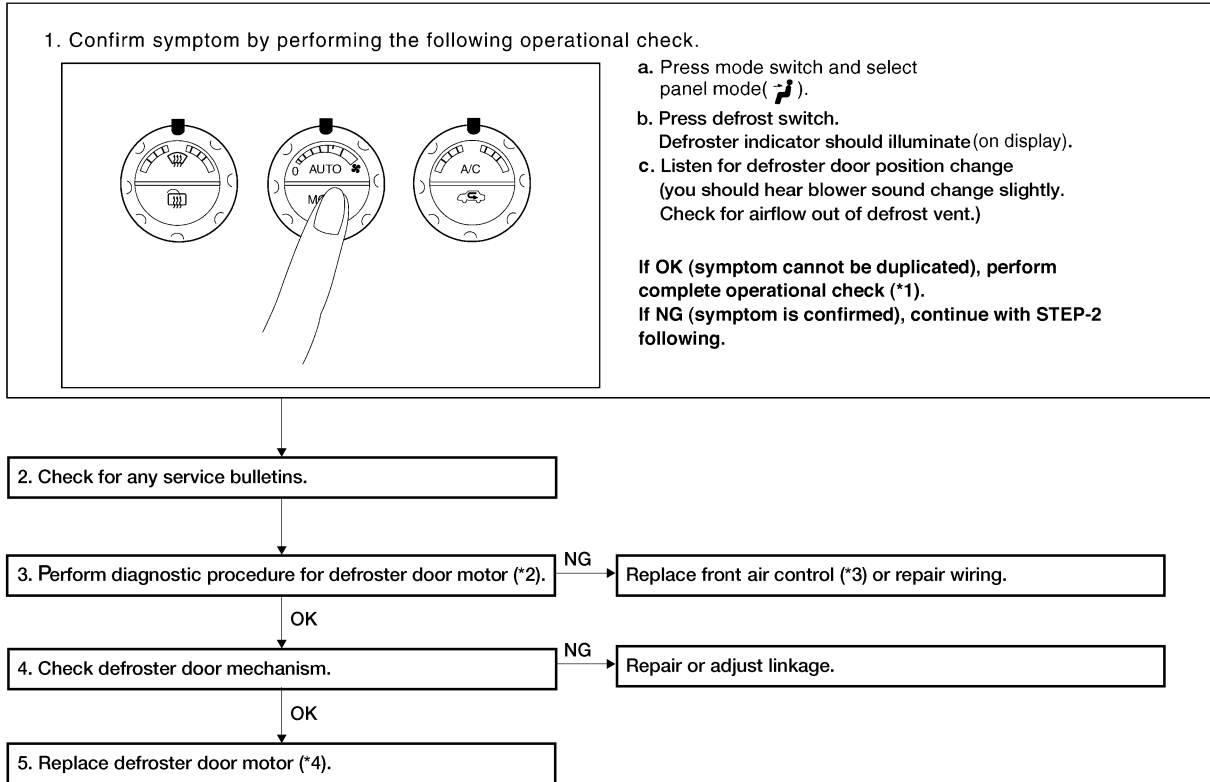
EJS004UQ

Defroster Door Motor Circuit

SYMPTOM:

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

INSPECTION FLOW



*1 [ATC-62, "Operational Check"](#)

*2 [ATC-99, "Defroster Door Motor Circuit"](#)

*3 [ATC-159, "CONTROL UNIT"](#)

*4 [ATC-171, "DEFROSTER DOOR MOTOR"](#)

WJIA1940E

TROUBLE DIAGNOSIS

SYSTEM DESCRIPTION

Component Parts

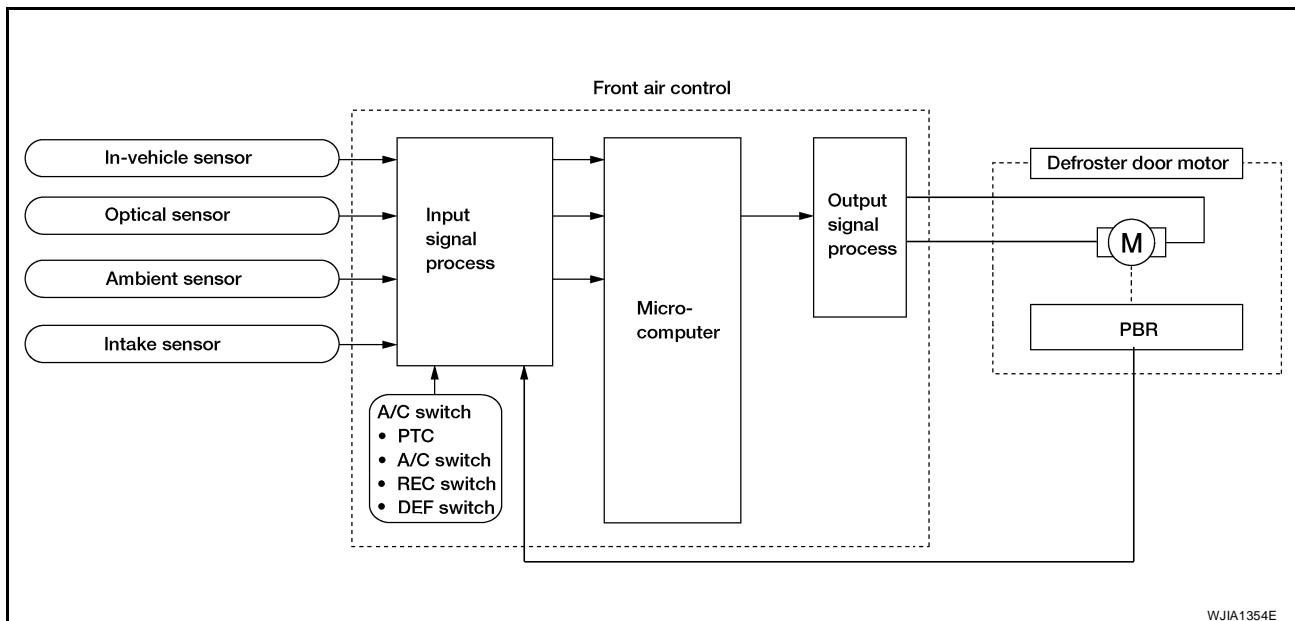
Defroster door control system components are:

- Front air control
- Defroster door motor
- PBR (Built into defroster door motor)
- In-vehicle sensor
- Ambient sensor
- Optical sensor
- Intake sensor

System Operation

The front air control determines defroster door position based on the position of the defroster switch. When the defroster switch is depressed, 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.

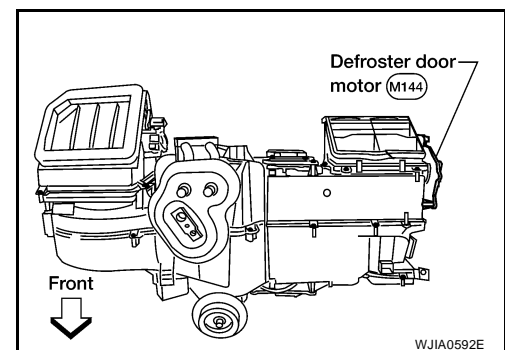
In the AUTO mode, the front air control determines defroster door position based on the ambient temperature, the intake air temperature and the in-vehicle temperature.



COMPONENT DESCRIPTION

Defroster door motor

The defroster door motor is attached to the front heater & cooling unit assembly. 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.



TROUBLE DIAGNOSIS

DIAGNOSTIC PROCEDURE FOR DEFROSTER DOOR MOTOR



1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

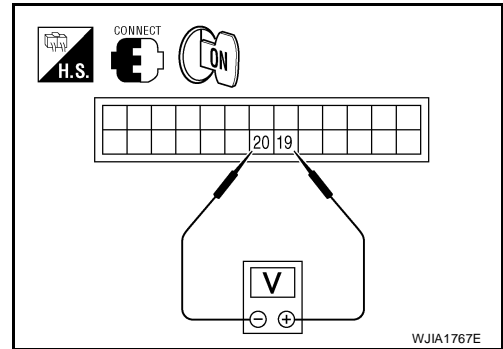
YES or NO

- YES >> GO TO 2.
- NO >> GO TO 14.

2. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Press the defroster switch ().
3. Check voltage between front air control harness connector M49 terminal 20 and terminal 19 and press the defroster switch () again.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	20	19	Press defroster switch	Battery voltage



OK or NG

- OK >> GO TO 4.
- NG >> GO TO 3.

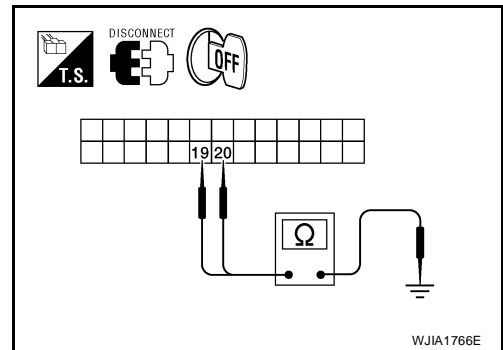
3. CHECK DEFROSTER DOOR MOTOR CIRCUITS FOR SHORT TO GROUND

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



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

OK or NG

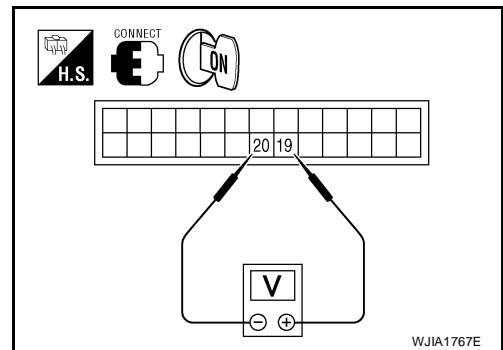
- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
- NG >> Repair or replace harness as necessary.



4. CHECK FRONT AIR CONTROL FOR GROUND AND POWER

1. Press the defroster switch ().
2. Check voltage between front air control harness connector M49 terminal 19 and terminal 20 and press the defroster switch () again.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M49	19	20	Press defroster switch	Battery voltage



OK or NG

- OK >> GO TO 5.
- NG >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).

TROUBLE DIAGNOSIS

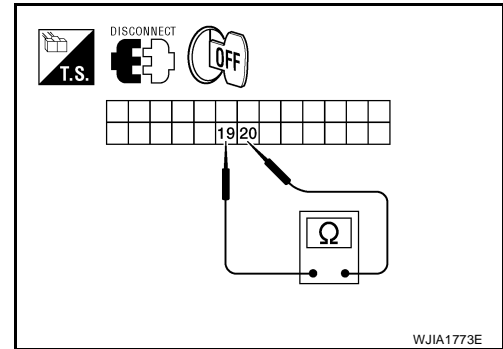
5. CHECK DEFROSTER DOOR MOTOR AND CIRCUITS FOR OPEN

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 >> GO TO 7.
 NG >> GO TO 6.



WJIA1773E

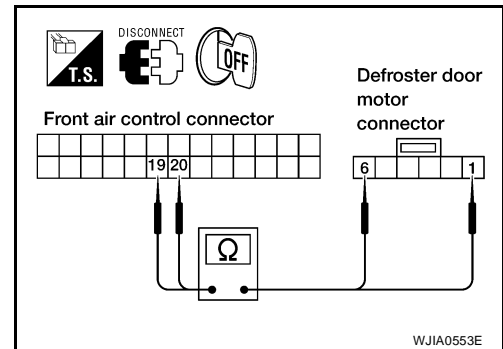
6. CHECK DEFROSTER DOOR MOTOR CIRCUITS FOR OPEN

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 M144 terminal 1, 6.

19 - 1 : Continuity should exist.
20 - 6 : Continuity should exist.

OK or NG

- OK >> Replace defroster door motor. Refer to [ATC-171, "DEFROSTER DOOR MOTOR"](#).
 NG >> Repair or replace harness as necessary.



WJIA0553E

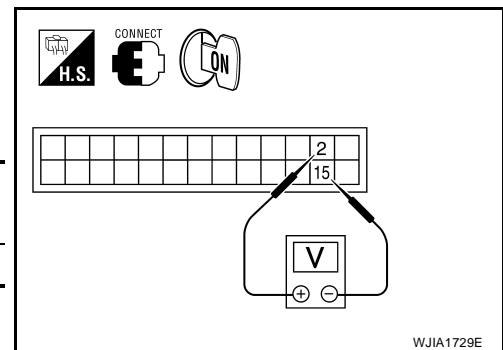
7. CHECK FRONT AIR CONTROL FOR PBR POWER AND GROUND

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 9.
 NG >> GO TO 8.



WJIA1729E

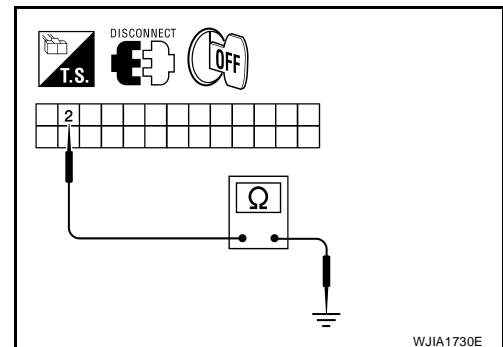
8. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND

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 [ATC-159, "REMOVAL"](#).
 NG >> Repair or replace harness as necessary.



WJIA1730E

TROUBLE DIAGNOSIS

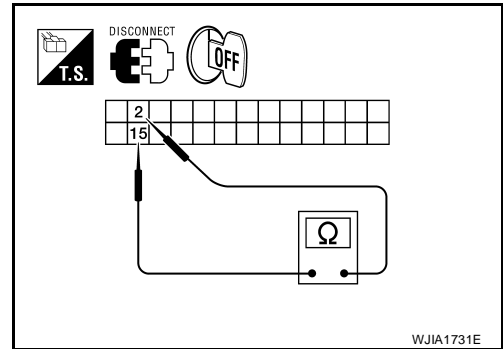
9. CHECK PBR REFERENCE VOLTAGE AND GROUND CIRCUITS

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 11.
NG >> GO TO 10.



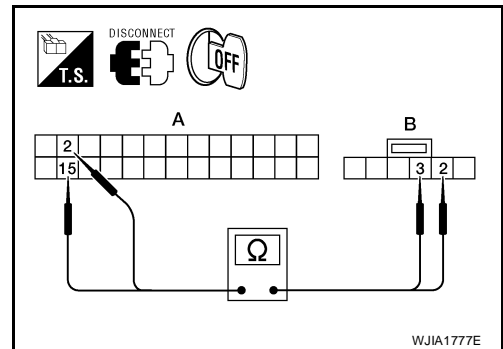
10. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR OPEN

1. Disconnect the defroster door motor harness connector.
2. Check continuity between defroster door motor harness connector (B) M144 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 defroster door motor. Refer to [ATC-171](#), "[DEFROSTER DOOR MOTOR](#)".
NG >> Repair or replace harness as necessary.



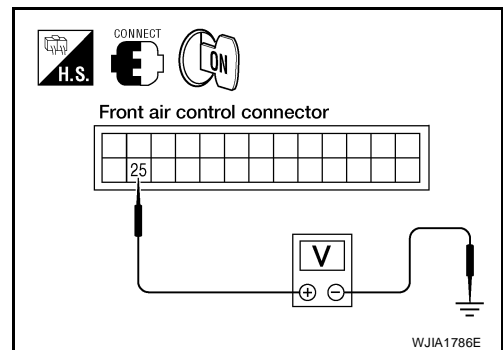
11. CHECK PBR FEEDBACK VOLTAGE

1. Reconnect the front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M49 terminal 25 and ground while cycling defroster switch on and off.

Voltage : Approx. 1V - 4.5V

OK or NG

- OK >> GO TO 13.
NG >> GO TO 12.



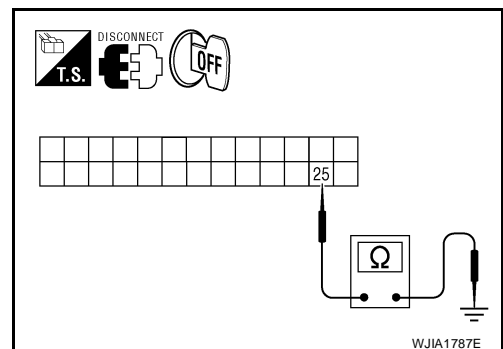
12. CHECK PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 25 and ground.

Continuity should not exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159](#), "[REMOVAL](#)".
NG >> Repair or replace harness as necessary.



TROUBLE DIAGNOSIS

13. CHECK PBR FEEDBACK CIRCUIT FOR OPEN

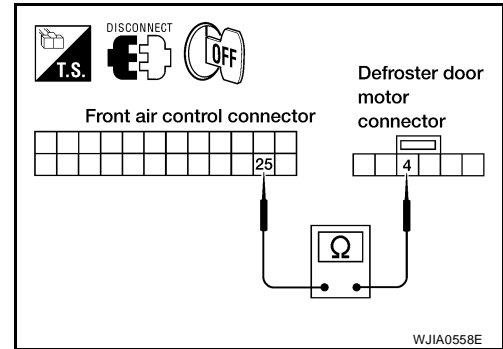
1. Turn ignition switch OFF.
2. Disconnect the defroster door motor harness connector and front air control harness connector.
3. Check continuity between defroster door motor harness connector M144 terminal 4 and front air control harness connector M49 terminal 25

Continuity should exist.

OK or NG

OK >> Replace defroster door motor. Refer to [ATC-171](#), "[DEFROSTER DOOR MOTOR](#)".

NG >> Repair or replace harness as necessary.

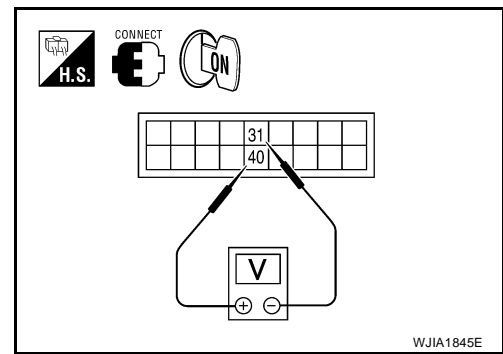


WJIA0558E

14. CHECK FRONT AIR CONTROL FOR POWER AND GROUND

1. Turn ignition switch ON.
2. Press the defroster switch (☞).
3. Check voltage between front air control harness connector M50 terminal 40 and terminal 31 and press the defroster switch (☞) again.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M50	40	31	Press defroster switch	Battery voltage



WJIA1845E

OK or NG

OK >> GO TO 16.

NG >> GO TO 15.

15. 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 M50 terminal 31, 40 and ground.

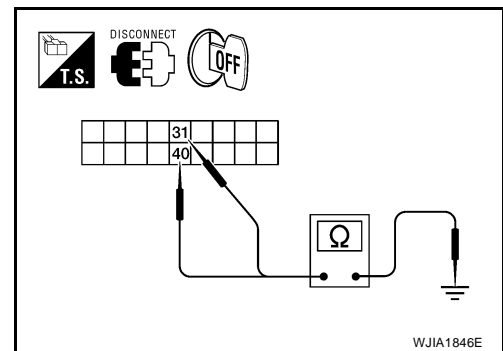
31 - Ground : Continuity should not exist.

40 - Ground : Continuity should not exist.

OK or NG

OK >> Replace front air control. Refer to [ATC-159](#), "[REMOVAL](#)".

NG >> Repair or replace harness as necessary.



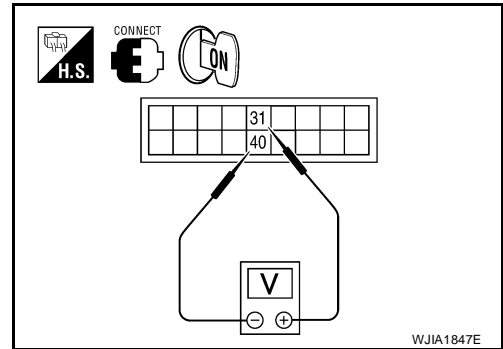
WJIA1846E

TROUBLE DIAGNOSIS

16. CHECK FRONT AIR CONTROL FOR GROUND AND POWER

1. Press the defroster switch (☞).
2. Check voltage between front air control harness connector M50 terminal 31 and terminal 40 and press the defroster switch (☞) again.

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Front air control: M50	31	40	Press defroster switch	Battery voltage



OK or NG

- OK >> GO TO 17.
 NG >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).

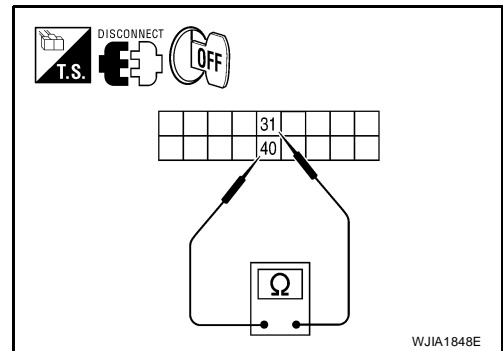
17. CHECK DEFROSTER DOOR MOTOR AND CIRCUITS FOR OPEN

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M50 terminal 31 and terminal 40.

Continuity should exist.

OK or NG

- OK >> GO TO 19.
 NG >> GO TO 18.



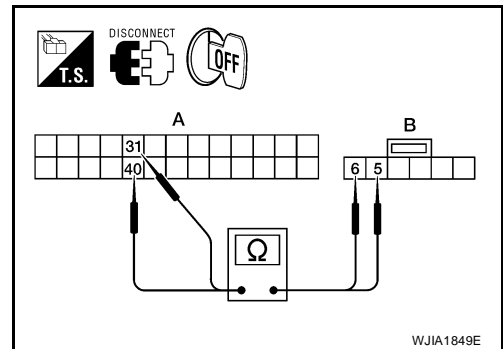
18. CHECK DEFROSTER DOOR MOTOR CIRCUITS FOR OPEN

1. Disconnect the defroster door motor harness connector.
2. Check continuity between front air control harness connector M50 (A) terminal 31, 40 and the defroster door motor harness connector M144 (B) terminal 1, 6.

31 - 1 : Continuity should exist.
40 - 6 : Continuity should exist.

OK or NG

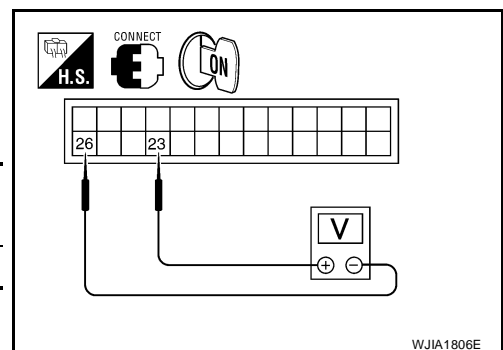
- OK >> Replace defroster door motor. Refer to [ATC-171, "DEFROSTER DOOR MOTOR"](#).
 NG >> Repair or replace harness as necessary.



19. 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 23 and terminal 26.

Connector	Terminals		Voltage (Approx.)
	(+)	(-)	
Front air control: M49	23	26	5V



OK or NG

- OK >> GO TO 21.
 NG >> GO TO 20.

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TROUBLE DIAGNOSIS

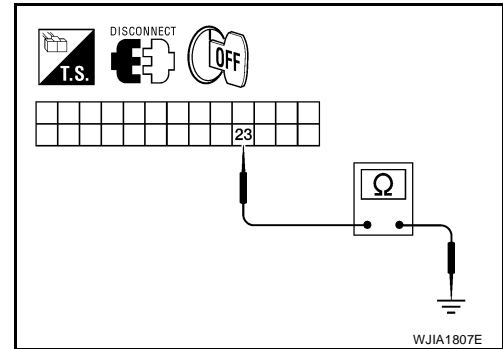
20. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR SHORT TO GROUND

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 23 and ground.

Continuity should not exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159](#), "[REMOVAL](#)".
- NG >> Repair or replace harness as necessary.



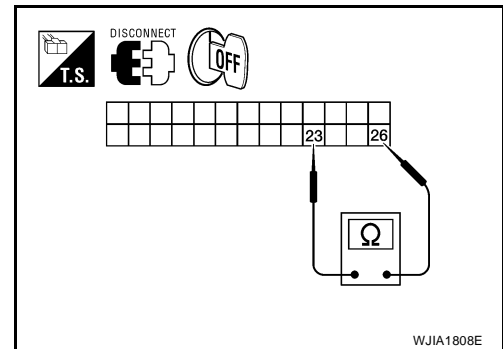
21. CHECK PBR REFERENCE VOLTAGE AND GROUND CIRCUITS

1. Turn ignition switch OFF.
2. Disconnect the front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 23 and terminal 26.

Continuity should exist.

OK or NG

- OK >> GO TO 23.
- NG >> GO TO 22.



22. CHECK PBR REFERENCE VOLTAGE CIRCUIT FOR OPEN

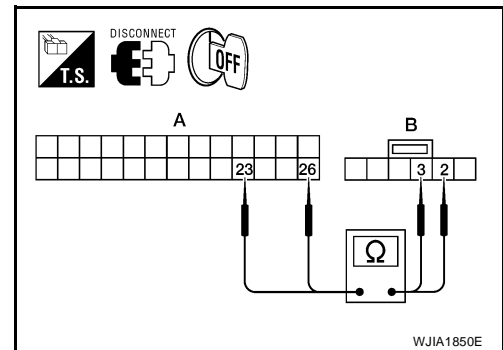
1. Disconnect the defroster door motor harness connector.
2. Check continuity between defroster door motor harness connector M144 (B) terminal 3, 2 and front air control harness connector M49 (A) terminal 23, 26.

23 - 3 : Continuity should exist.

26 - 2 : Continuity should exist.

OK or NG

- OK >> Replace defroster door motor. Refer to [ATC-171](#), "[DEFROSTER DOOR MOTOR](#)".
- NG >> Repair or replace harness as necessary.



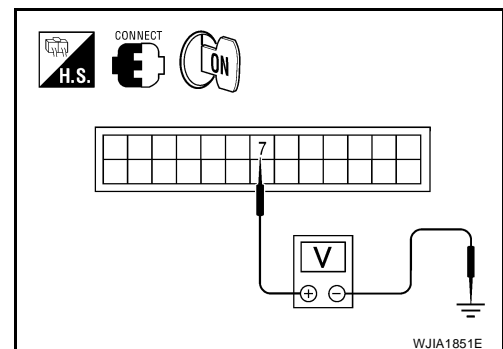
23. CHECK PBR FEEDBACK VOLTAGE

1. Reconnect the front air control harness connector.
2. Turn ignition switch ON.
3. Check voltage between front air control harness connector M49 terminal 7 and ground while cycling defroster switch on and off.

Voltage : Approx. 1V - 4.5V

OK or NG

- OK >> GO TO 25.
- NG >> GO TO 24.



TROUBLE DIAGNOSIS

24. CHECK PBR FEEDBACK SIGNAL CIRCUIT FOR SHORT TO GROUND

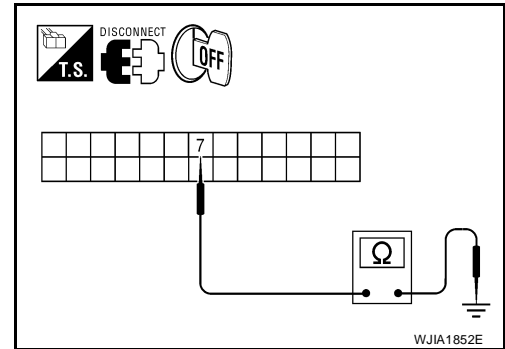
1. Turn ignition switch OFF.
2. Disconnect front air control harness connector.
3. Check continuity between front air control harness connector M49 terminal 7 and ground.

Continuity should not exist.

OK or NG

OK >> Replace front air control. Refer to [ATC-159](#), "[REMOVAL](#)".

NG >> Repair or replace harness as necessary.



25. CHECK PBR FEEDBACK CIRCUIT FOR OPEN

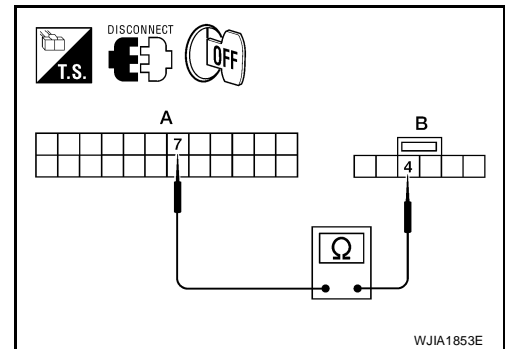
1. Turn ignition switch OFF.
2. Disconnect the defroster door motor harness connector and front air control harness connector.
3. Check continuity between defroster door motor harness connector M144 (B) terminal 4 and front air control harness connector M49 (A) terminal 7.

Continuity should exist.

OK or NG

OK >> Replace defroster door motor. Refer to [ATC-171](#), "[DEFROSTER DOOR MOTOR](#)".

NG >> Repair or replace harness as necessary.



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TROUBLE DIAGNOSIS

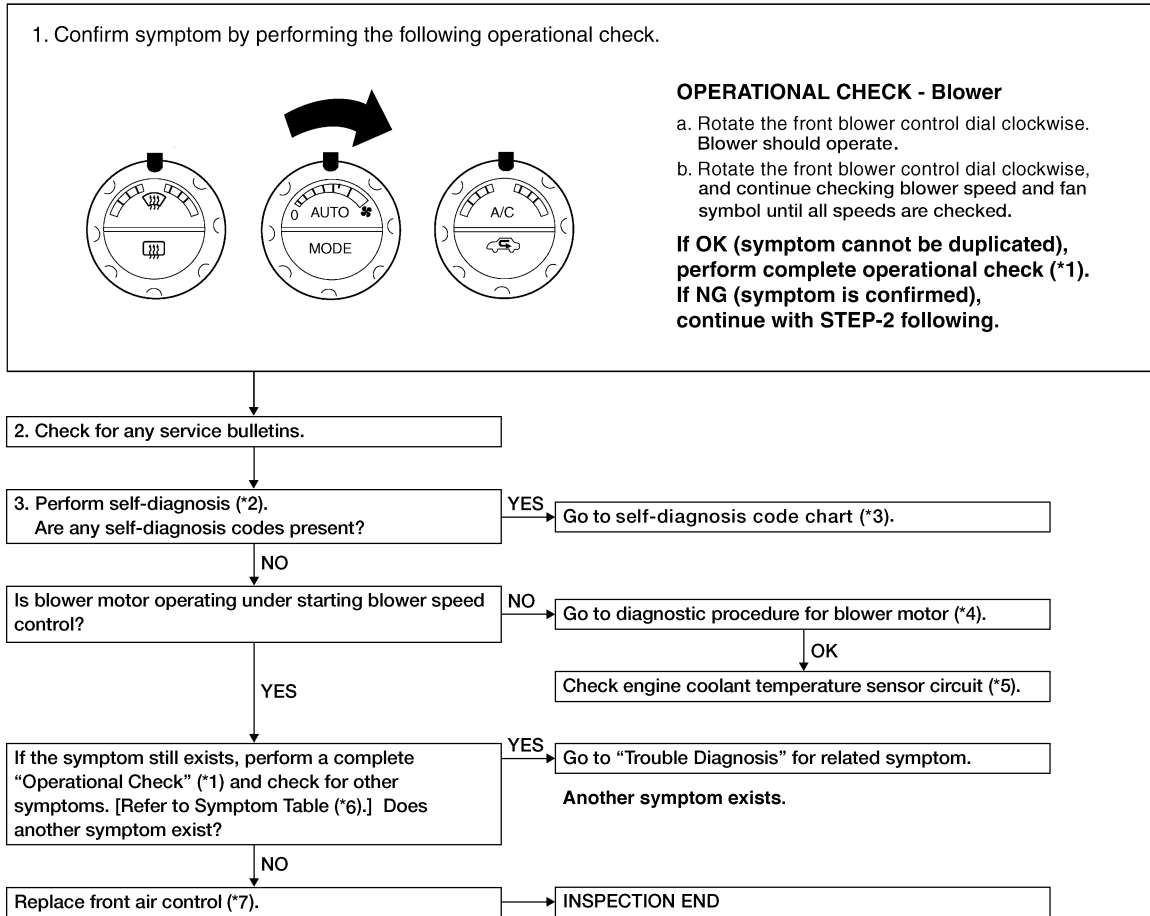
EJS004UR

Front Blower Motor Circuit

SYMPTOM:

- Blower motor operation is malfunctioning.

INSPECTION FLOW



*1 [ATC-62, "Operational Check"](#)

*2 [ATC-60, "A/C System Self-diagnosis Function"](#)

*3 [ATC-61, "SELF-DIAGNOSIS CODE CHART"](#)

*4 [ATC-110, "DIAGNOSTIC PROCEDURE FOR BLOWER MOTOR"](#)

*5 [EC-198, "DTC P0117, P0118 ECT SENSOR"](#)

*6 [ATC-35, "SYMPTOM TABLE"](#)

*7 [ATC-159, "CONTROL UNIT"](#)

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TROUBLE DIAGNOSIS

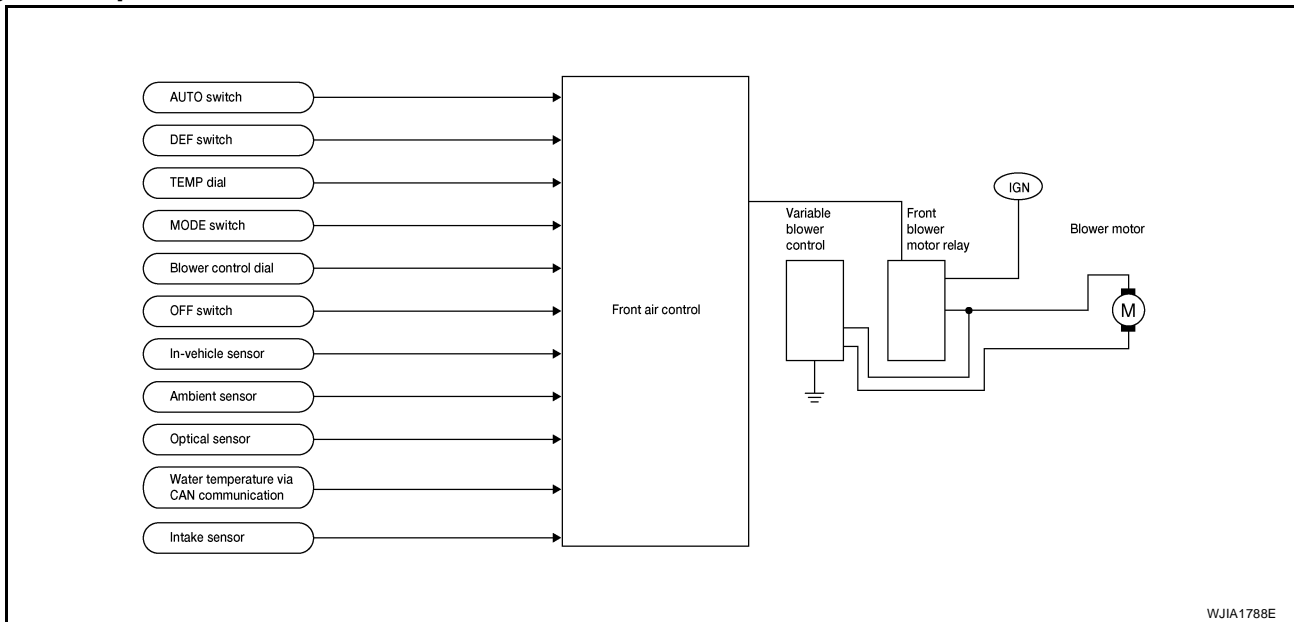
SYSTEM DESCRIPTION

Component Parts

Blower speed control system components are:

- Front air control
- Variable blower control
- Front blower motor relay
- Front blower motor
- In-vehicle sensor
- Ambient sensor
- Optical sensor
- Intake sensor

System Operation



Automatic Mode

In the automatic mode, the blower motor speed is calculated by the front air control and variable blower control based on input from the in-vehicle sensor, optical sensor, intake sensor and ambient sensor, and potentiometer temperature control (PTC).

When the air flow is increased, the blower motor speed is adjusted gradually to prevent a sudden increase in air flow.

In addition to manual air flow control and the usual automatic air flow control, starting air flow control, low water temperature starting control and high passenger compartment temperature starting control are available.

Starting Blower Speed Control

Start up from cold soak condition (Automatic mode).

In a cold start up condition where the engine coolant temperature is below 50°C (122°F), the blower will not operate at blower speed 1 for a short period of time (up to 210 seconds). The exact start delay time varies depending on the ambient and engine coolant temperatures.

In the most extreme case (very low ambient temperature) the blower starting delay will be 210 seconds as described above. After the coolant temperature reaches 50°C (122°F), or the 210 seconds has elapsed, the blower speed will increase to the objective blower speed.

Start up from usual operating or hot soak condition (Automatic mode).

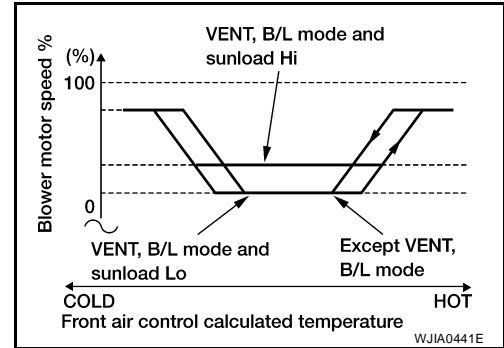
The blower will begin operation momentarily after the AUTO switch is pushed. The blower speed will gradually rise to the objective speed over a time period of 3 seconds or less (actual time depends on the objective blower speed).

TROUBLE DIAGNOSIS

Blower Speed Compensation - Sunload

When the in-vehicle temperature and the set temperature are very close, the blower will be operating at low speed. The speed will vary depending on the sunload. During conditions of low or no sunload, the blower operates at low speed. During high sunload conditions, the front air control causes the blower speed to increase.

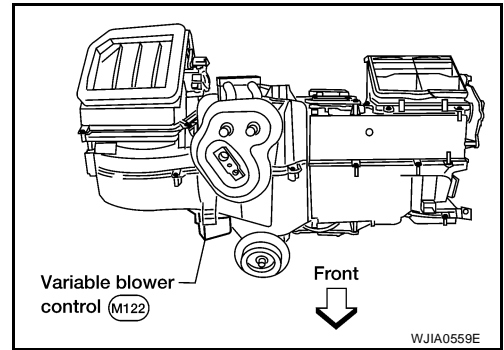
Blower Speed Control Specification



COMPONENT DESCRIPTION

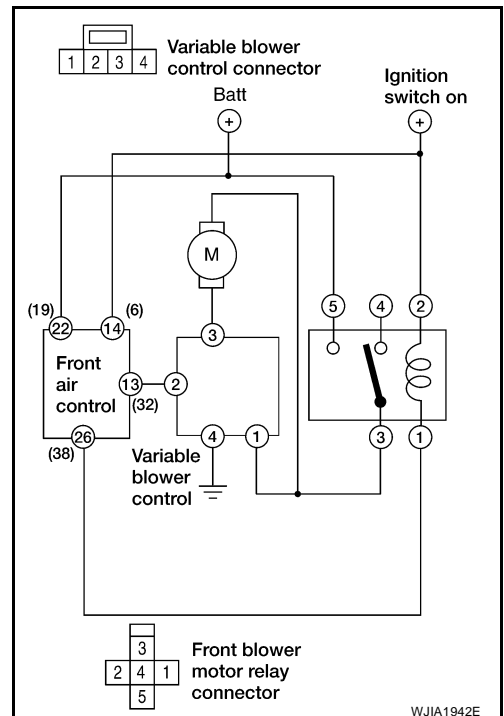
Variable Blower Control

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 motor voltage in the 0 to 5 volt range (approx.).



DIAGNOSTIC PROCEDURE FOR BLOWER MOTOR

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



TROUBLE DIAGNOSIS

1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

YES or NO

- YES >> GO TO 2.
- NO >> GO TO 17.

2. CHECK FUSES

Check 20A fuses [No. 24 and 27 (Located in the fuse and fusible link box)]. For fuse layout. Refer to [PG-81, "FUSE AND FUSIBLE LINK BOX"](#).

Fuses are good.

OK or NG

- OK >> GO TO 3.
- NG >> GO TO 11.

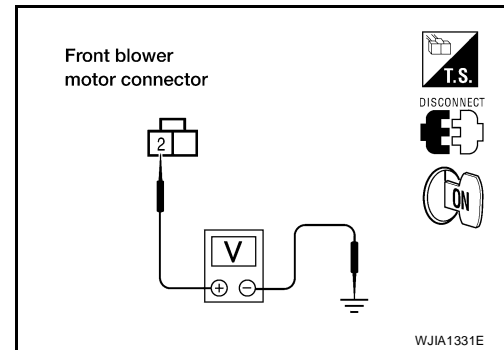
3. CHECK FRONT BLOWER MOTOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect front blower motor connector.
3. Turn ignition switch ON.
4. Press the mode switch to select any mode except OFF.
5. Turn the front blower control dial to high.
6. Check voltage between front blower motor harness connector M62 terminal 2 and ground.

2 - Ground : Battery voltage

OK or NG

- OK >> GO TO 13.
- NG >> GO TO 4.



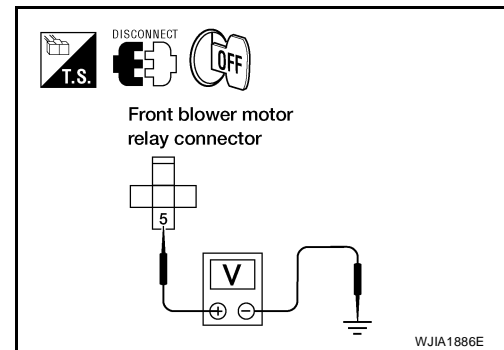
4. CHECK FRONT BLOWER MOTOR RELAY (SWITCH SIDE) POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect front blower motor relay.
3. Check voltage between front blower motor relay harness connector M107 terminal 5 and ground.

5 - Ground : Battery voltage

OK or NG

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



5. CHECK FRONT BLOWER MOTOR RELAY

Turn ignition switch OFF.

Check front blower motor relay. Refer to [ATC-119, "Front Blower Motor Relay"](#).

OK or NG

- OK >> GO TO 6.
- NG >> Replace front blower motor relay.

TROUBLE DIAGNOSIS

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

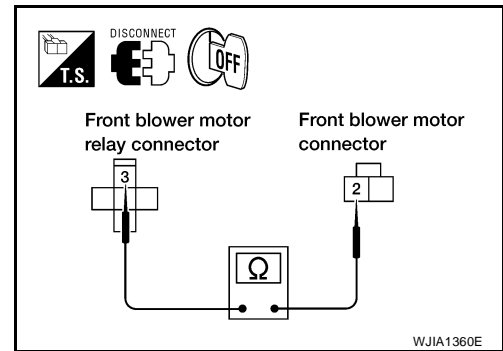
Check continuity between front blower motor relay harness connector M107 terminal 3 and front blower motor harness connector M62 terminal 2.

3 - 2 : Continuity should exist.

OK or NG

OK >> GO TO 7.

NG >> Repair harness or connector.



7. CHECK VARIABLE BLOWER CONTROL POWER SUPPLY CIRCUIT FOR OPEN

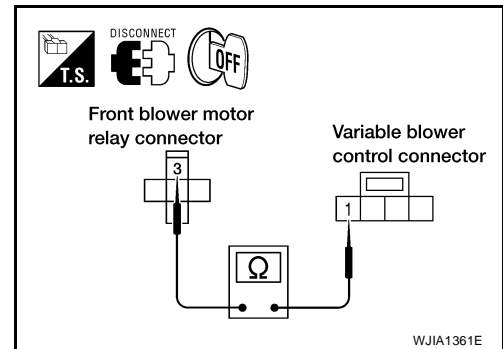
1. Disconnect variable blower control harness connector.
2. Check continuity between front blower motor relay harness connector M107 terminals 3 and variable blower control harness connector M122 terminal 1.

3 - 1 : Continuity should exist.

OK or NG

OK >> GO TO 8.

NG >> Repair harness or connector.



8. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT

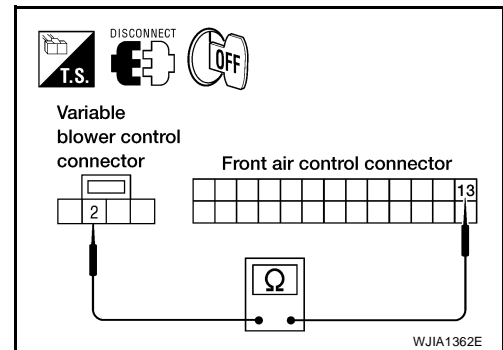
1. Disconnect front air control connector.
2. Check continuity between front air control harness connector M49 terminal 13 and variable blower control harness connector M122 terminal 2.

13 - 2 : Continuity should exist.

OK or NG

OK >> GO TO 9.

NG >> Repair harness or connector.



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

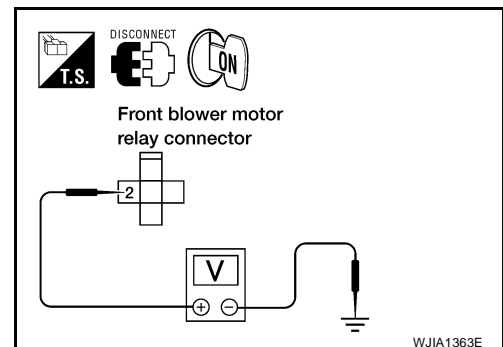
1. Turn ignition switch ON.
2. Check voltage between front blower motor relay harness connector M107 terminal 2 and ground.

2 - Ground : Battery voltage

OK or NG

OK >> GO TO 10.

NG >> Repair harness or connector.



TROUBLE DIAGNOSIS

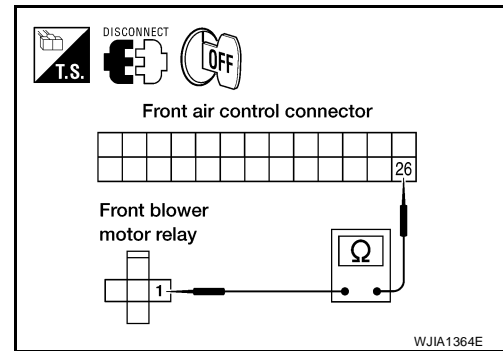
10. CHECK FRONT BLOWER MOTOR RELAY (COIL SIDE) GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between front blower motor relay connector M107 terminal 1 and front air control harness connector M49 terminal 26.

1 - 26 : Continuity should exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
- NG >> Repair harness or connector.



11. REPLACE FUSES

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

YES or NO

- YES >> GO TO 12.
- NO >> Inspection End.

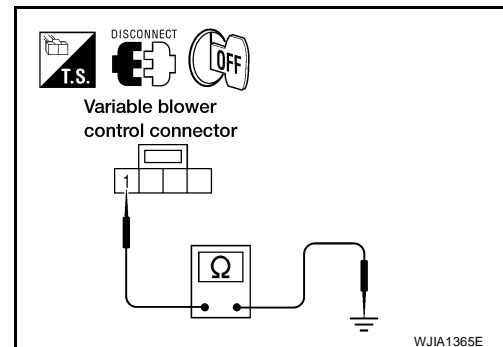
12. CHECK FRONT BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

1. Turn ignition switch OFF.
2. Disconnect front blower motor connector and variable blower control connector.
3. Check continuity between variable blower control harness connector M122 terminal 1 and ground.

1 - Ground. : Continuity should not exist.

OK or NG

- OK >> GO TO 13.
- NG >> Repair harness or connector.



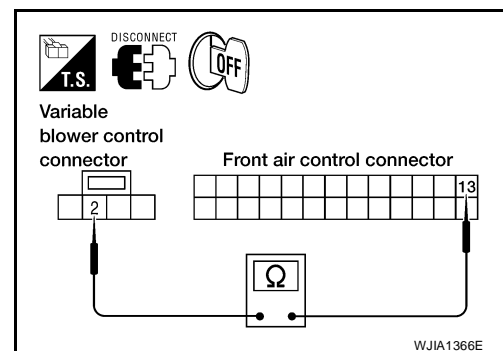
13. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT

1. Disconnect front air control connector.
2. Check continuity between front air control harness connector M49 terminal 13 and variable blower control harness connector M122 terminal 2.

13 - 2 : Continuity should exist.

OK or NG

- OK >> GO TO 14.
- NG >> Repair harness or connector.



14. CHECK FRONT BLOWER MOTOR

Check front blower motor. Refer to [ATC-119, "Front Blower Motor"](#).

OK or NG

- OK >> GO TO 15.
- NG >> Replace front blower motor. Refer to [ATC-164, "REMOVAL"](#).

TROUBLE DIAGNOSIS

15. CHECK BLOWER MOTOR GROUND CIRCUIT

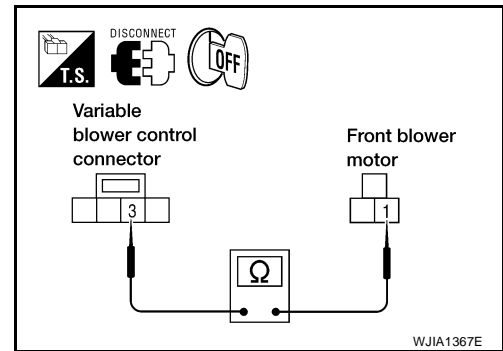
Check continuity between front blower motor harness connector M62 terminal 1 and variable blower control harness connector M122 terminal 3.

1 - 3 : Continuity should exist.

OK or NG

OK >> GO TO 16.

NG >> Repair harness or connector.



16. CHECK VARIABLE BLOWER CONTROL GROUND CIRCUIT

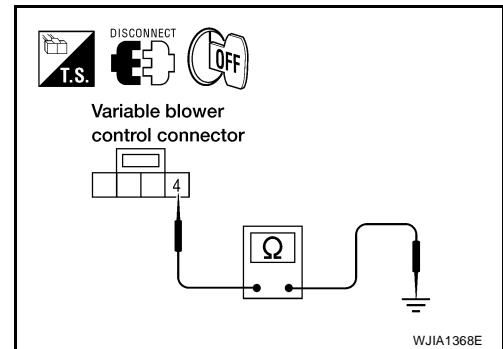
Check continuity between variable blower control harness connector M122 terminal 4 and ground.

4 - ground : Continuity should exist.

OK or NG

OK >> Replace variable blower control. Refer to [ATC-176](#), "[VARIABLE BLOWER CONTROL](#)".

NG >> Repair harness or connector.



17. CHECK FUSES

Check 20A fuses [No. 24 and 27 (Located in the fuse and fusible link box)]. For fuse layout. Refer to [PG-81](#), "[FUZE AND FUSIBLE LINK BOX](#)".

Fuses are good.

OK or NG

OK >> GO TO 18.

NG >> GO TO 26.

18. CHECK FRONT BLOWER MOTOR POWER SUPPLY CIRCUIT

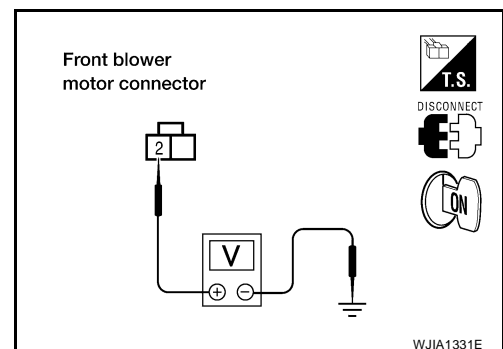
1. Turn ignition switch OFF.
2. Disconnect front blower motor connector.
3. Turn ignition switch ON.
4. Press the mode switch to select any mode except OFF.
5. Turn the front blower control dial to high.
6. Check voltage between front blower motor harness connector M62 terminal 2 and ground.

2 - Ground : Battery voltage

OK or NG

OK >> GO TO 28.

NG >> GO TO 19.



TROUBLE DIAGNOSIS

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

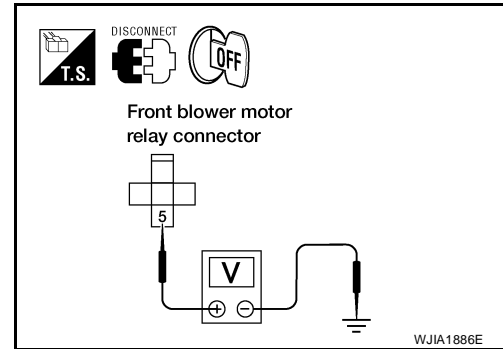
1. Turn ignition switch OFF.
2. Disconnect front blower motor relay.
3. Check voltage between front blower motor relay harness connector M107 terminals 5 and ground.

5 - Ground : Battery voltage

OK or NG

OK >> GO TO 20.

NG >> Repair harness or connector.



20. CHECK FRONT BLOWER MOTOR RELAY

Turn ignition switch OFF.

Check front blower motor relay. Refer to [ATC-119, "Front Blower Motor Relay"](#).

OK or NG

OK >> GO TO 21.

NG >> Replace front blower motor relay.

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

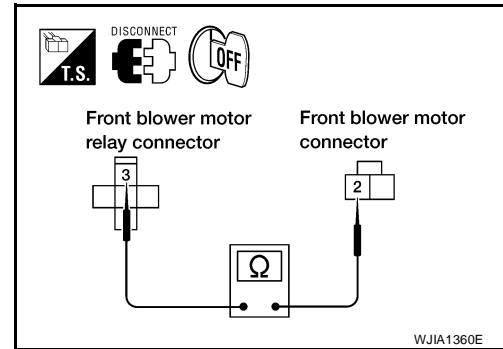
Check continuity between front blower motor relay harness connector M107 terminal 3 and front blower motor harness connector M62 terminal 2.

3 - 2 : Continuity should exist.

OK or NG

OK >> GO TO 22.

NG >> Repair harness or connector.



22. CHECK VARIABLE BLOWER CONTROL POWER SUPPLY CIRCUIT FOR OPEN

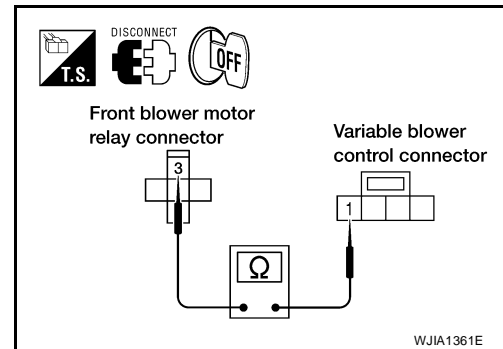
1. Disconnect variable blower control harness connector.
2. Check continuity between front blower motor relay harness connector M107 terminals 3 and variable blower control harness connector M122 terminal 1.

3 - 1 : Continuity should exist.

OK or NG

OK >> GO TO 23.

NG >> Repair harness or connector.



TROUBLE DIAGNOSIS

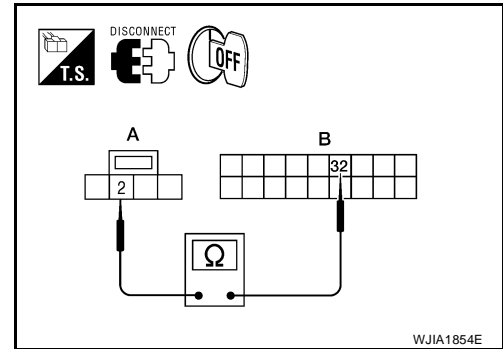
23. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT

1. Disconnect front air control connector.
2. Check continuity between front air control harness connector M50 (B) terminal 32 and variable blower control harness connector M122 (A) terminal 2.

32 - 2 : Continuity should exist.

OK or NG

- OK >> GO TO 24.
NG >> Repair harness or connector.



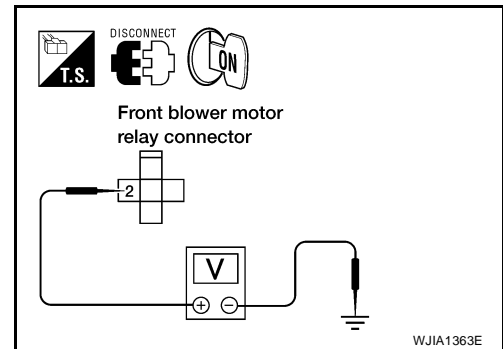
24. CHECK FRONT BLOWER MOTOR RELAY (COIL SIDE) POWER SUPPLY

1. Turn ignition switch ON.
2. Check voltage between front blower motor relay harness connector M107 terminal 2 and ground.

2 - Ground : Battery voltage

OK or NG

- OK >> GO TO 25.
NG >> Repair harness or connector.



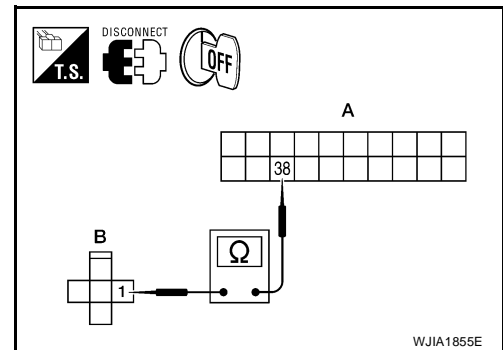
25. CHECK FRONT BLOWER MOTOR RELAY (COIL SIDE) GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between front blower motor relay connector M107 (B) terminal 1 and front air control harness connector M50 (A) terminal 38.

1 - 38 : Continuity should exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159](#), "[REMOVAL](#)".
NG >> Repair harness or connector.



26. REPLACE FUSES

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

YES or NO

- YES >> GO TO 27.
NO >> Inspection End.

TROUBLE DIAGNOSIS

27. CHECK FRONT BLOWER MOTOR POWER SUPPLY CIRCUIT FOR SHORT

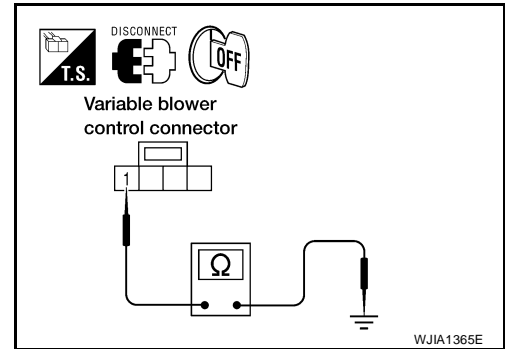
1. Turn ignition switch OFF.
2. Disconnect front blower motor connector and variable blower control connector.
3. Check continuity between variable blower control harness connector M122 terminal 1 and ground.

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

OK or NG

OK >> GO TO 28.

NG >> Repair harness or connector.



28. CHECK VARIABLE BLOWER CONTROL SIGNAL CIRCUIT

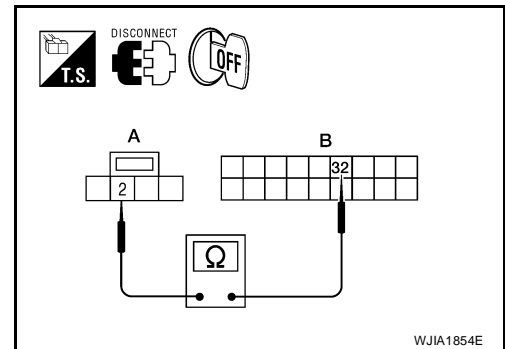
1. Disconnect front air control connector.
2. Check continuity between front air control harness connector M50 (B) terminal 32 and variable blower control harness connector M122 (A) terminal 2.

32 - 2 : **Continuity should exist.**

OK or NG

OK >> GO TO 29.

NG >> Repair harness or connector.



29. CHECK FRONT BLOWER MOTOR

Check front blower motor. Refer to [ATC-119, "Front Blower Motor"](#) .

OK or NG

OK >> GO TO 30.

NG >> Replace front blower motor. Refer to [ATC-164, "REMOVAL"](#) .

30. CHECK BLOWER MOTOR GROUND CIRCUIT

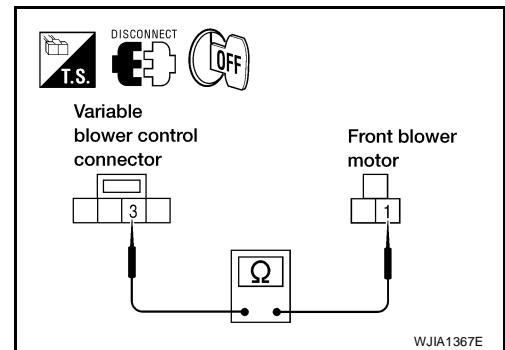
Check continuity between front blower motor harness connector M62 terminal 1 and variable blower control harness connector M122 terminal 3.

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

OK or NG

OK >> GO TO 31.

NG >> Repair harness or connector.



TROUBLE DIAGNOSIS

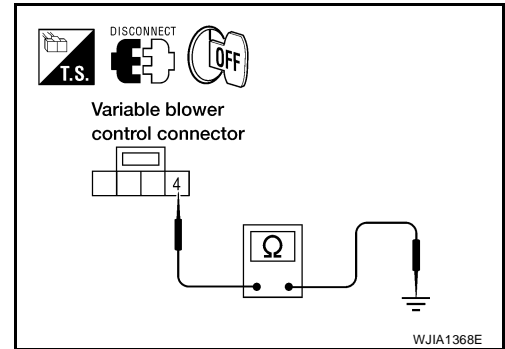
31. CHECK VARIABLE BLOWER CONTROL GROUND CIRCUIT

Check continuity between variable blower control harness connector M122 terminal 4 and ground.

4 - ground : **Continuity should exist.**

OK or NG

- OK >> Replace variable blower control. Refer to [ATC-176](#), "[VARIABLE BLOWER CONTROL](#)".
- NG >> Repair harness or connector.

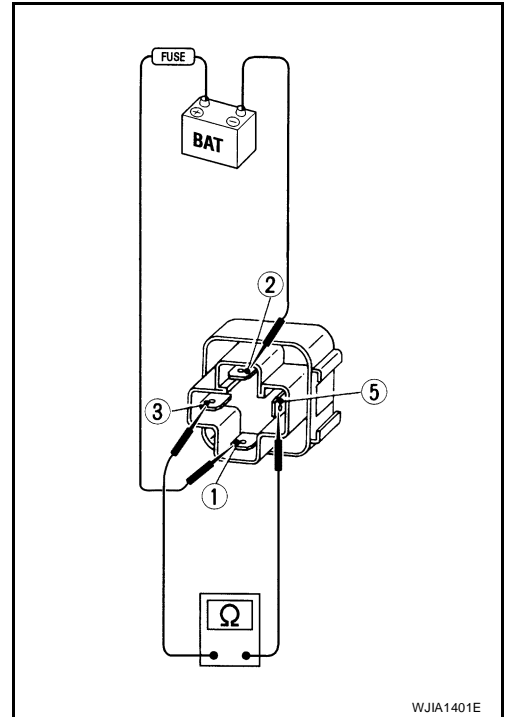


TROUBLE DIAGNOSIS

COMPONENT INSPECTION

Front Blower Motor Relay

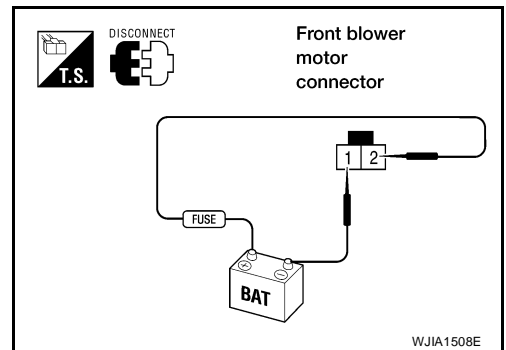
Check continuity between terminals by supplying 12 volts and ground to coil side terminals of relay.



Front Blower Motor

Confirm smooth rotation of the blower motor.

- Ensure that there are no foreign particles inside the blower unit.
- Apply 12 volts to terminal 2 and ground to terminal 1 and verify that the motor operates freely and quietly.



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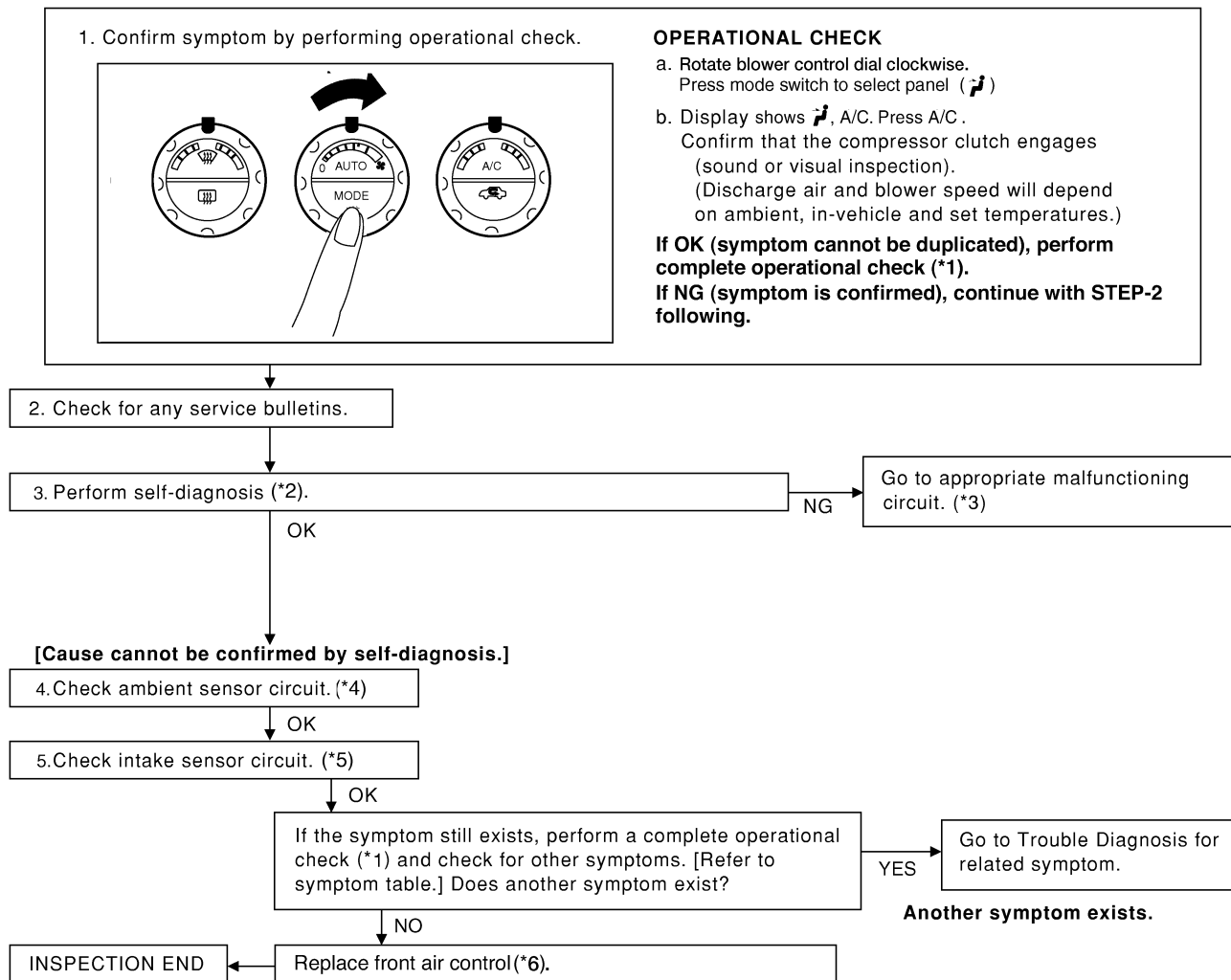
TROUBLE DIAGNOSIS

EJS004UU

Magnet Clutch Circuit

SYMPTOM: Magnet clutch does not engage.

INSPECTION FLOW



*1 [ATC-62. "Operational Check"](#)

*2 [ATC-60. "A/C System Self-diagnosis Function"](#)

*3 [ATC-61. "SELF-DIAGNOSIS CODE CHART"](#)

*4 [ATC-143. "Ambient Sensor Circuit"](#)

*5 [ATC-155. "Intake Sensor Circuit"](#)

*6 [ATC-159. "CONTROL UNIT"](#)

WJIA1943E

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

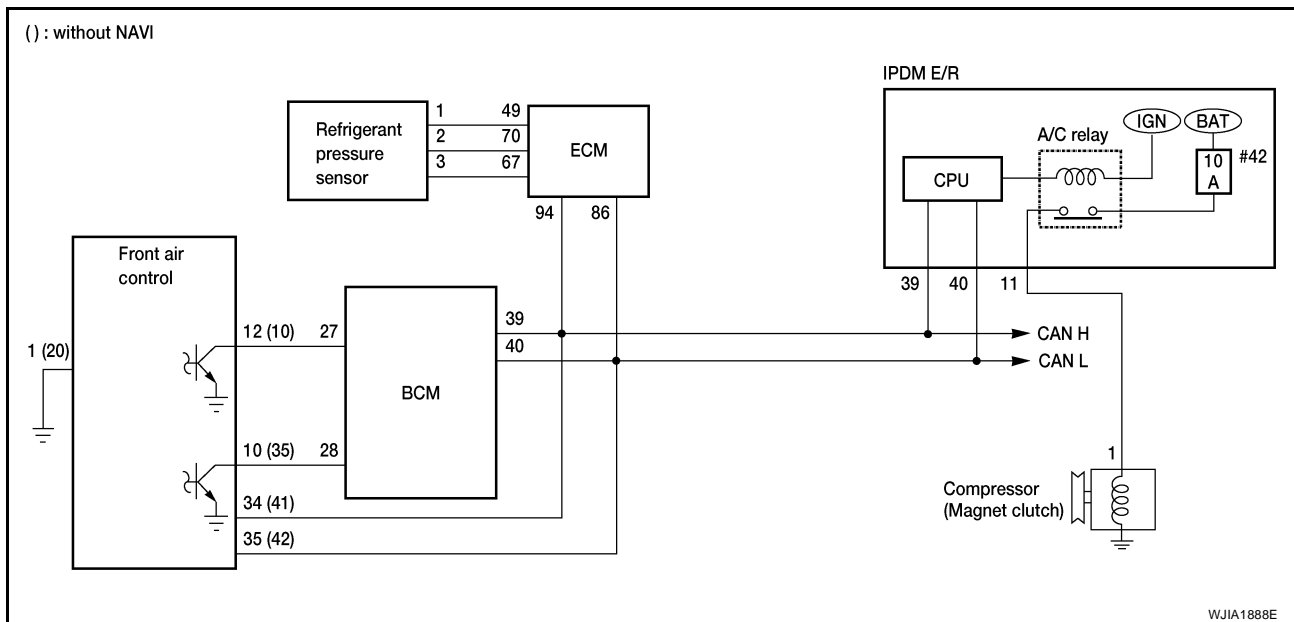
The front air control will turn the compressor ON or OFF as determined by a signal detected by the intake sensor and the ambient sensor.

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)	0.5 (33)
40 (104)	2.0 (36)	0.5 (33)
50 (122)	2.0 (36)	0.5 (33)

DIAGNOSTIC PROCEDURE FOR MAGNET CLUTCH

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



1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

YES or NO

YES >> GO TO 2.

NO >> GO TO 14.

2. CHECK INTAKE AND AMBIENT SENSOR CIRCUITS

Check intake and ambient sensors. Refer to [ATC-60, "A/C System Self-diagnosis Function"](#).

OK or NG

OK >> GO TO 3.

NG >> ● Malfunctioning intake sensor. Refer to [ATC-155, "Intake Sensor Circuit"](#).

● Malfunctioning ambient sensor. Refer to [ATC-155, "Intake Sensor Circuit"](#).

TROUBLE DIAGNOSIS

3. PERFORM AUTO ACTIVE TEST

Refer to [PG-24, "Auto Active Test"](#) .
Does magnet clutch operate?

YES or NO

YES >> ● WITH CONSULT-II
GO TO 6.

● WITHOUT CONSULT-II
GO TO 7.

NO >> Check 10A fuse (No. 42, located in IPDM E/R), and GO TO 4.

4. CHECK CIRCUIT CONTINUITY BETWEEN IPDM E/R AND COMPRESSOR

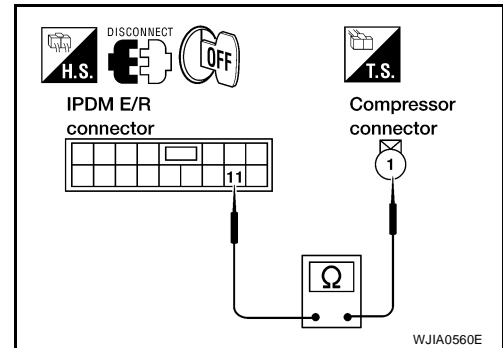
1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and compressor (magnet clutch) connector.
3. Check continuity between IPDM E/R harness connector E119 terminal 11 and compressor harness connector F3 terminal 1.

11 – 1 : Continuity should exist.

OK or NG

OK >> GO TO 5.

NG >> Repair harness or connector.



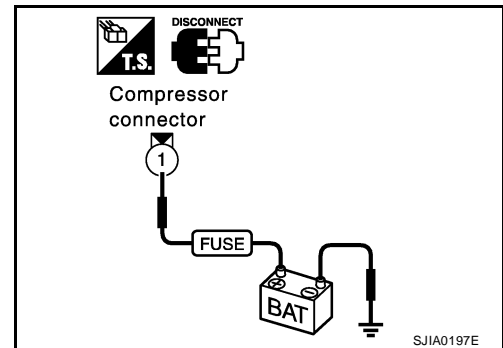
5. CHECK MAGNET CLUTCH CIRCUIT

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

OK or NG

OK >> Replace IPDM E/R. Refer to [PG-31, "Removal and Installation of IPDM E/R"](#) .

NG >> Replace magnet clutch. Refer to [ATC-184, "Removal and Installation for Compressor Clutch"](#) .



6. CHECK BCM INPUT (COMPRESSOR ON) SIGNAL

Check compressor ON/OFF signal. Refer to [ATC-30, "CONSULT-II Function \(HVAC\)"](#) .

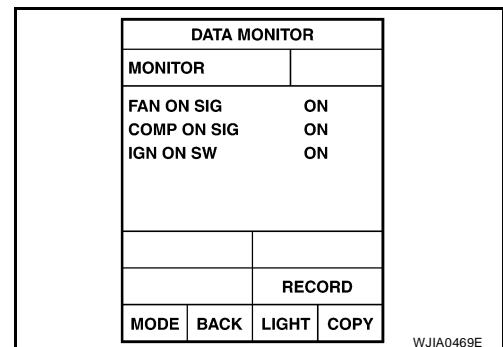
A/C SW ON : COMP ON SIG ON

A/C SW OFF : COMP ON SIG OFF

OK or NG

OK >> GO TO 9.

NG >> GO TO 7.



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TROUBLE DIAGNOSIS

7. 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 and front air control harness connector M49 terminal 12.

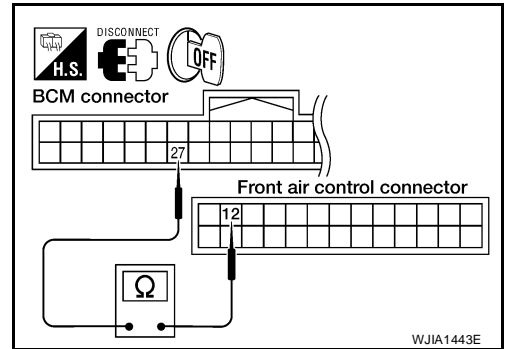
27 - 12

Continuity should exist.

OK or NG

OK >> GO TO 8.

NG >> Repair harness or connector.



8. 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 and ground.

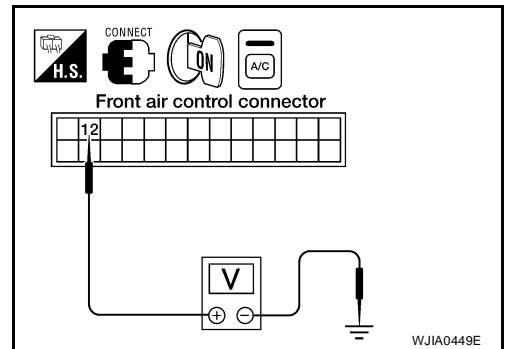
Terminals		(-)	Condition	Voltage
(+)				
Front air control connector	Terminal No.			
M49	12	Ground	A/C switch: ON	Approx. 0V
			A/C switch: OFF	Approx. 5V

OK or NG

OK >> GO TO 9.

NG-1 >> If the voltage is approx. 5V when A/C switch is ON, replace front air control. Refer to [ATC-159, "REMOVAL"](#).

NG-2 >> If the voltage is approx. 0V when A/C switch is OFF, replace BCM. Refer to [BCS-20, "REMOVAL AND INSTALLATION"](#).



9. CHECK REFRIGERANT PRESSURE SENSOR

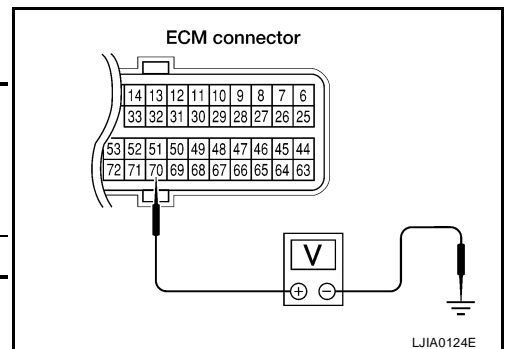
1. Start engine.
2. Check voltage between ECM harness connector F54 terminal 70 and ground.

Terminals		(-)	Condition	Voltage
(+)				
ECM connector	Terminal No.			
F54	70	Ground	A/C switch: ON	Approx. 0.36 - 3.88V

OK or NG

OK >> GO TO 10.

NG >> Refer to [EC-623, "REFRIGERANT PRESSURE SENSOR"](#).



TROUBLE DIAGNOSIS

10. CHECK BCM INPUT (FAN ON) SIGNAL

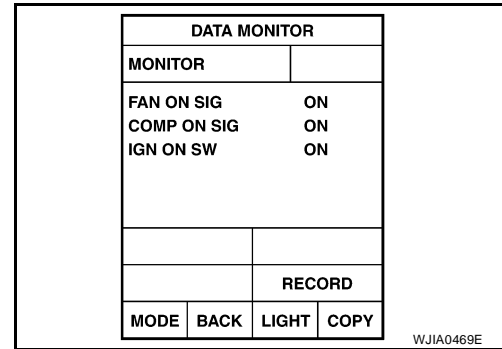
Check FAN ON/OFF signal. Refer to [ATC-30, "CONSULT-II Function \(HVAC\)"](#).

FRONT BLOWER CONTROL : FAN ON SIG ON DIAL ON

FRONT BLOWER CONTROL : FAN ON SIG OFF DIAL OFF

OK or NG

- OK >> GO TO 13.
- NG >> GO TO 11.



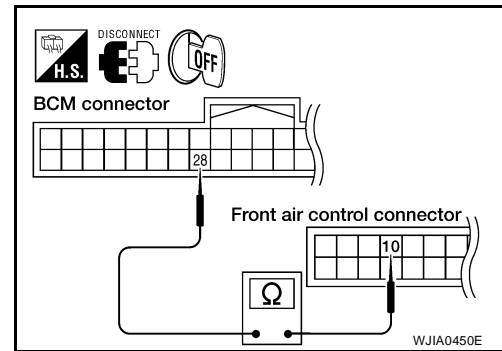
11. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect BCM connector and front air control connector.
3. Check continuity between BCM harness connector M18 terminal 28 and front air control harness connector M49 terminal 10.

28 - 10 Continuity should exist.

OK or NG

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



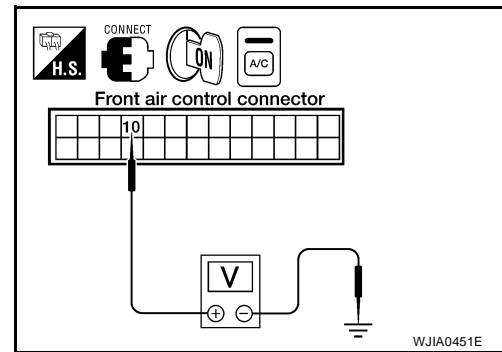
12. CHECK VOLTAGE FOR FRONT AIR CONTROL (FAN ON SIGNAL)

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 10 and ground.

Terminals		(-)	Condition	Voltage
(+)	Terminal No.			
Front air control connector		(-)		
M49	10	Ground	A/C switch: ON Blower motor operates	Approx. 0V
			A/C switch: OFF	Approx. 5V

OK or NG

- OK >> GO TO 13.
- NG-1 >> If the voltage is approx. 5V when blower motor is ON, replace front air control. Refer to [ATC-159, "REMOVAL"](#).
- NG-2 >> If the voltage is approx. 0V when blower motor is OFF, replace BCM. Refer to [BCS-20, "REMOVAL AND INSTALLATION"](#).



TROUBLE DIAGNOSIS

13. CHECK CAN COMMUNICATION

Check CAN communication. Refer to [LAN-25, "CAN COMMUNICATION"](#) .

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

OK or NG

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

14. CHECK INTAKE AND AMBIENT SENSOR CIRCUITS

Check intake and ambient sensors. Refer to [ATC-60, "A/C System Self-diagnosis Function"](#) .

OK or NG

- OK >> GO TO 15.
NG >> ● Malfunctioning intake sensor. Refer to [ATC-155, "Intake Sensor Circuit"](#) .
● Malfunctioning ambient sensor. Refer to [ATC-155, "Intake Sensor Circuit"](#) .

15. PERFORM AUTO ACTIVE TEST

Refer to [PG-24, "Auto Active Test"](#) .

Does magnet clutch operate?

YES or NO

- YES >> ● WITH CONSULT-II
GO TO 18.
● WITHOUT CONSULT-II
GO TO 19.
NO >> Check 10A fuse (No. 42, located in IPDM E/R), and GO TO 16.

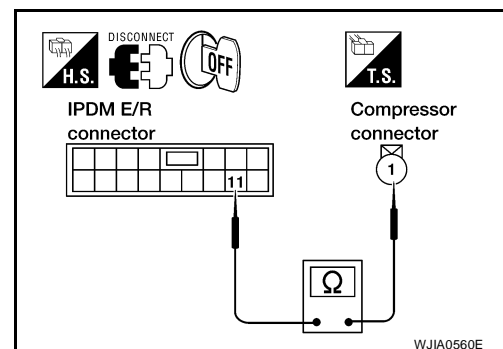
16. CHECK CIRCUIT CONTINUITY BETWEEN IPDM E/R AND COMPRESSOR

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and compressor (magnet clutch) connector.
3. Check continuity between IPDM E/R harness connector E119 terminal 11 and compressor harness connector F3 terminal 1.

11 – 1 : Continuity should exist.

OK or NG

- OK >> GO TO 17.
NG >> Repair harness or connector.

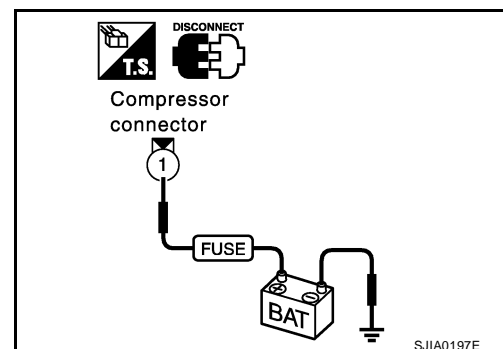


17. CHECK MAGNET CLUTCH CIRCUIT

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

OK or NG

- OK >> Replace IPDM E/R. Refer to [PG-31, "Removal and Installation of IPDM E/R"](#) .
NG >> Replace magnet clutch. Refer to [ATC-184, "Removal and Installation for Compressor Clutch"](#) .



TROUBLE DIAGNOSIS

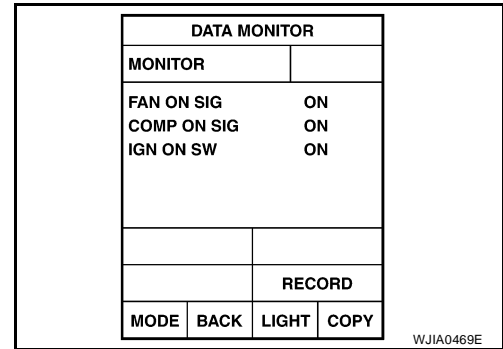
18. CHECK BCM INPUT (COMPRESSOR ON) SIGNAL

Check compressor ON/OFF signal. Refer to [ATC-30, "CONSULT-II Function \(HVAC\)"](#) .

A/C SW ON : COMP ON SIG ON
A/C SW OFF : COMP ON SIG OFF

OK or NG

OK >> GO TO 21.
 NG >> GO TO 19.



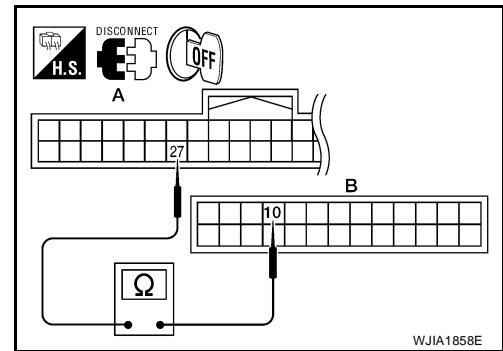
19. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect BCM connector and front air control connector.
3. Check continuity between BCM harness connector M18 (A) terminal 27 and front air control harness connector M49 (B) terminal 10.

27 - 10 Continuity should exist.

OK or NG

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



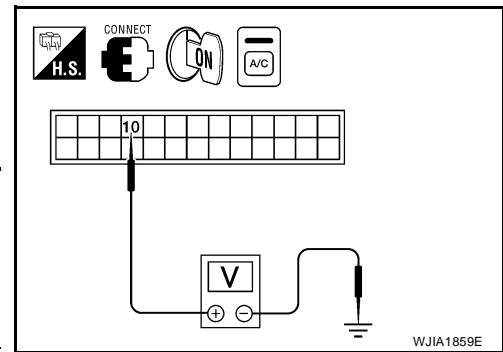
20. CHECK VOLTAGE FOR FRONT AIR CONTROL (COMPRESSOR ON SIGNAL)

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 10 and ground.

Terminals		(-)	Condition	Voltage
(+)	Terminal No.			
Front air control connector				
M49	10	Ground	A/C switch: ON	Approx. 0V
			A/C switch: OFF	Approx. 5V

OK or NG

- OK >> GO TO 21.
 NG-1 >> If the voltage is approx. 5V when A/C switch is ON, replace front air control. Refer to [ATC-159, "REMOVAL"](#) .
 NG-2 >> If the voltage is approx. 0V when A/C switch is OFF, replace BCM. Refer to [BCS-20, "REMOVAL AND INSTALLATION"](#) .



TROUBLE DIAGNOSIS

21. CHECK REFRIGERANT PRESSURE SENSOR

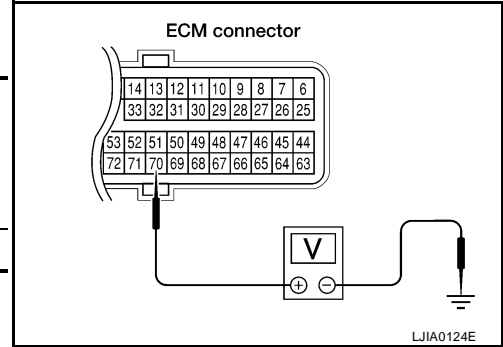
1. Start engine.
2. Check voltage between ECM harness connector F54 terminal 70 and ground.

Terminals		(-)	Condition	Voltage
(+) ECM con- nector				
Terminal No.				
F54	70	Ground	A/C switch: ON	Approx. 0.36 - 3.88V

OK or NG

OK >> GO TO 22.

NG >> Refer to [EC-623, "REFRIGERANT PRESSURE SENSOR"](#).



22. CHECK BCM INPUT (FAN ON) SIGNAL

Check FAN ON/OFF signal. Refer to [ATC-30, "CONSULT-II Function \(HVAC\)"](#).

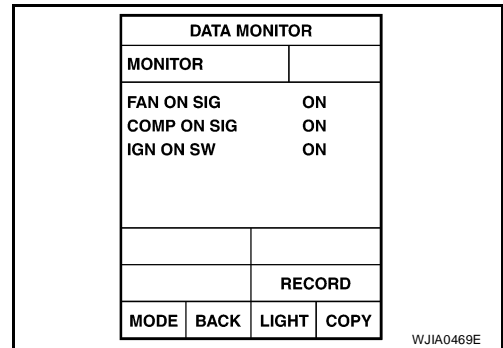
**FRONT BLOWER CONTROL : FAN ON SIG ON
DIAL ON**

**FRONT BLOWER CONTROL : FAN ON SIG OFF
DIAL OFF**

OK or NG

OK >> GO TO 25.

NG >> GO TO 23.



23. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND FRONT AIR CONTROL

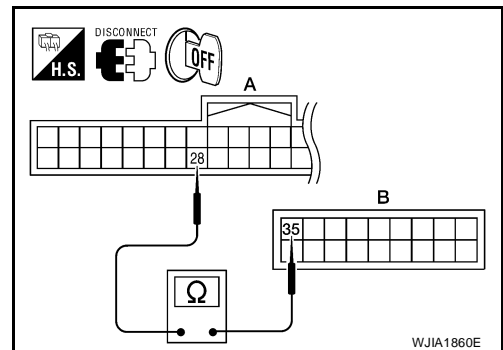
1. Turn ignition switch OFF.
2. Disconnect BCM connector and front air control connector.
3. Check continuity between BCM harness connector M18 (A) terminal 28 and front air control harness connector M50 (B) terminal 35.

28 - 35 Continuity should exist.

OK or NG

OK >> GO TO 24.

NG >> Repair harness or connector.

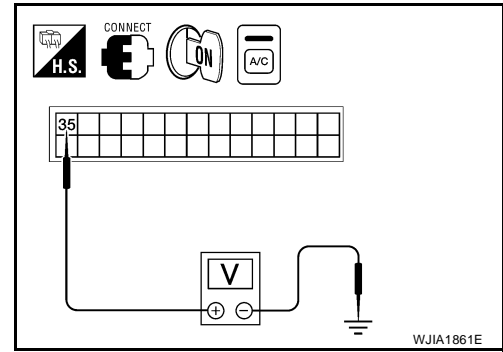


TROUBLE DIAGNOSIS

24. CHECK VOLTAGE FOR FRONT AIR CONTROL (FAN 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 M50 terminal 35 and ground.

Terminals		(-)	Condition	Voltage
(+)	Terminal No.			
Front air control connector				
M50	35	Ground	A/C switch: ON Blower motor operates	Approx. 0V
			A/C switch: OFF	Approx. 5V



OK or NG

OK >> GO TO 25.

NG-1 >> If the voltage is approx. 5V when blower motor is ON, replace front air control. Refer to [ATC-159, "REMOVAL"](#).

NG-2 >> If the voltage is approx. 0V when blower motor is OFF, replace BCM. Refer to [BCS-20, "REMOVAL AND INSTALLATION"](#).

25. CHECK CAN COMMUNICATION

Check CAN communication. Refer to [LAN-25, "CAN COMMUNICATION"](#).

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

OK or NG

OK >> Inspection End.

NG >> Repair or replace malfunctioning part(s).

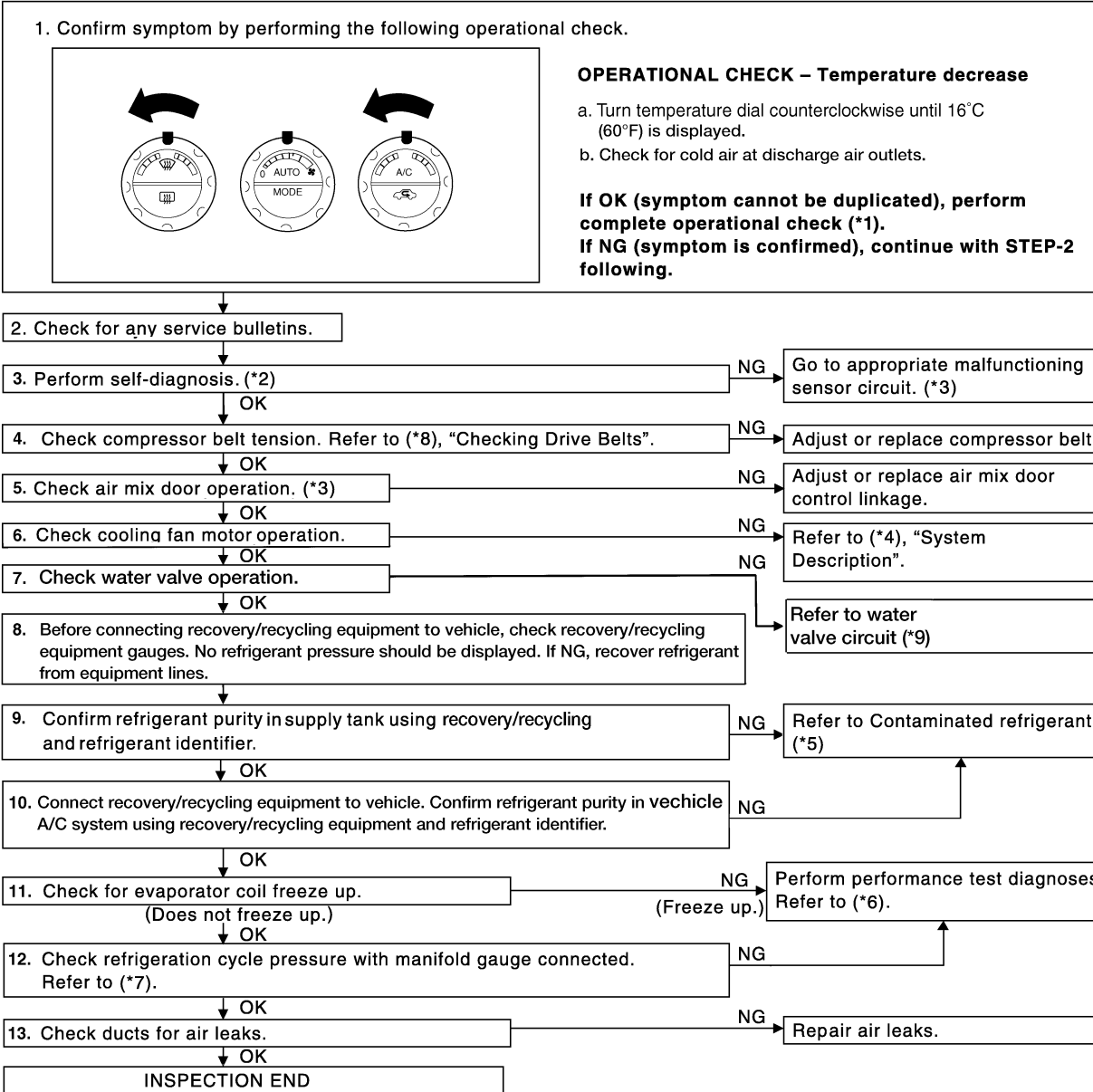
TROUBLE DIAGNOSIS

EJS004UV

Insufficient Cooling

SYMPTOM: Insufficient cooling

INSPECTION FLOW



*1 [ATC-62. "Operational Check"](#)

*2 [ATC-60. "A/C System Self-diagnosis Function"](#)

*3 [ATC-61. "SELF-DIAGNOSIS CODE CHART"](#)

*4 [EC-479. "Cooling Fan Control"](#)

*5 [ATC-4. "Contaminated Refrigerant"](#)

*6 [ATC-130. "PERFORMANCE TEST DIAGNOSES"](#)

*7 [ATC-132. "Test Reading"](#)

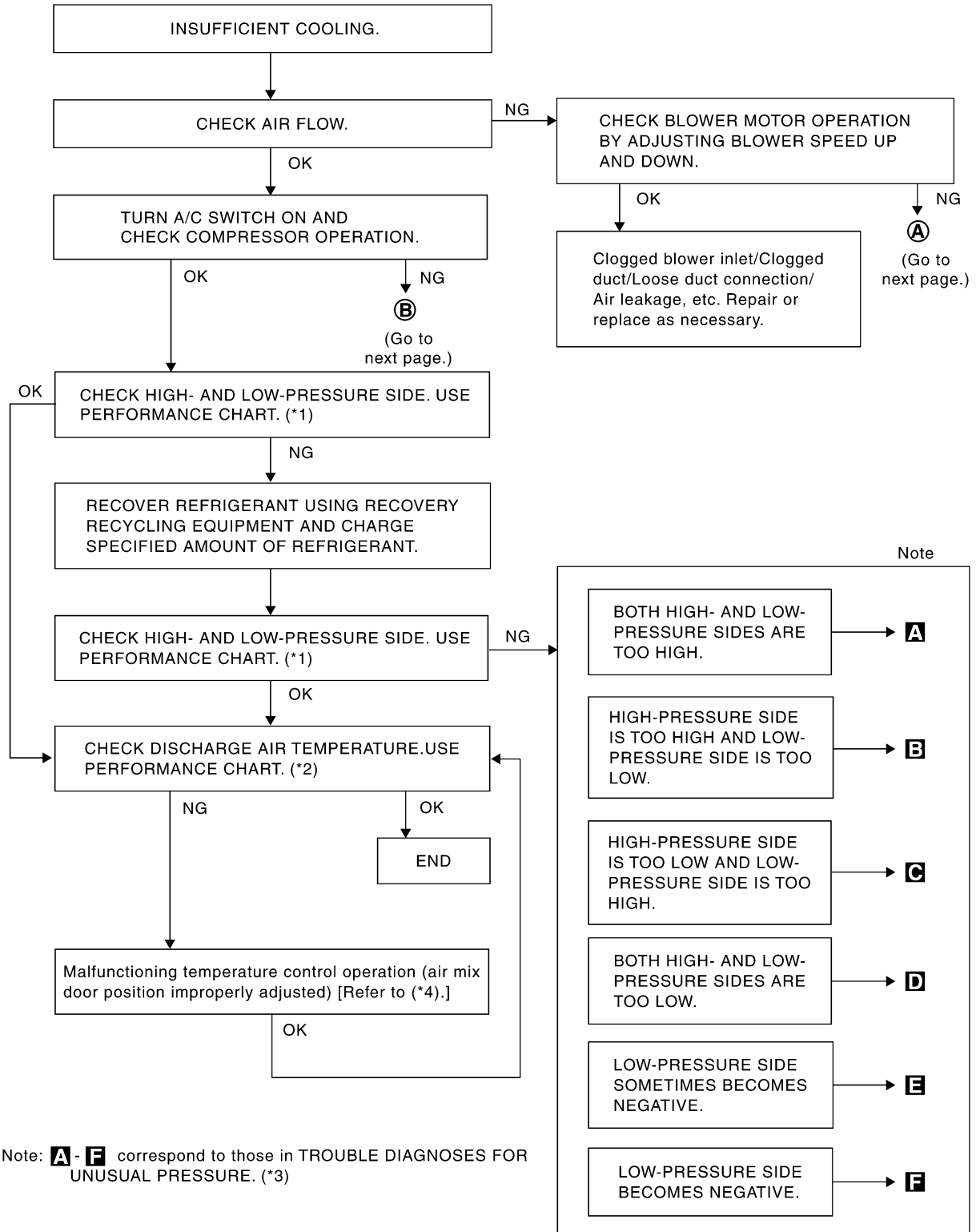
*8 [EM-13. "Checking Drive Belts"](#)

*9 [ATC-139. "Water Valve Circuit"](#)

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TROUBLE DIAGNOSIS

PERFORMANCE TEST DIAGNOSES



Note: **A** - **F** correspond to those in TROUBLE DIAGNOSES FOR UNUSUAL PRESSURE. (*3)

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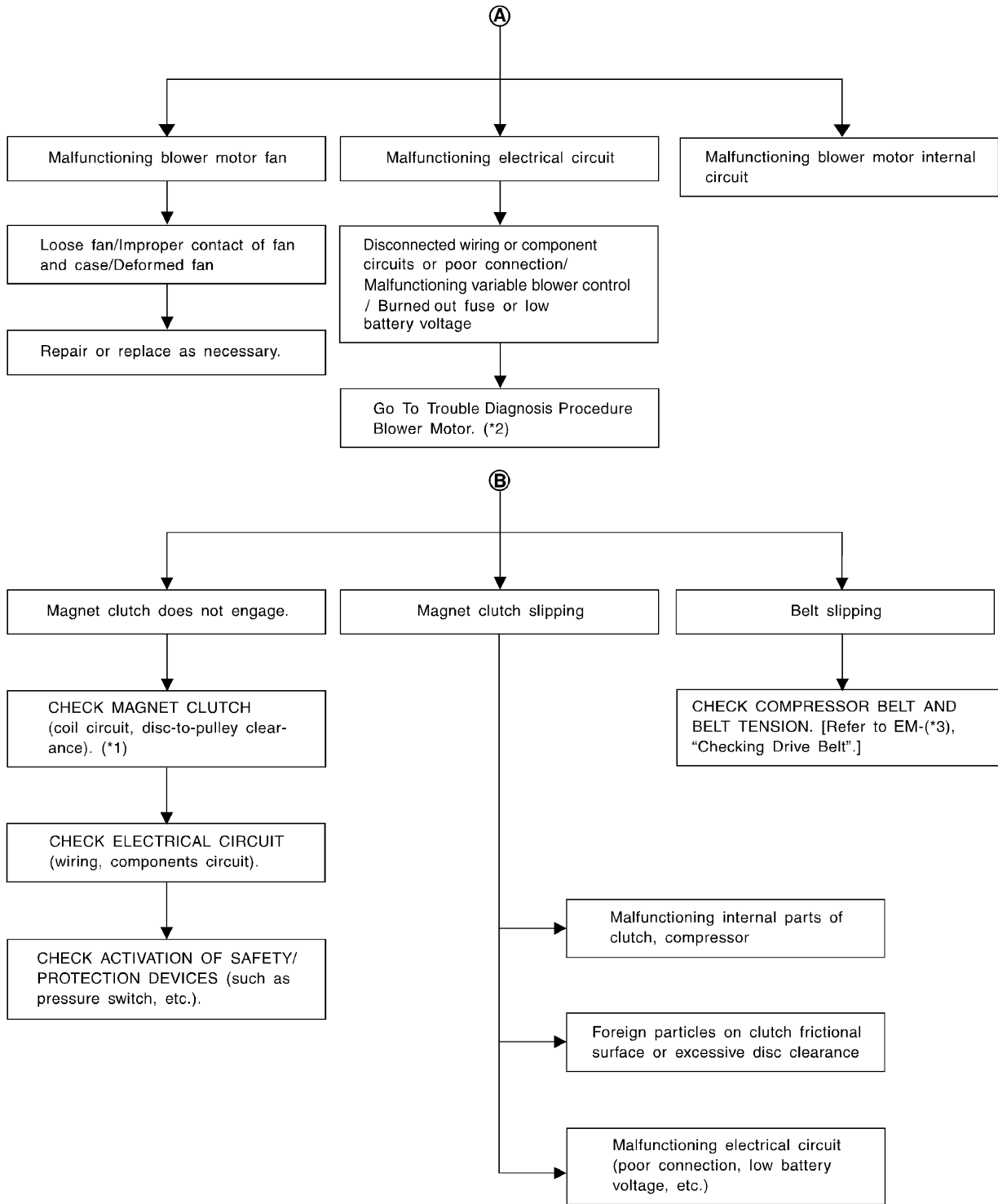
*1 [ATC-132, "PERFORMANCE CHART"](#)

*2 [ATC-132, "PERFORMANCE CHART"](#)

*3 [ATC-133, "Trouble Diagnoses for Unusual Pressure"](#)

*4 [ATC-77, "Air Mix Door Motor Circuit"](#)

TROUBLE DIAGNOSIS



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*1 [ATC-184, "Removal and Installation for Compressor Clutch"](#)

*2 [ATC-108, "Front Blower Motor Circuit"](#)

*3 [EM-13, "Checking Drive Belts"](#)




WJIA1371E

TROUBLE DIAGNOSIS

PERFORMANCE CHART

Test Condition

Testing must be performed as follows:

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

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

Test Reading

Recirculating-to-discharge Air Temperature Table

Inside air (Recirculating air) at blower assembly inlet		Discharge air temperature at center ventilator °C (°F)
Relative humidity %	Air temperature °C (°F)	
50 - 60	20 (68)	9.9 - 13.9 (50 - 57)
	25 (77)	14.6 - 18.6 (58 - 65)
	30 (86)	16.8 - 21.8 (62 - 71)
	35 (95)	21.1 - 27.1 (70 - 81)
	40 (104)	25.3 - 31.5 (78 - 89)
60 - 70	20 (68)	11.4 - 15.2 (53 - 59)
	25 (77)	15.5 - 20.0 (60 - 68)
	30 (86)	19.9 - 25.0 (68 - 77)
	35 (95)	24.5 - 29.6 (76 - 85)
	40 (104)	28.7 - 34.9 (84 - 95)

Ambient Air Temperature-to-operating Pressure Table

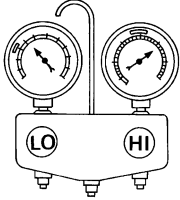
Ambient air		High-pressure (Discharge side) kPa (kg/cm ² , psi)	Low-pressure (Suction side) kPa (kg/cm ² , psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	20 (68)	1020 - 1250 (10.4 - 12.7, 147.9 - 181.3)	160 - 190 (1.63 - 1.94, 23.2 - 27.6)
	25 (77)	1236 - 1510 (12.6 - 15.4, 179.2 - 219)	206 - 245 (2.1 - 2.5, 29.9 - 35.6)
	30 (86)	1569 - 1,922 (16.0 - 19.6, 227.6 - 278.8)	265 - 324 (2.7 - 3.3, 38.4 - 46.9)
	35 (95)	1,697 - 2079 (17.3 - 21.2, 246.1 - 301.5)	304 - 363 (3.1 - 3.7, 44.1 - 52.6)
	40 (104)	1971 - 2403 (20.1 - 24.5, 285.9 - 348.5)	373 - 451 (3.8 - 4.6, 54.0 - 65.4)

TROUBLE DIAGNOSIS

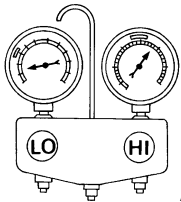
TROUBLE DIAGNOSES FOR UNUSUAL PRESSURE

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

Both High- and Low-pressure Sides are Too High

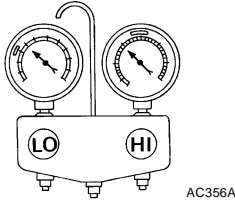
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Both high- and low-pressure sides are too high.</p>  <p>AC359A</p>	<p>Pressure is reduced soon after water is splashed on condenser.</p>	<p>Excessive refrigerant charge in refrigeration cycle</p>	<p>Reduce refrigerant until specified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

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

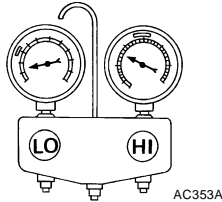
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>High-pressure side is too high and low-pressure side is too low.</p>  <p>AC360A</p>	<p>Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot.</p>	<p>High-pressure tube or parts located between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

TROUBLE DIAGNOSIS

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

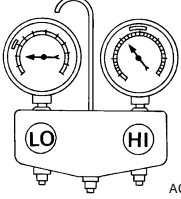
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
High-pressure side is too low and low-pressure side is too high. 	High- and low-pressure sides become equal soon after compressor operation stops.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace 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

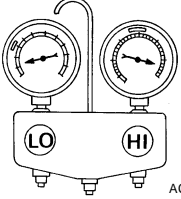
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Both high- and low-pressure sides are too low. 	<ul style="list-style-type: none"> There is a big temperature difference between liquid tank outlet and inlet. Outlet temperature is extremely low. Liquid tank inlet and expansion valve are frosted. 	Liquid tank inside is slightly clogged.	<ul style="list-style-type: none"> Replace liquid tank. Check oil for contamination.
	<ul style="list-style-type: none"> Temperature of expansion valve inlet is extremely low as compared with areas near liquid tank. Expansion valve inlet may be frosted. Temperature difference occurs somewhere in high-pressure side. 	High-pressure pipe located between liquid tank and expansion valve is clogged.	<ul style="list-style-type: none"> Check and repair malfunctioning parts. Check oil for contamination.
	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 ATC-191, "Checking for Refrigerant Leaks" .
	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"> Remove foreign particles by using compressed air. Check oil for contamination.
	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"> Check and repair malfunctioning parts. Check oil for contamination.
	Air flow volume is too low.	Evaporator is frozen.	<ul style="list-style-type: none"> Check intake sensor circuit. Refer to ATC-155, "Intake Sensor Circuit" . Repair evaporator fins. Replace evaporator. Refer to ATC-108, "Front Blower Motor Circuit" .

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"> ● Air conditioning system does not function and does not cyclically cool the compartment air. ● The system constantly functions for a certain period of time after compressor is stopped and restarted. 	<p>Refrigerant does not discharge cyclically.</p> <p>↓</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"> ● Drain water from refrigerant or replace refrigerant. ● Replace liquid tank.

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"> ● If water is the cause, initially cooling is okay. Then the water freezes causing a blockage. Drain water from refrigerant or replace refrigerant. ● If due to foreign particles, remove expansion valve and remove the particles with dry and compressed air (not shop air). ● If either of the above methods cannot correct the malfunction, replace expansion valve. ● Replace liquid tank. ● Check oil for contamination.

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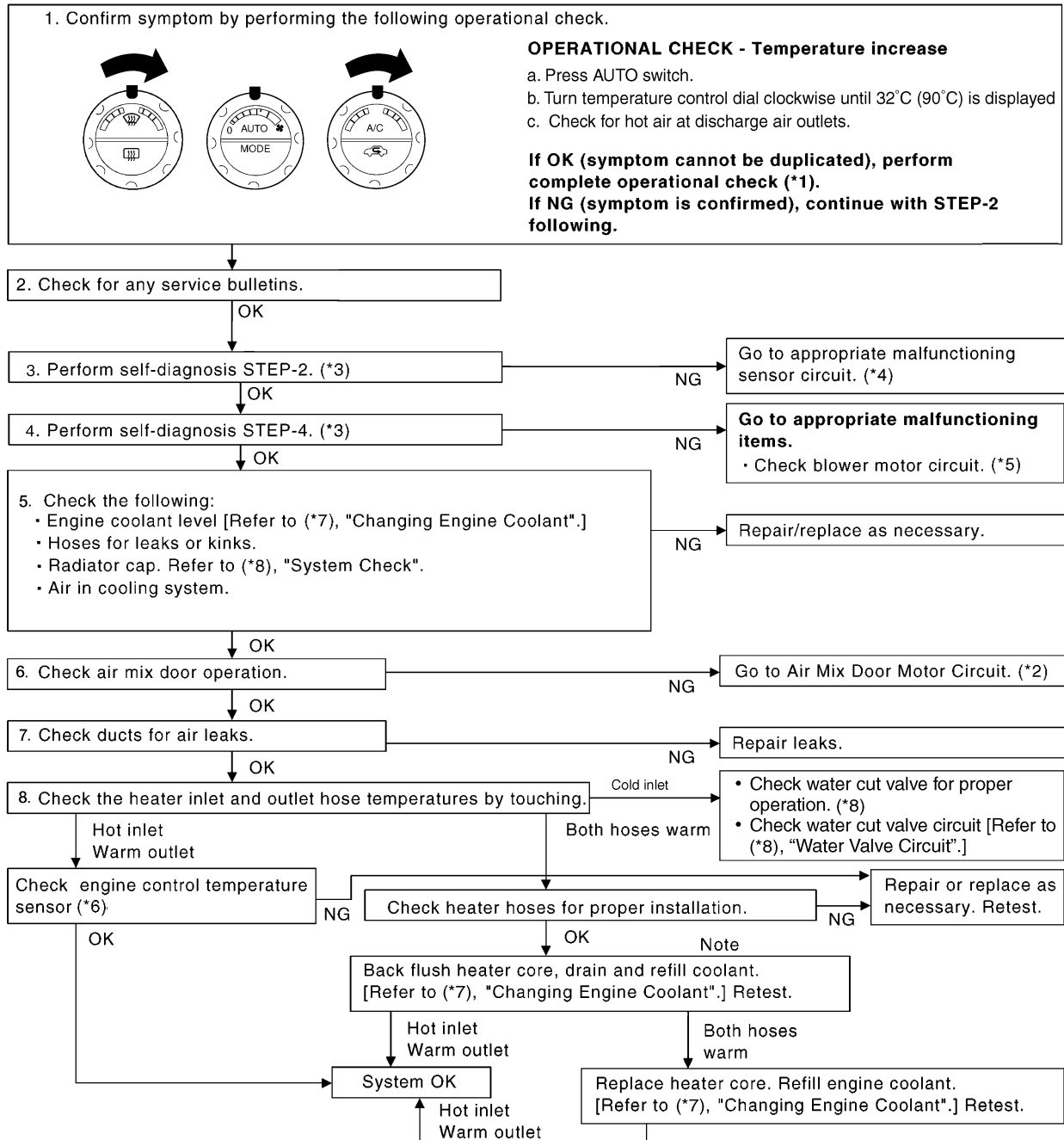
TROUBLE DIAGNOSIS

EJS004UW

Insufficient Heating

SYMPTOM: Insufficient heating

INSPECTION FLOW



WJIA1945E

*1 [ATC-62. "Operational Check"](#)

*2 [ATC-77. "Air Mix Door Motor Circuit"](#)

*3 [ATC-60. "A/C System Self-diagnosis Function"](#)

*4 [ATC-61. "SELF-DIAGNOSIS CODE CHART"](#)

*5 [ATC-108. "Front Blower Motor Circuit"](#)

*6 [EC-198. "DTC P0117, P0118 ECT SENSOR"](#)

*7 [CO-10. "Changing Engine Coolant"](#)

*8 [ATC-139. "Water Valve Circuit"](#)

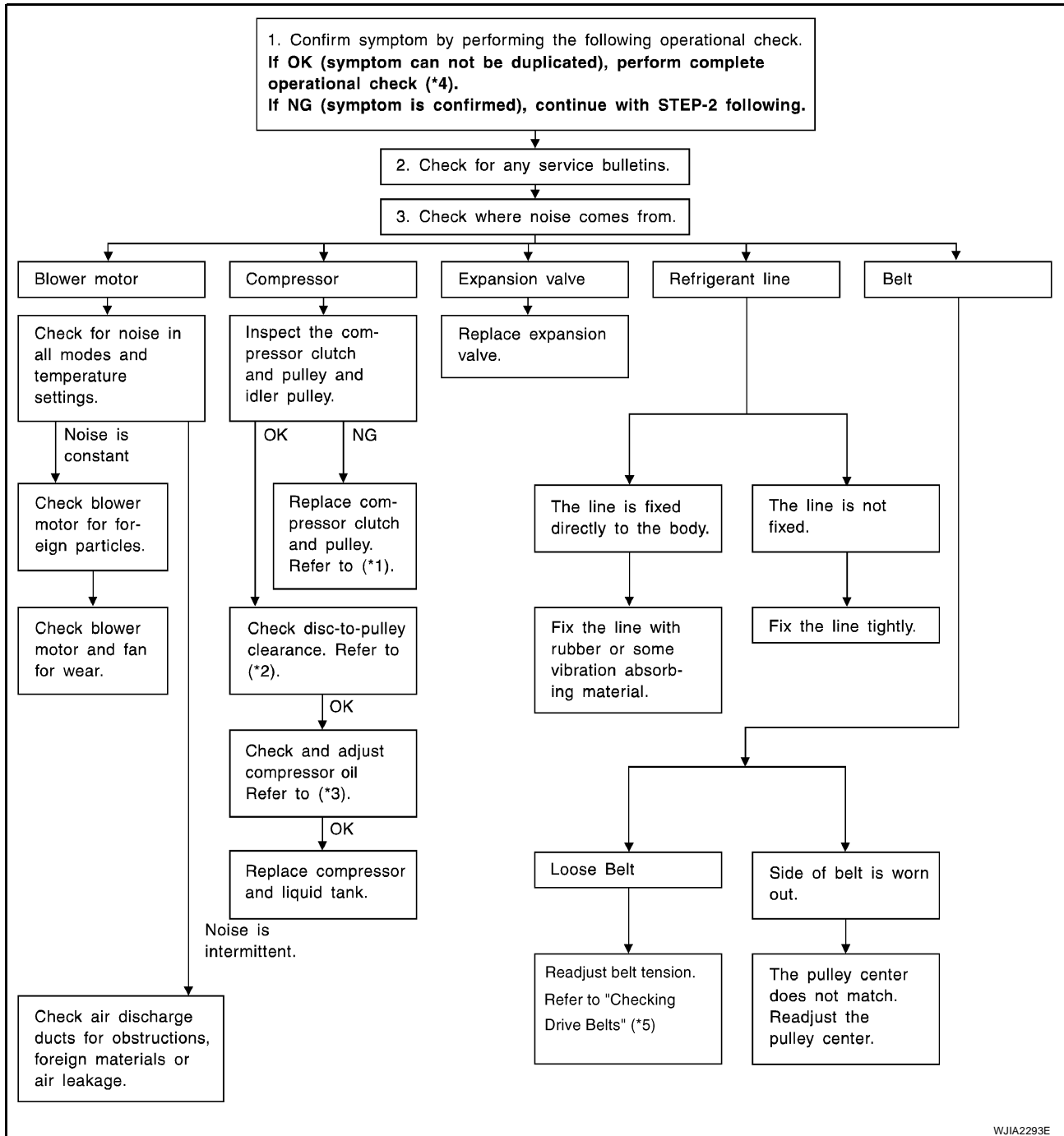
TROUBLE DIAGNOSIS

EJS004UX

Noise

SYMPTOM: Noise

INSPECTION FLOW



*1 [ATC-183. "REMOVAL"](#)

*2 [ATC-184. "INSTALLATION"](#)

*3 [ATC-20. "Maintenance of Oil Quantity in Compressor"](#)

*4 [ATC-62. "Operational Check"](#)

*5 [EM-13. "Checking Drive Belts"](#)

WJIA2293E

TROUBLE DIAGNOSIS

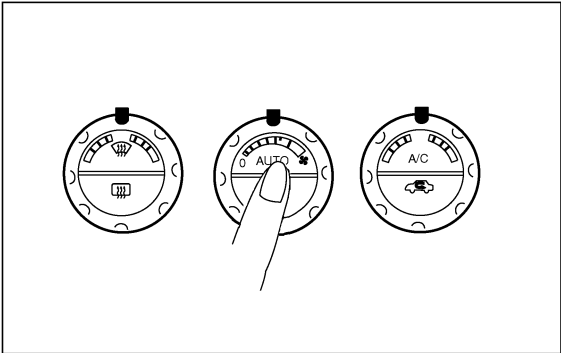
EJS004UY

Self-diagnosis

SYMPTOM: Self-diagnosis cannot be performed.

INSPECTION FLOW

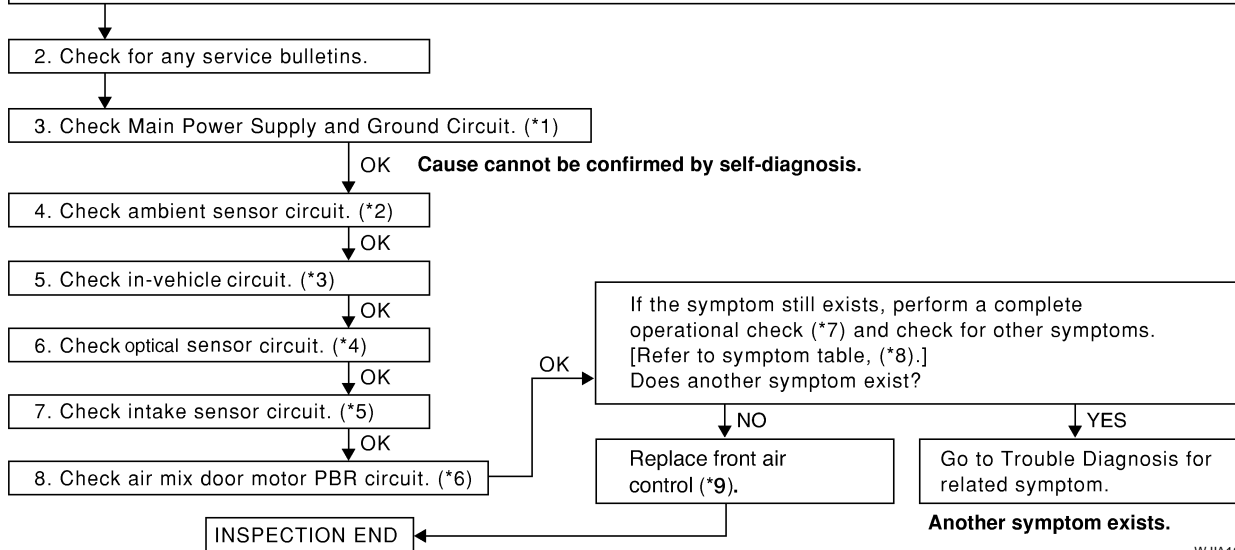
1. Confirm symptom by performing operational check.



OPERATIONAL CHECK – AUTO mode

a. Press AUTO switch.
b. Display should indicate AUTO.
(Discharge air and blower speed will depend on ambient, in-vehicle and set temperatures.)

If OK (symptom cannot be duplicated), perform complete operational check (*7).
If NG (symptom is confirmed), continue with STEP-2 following.



- | | | |
|--|--|---|
| *1 ATC-64, "Power Supply and Ground Circuit for Front Air Control" | *2 ATC-143, "Ambient Sensor Circuit" | *3 ATC-151, "In-vehicle Sensor" |
| *4 ATC-152, "Optical Sensor Circuit" | *5 ATC-155, "Intake Sensor Circuit" | *6 ATC-77, "Air Mix Door Motor Circuit" |
| *7 ATC-62, "Operational Check" | *8 ATC-35, "SYMPTOM TABLE" | *9 ATC-159, "CONTROL UNIT" |

WJIA1946E

TROUBLE DIAGNOSIS

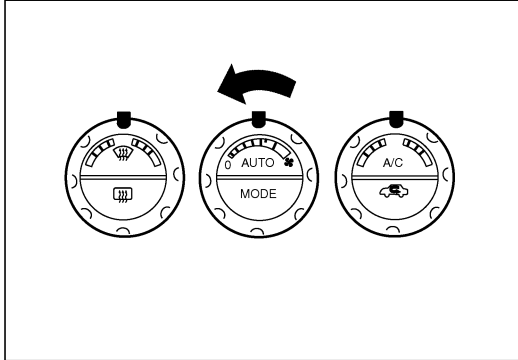
EJS004UZ

Memory Function

SYMPTOM: Memory function does not operate.

INSPECTION FLOW

1. Confirm symptom by performing the following operational check.

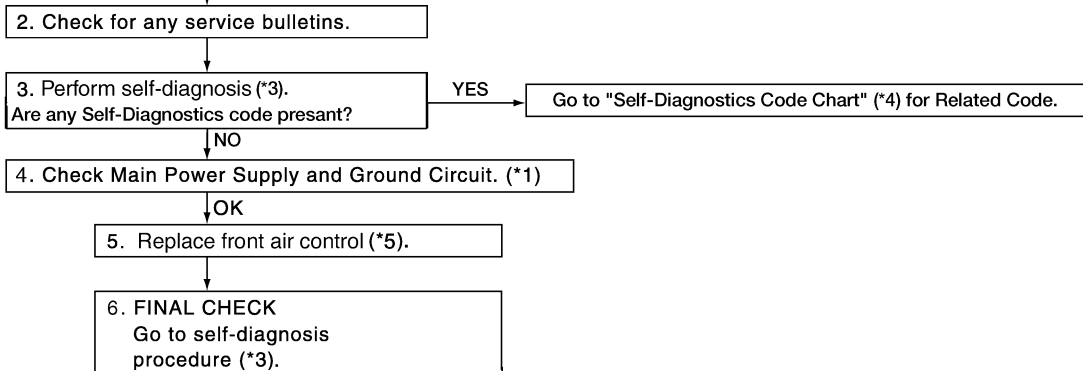


OPERATIONAL CHECK – Memory function

- Set the temperature to 32°C (90°F)
- Rotate the front blower control dial (driver side) to turn system off.
- Turn the ignition off.
- Turn the ignition on.
- Press the AUTO switch.
- Confirm that the set temperature remains at previous temperature.

If OK (symptom cannot be duplicated), perform complete operational check (*2).

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



*1 [ATC-64, "Power Supply and Ground Circuit for Front Air Control"](#)

*2 [ATC-62, "Operational Check"](#)

*3 [ATC-60, "A/C System Self-diagnosis Function"](#)

*4 [ATC-61, "SELF-DIAGNOSIS CODE CHART"](#)

*5 [ATC-159, "CONTROL UNIT"](#)

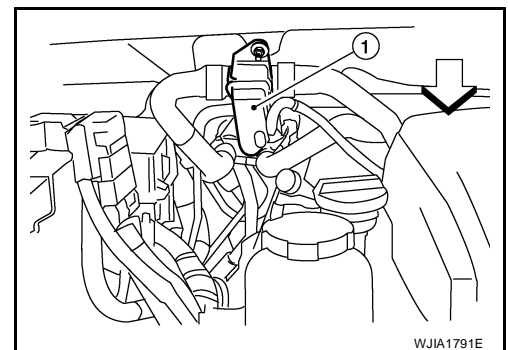
WJIA1947E

Water Valve Circuit COMPONENT DESCRIPTION

EJS004V0

Water Valve

The water valve (1) cuts the flow of engine coolant to the front and rear heater cores to allow for maximum cooling during A/C operation. It is controlled by the front air control.



WJIA1791E

TROUBLE DIAGNOSIS

DIAGNOSTIC PROCEDURE FOR WATER VALVE

1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

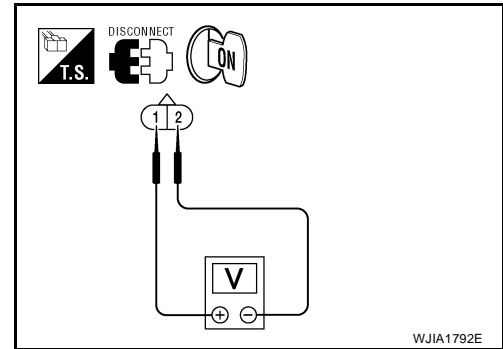
YES or NO

- YES >> GO TO 2.
- NO >> GO TO 6.

2. CHECK WATER VALVE POWER AND GROUND CIRCUITS

1. Disconnect water valve connector F68.
2. Turn ignition switch ON.
3. Rotate temperature control dial (driver) to 32°C (90°F).
4. Check voltage between water valve harness connector F68 terminal 1 and terminal 2 while rotating temperature control dial (driver) to 16°C (60°F).

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Water valve: F68	1	2	Rotate temperature control dial	Battery voltage



OK or NG

- OK >> GO TO 4.
- NG >> GO TO 3.

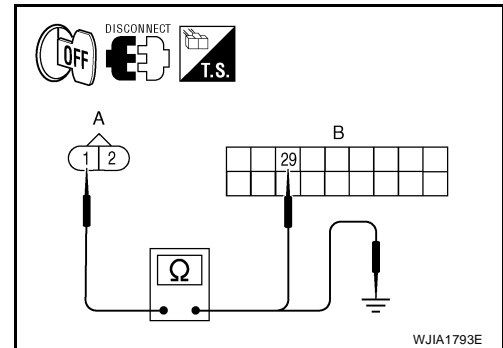
3. CHECK WATER VALVE CONTROL OUTPUT CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect front air control connector M50.
3. Check continuity between water valve harness connector F68 (A) terminal 1 and front air control harness connector M50 (B) terminal 29.

1 - 29 : Continuity should exist.

4. Check continuity between water valve harness connector F68 (A) terminal 1 and ground.

1 - Ground : Continuity should not exist.



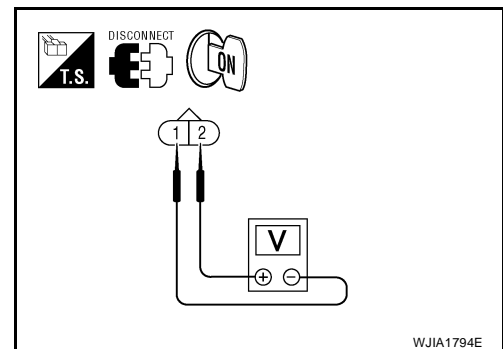
OK or NG

- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
- NG >> Repair harness or connector.

4. CHECK WATER VALVE POWER AND GROUND CIRCUITS

1. Rotate temperature control dial (driver) to 16°C (60°F).
2. Check voltage between water valve harness connector F68 terminal 1 and terminal 2 while rotating temperature control dial (driver) to 32°C (90°F).

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Water valve: F68	2	1	Rotate temperature control dial	Battery voltage



OK or NG

- OK >> Replace the water valve.
- NG >> GO TO 5.

TROUBLE DIAGNOSIS

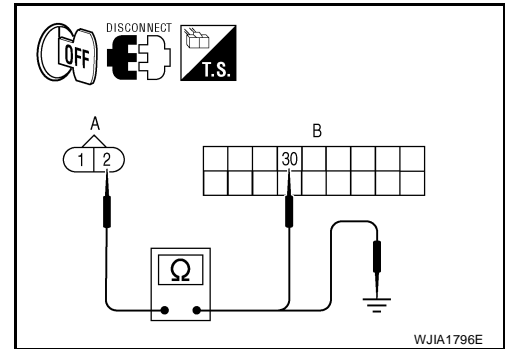
5. CHECK WATER VALVE CONTROL OUTPUT CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect front air control connector M50.
3. Check continuity between water valve harness connector F68 (A) terminal 2 and front air control harness connector M50 (B) terminal 30.

2 - 30 : Continuity should exist.

4. Check continuity between water valve harness connector F68 (A) terminal 2 and ground.

2 - Ground : Continuity should not exist.



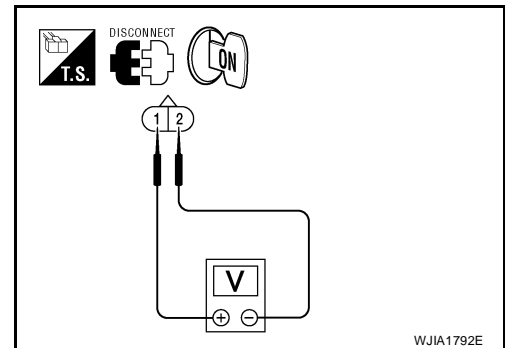
OK or NG

- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#) .
 NG >> Repair harness or connector.

6. CHECK WATER VALVE POWER AND GROUND CIRCUITS

1. Disconnect water valve connector F68.
2. Turn ignition switch ON.
3. Rotate temperature control dial (driver) to 32°C (90°F).
4. Check voltage between water valve harness connector F68 terminal 1 and terminal 2 while rotating temperature control dial (driver) to 16°C (60°F).

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Water valve F68	1	2	Rotate temperature control dial	Battery voltage



OK or NG

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

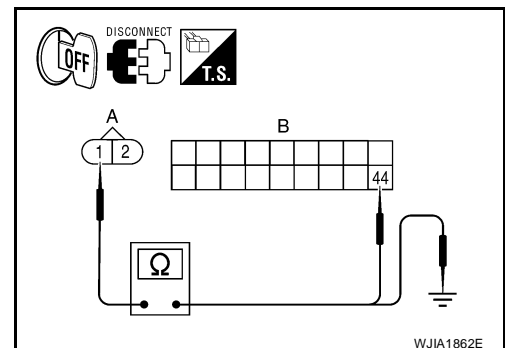
7. CHECK WATER VALVE CONTROL OUTPUT CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect front air control connector M50.
3. Check continuity between water valve harness connector F68 (A) terminal 1 and front air control harness connector M50 (B) terminal 44.

1 - 44 : Continuity should exist.

4. Check continuity between water valve harness connector F68 (A) terminal 1 and ground.

1 - Ground : Continuity should not exist.



OK or NG

- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#) .
 NG >> Repair harness or connector.

TROUBLE DIAGNOSIS

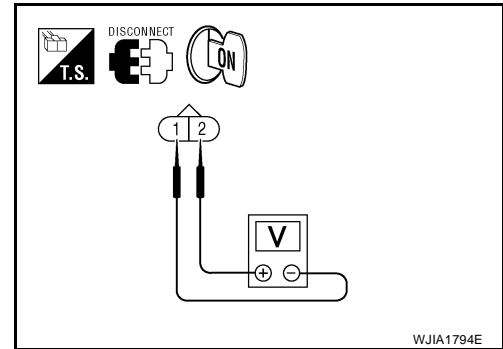
8. CHECK WATER VALVE POWER AND GROUND CIRCUITS

1. Rotate temperature control dial (driver) to 60°F (16°C).
2. Check voltage between water valve harness connector F68 terminal 1 and terminal 2 while rotating temperature control dial (driver) to 32°C (90°F).

Connector	Terminals		Condition	Voltage (Approx.)
	(+)	(-)		
Water valve: F68	2	1	Rotate temperature control dial	Battery voltage

OK or NG

- OK >> Replace the water valve.
 NG >> GO TO 9.



9. CHECK WATER VALVE CONTROL OUTPUT CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect front air control connector M50.
3. Check continuity between water valve harness connector F68 (A) terminal 2 and front air control harness connector M50 (B) terminal 43.

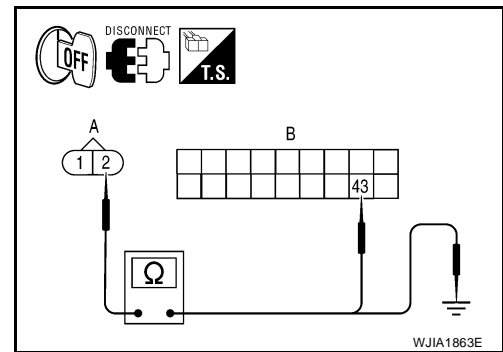
2 - 43 : Continuity should exist.

4. Check continuity between water valve harness connector F68 (A) terminal 2 and ground.

2 - Ground : Continuity should not exist.

OK or NG

- OK >> Replace front air control. Refer to [ATC-159, "REMOVAL"](#) .
 NG >> Repair harness or connector.



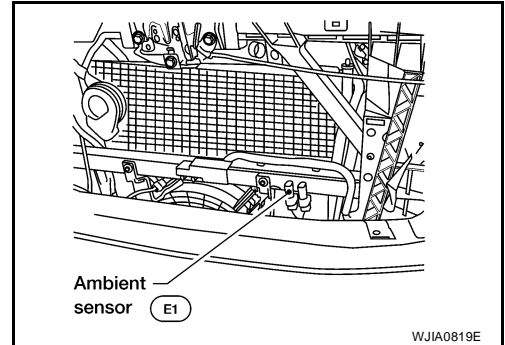
TROUBLE DIAGNOSIS

EJS004V1

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 value which is then input into the front air control.



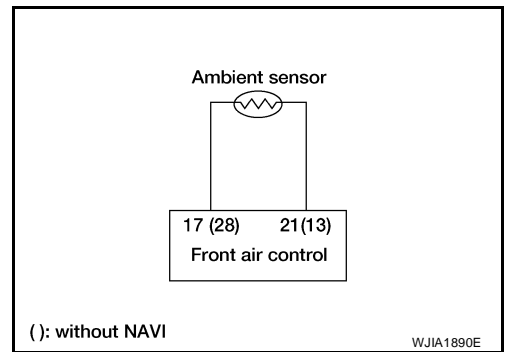
AMBIENT TEMPERATURE INPUT PROCESS

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. Using the CONSULT-II, DTC B257B or B257C is displayed. Without a CONSULT-II, code 40 or 41 is indicated on front air control as a result of conducting the front air control self-diagnosis.



1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

YES or NO

- YES >> GO TO 2.
- NO >> GO TO 6.

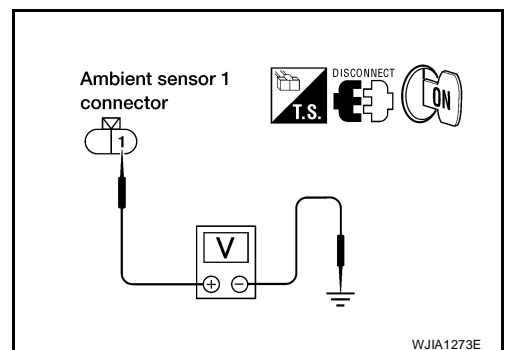
2. CHECK VOLTAGE BETWEEN AMBIENT SENSOR AND GROUND

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

1 - Ground : Approx. 5V

OK or NG

- OK >> GO TO 3.
- NG >> GO TO 5.



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TROUBLE DIAGNOSIS

3. CHECK CIRCUIT CONTINUITY BETWEEN AMBIENT SENSOR AND FRONT AIR CONTROL

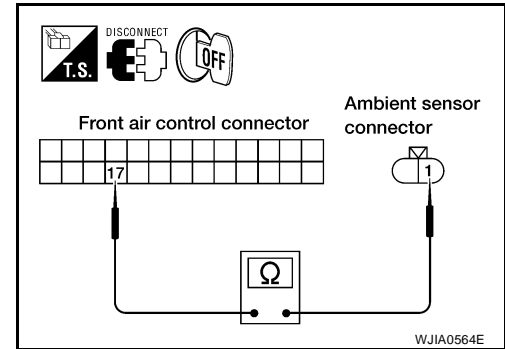
1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between ambient sensor harness connector E1 terminal 1 and front air control harness connector M49 terminal 17.

1 - 17 : Continuity should exist.

OK or NG

OK >> GO TO 4.

NG >> Repair harness or connector.



4. CHECK AMBIENT SENSOR

Refer to [ATC-143, "Ambient Sensor Circuit"](#) .

OK or NG

OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#)

2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

NG >> 1. Replace ambient sensor.

2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

5. 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 and front air control harness connector M49 terminal 21.

2 - 21 : Continuity should exist.

4. Check continuity between ambient sensor harness connector E1 terminal 2 and ground.

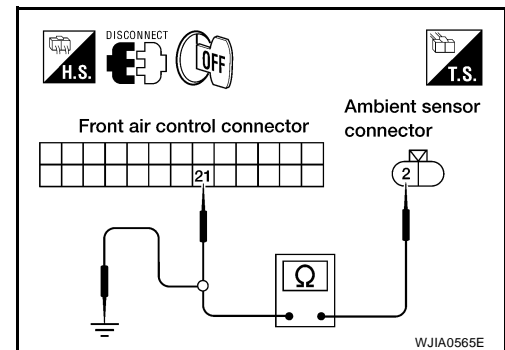
2 - Ground : Continuity should not exist.

OK or NG

OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#)

2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

NG >> Repair harness or connector.



6. CHECK VOLTAGE BETWEEN AMBIENT SENSOR AND GROUND

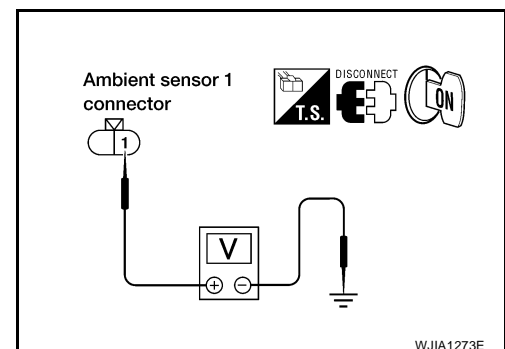
1. Disconnect ambient sensor connector.
2. Turn ignition switch ON.
3. Check voltage between ambient sensor harness connector E1 terminal 1 and ground.

1 - Ground : Approx. 5V

OK or NG

OK >> GO TO 7.

NG >> GO TO 9.



TROUBLE DIAGNOSIS

7. CHECK CIRCUIT CONTINUITY BETWEEN AMBIENT SENSOR AND FRONT AIR CONTROL

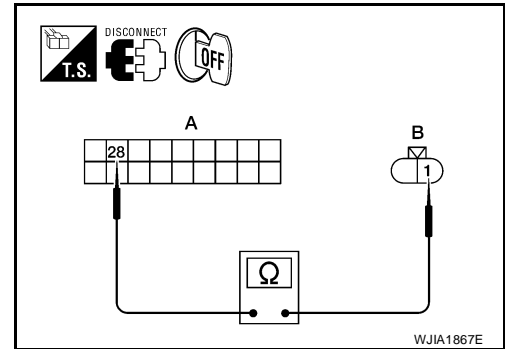
1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between ambient sensor harness connector E1 (B) terminal 1 and front air control harness connector M50 (A) terminal 28.

1 - 28 : Continuity should exist.

OK or NG

OK >> GO TO 8.

NG >> Repair harness or connector.



8. CHECK AMBIENT SENSOR

Refer to [ATC-143, "Ambient Sensor Circuit"](#) .

OK or NG

OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#)

2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

NG >> 1. Replace ambient sensor.

2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

9. 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 (B) terminal 2 and front air control harness connector M49 (A) terminal 13.

2 - 13 : Continuity should exist.

4. Check continuity between ambient sensor harness connector E1 (B) terminal 2 and ground.

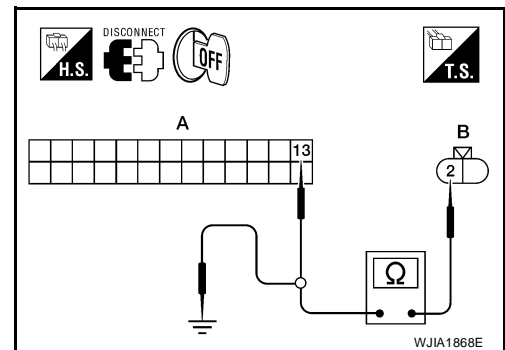
2 - Ground : Continuity should not exist.

OK or NG

OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#)

2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

NG >> Repair harness or connector.



TROUBLE DIAGNOSIS

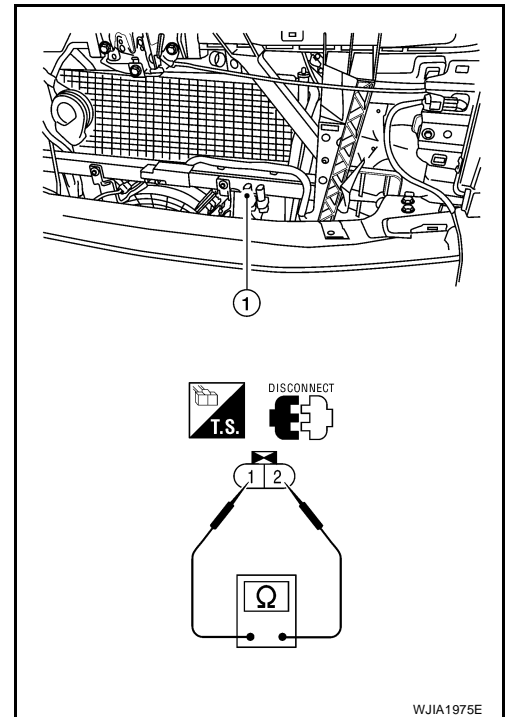
COMPONENT INSPECTION

Ambient Sensor

After disconnecting ambient sensor (1) connector E1, measure resistance between terminals 1 and 2 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.



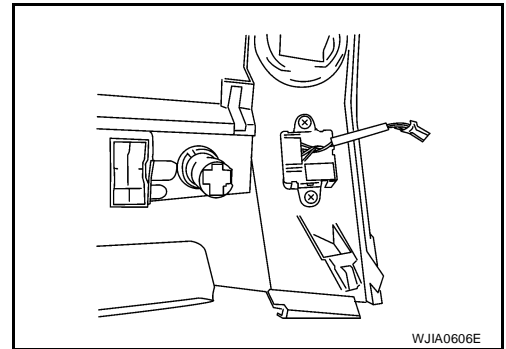
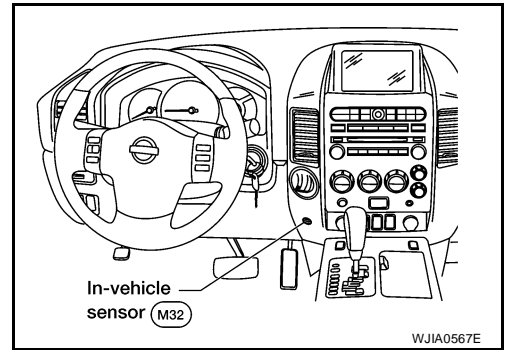
TROUBLE DIAGNOSIS

In-vehicle Sensor Circuit COMPONENT DESCRIPTION

EJS004V2

In-vehicle Sensor

The in-vehicle sensor is located on cluster lid D. It converts variations in temperature of passenger compartment air (drawn in through the integrated fan) into a resistance value. It is then input into the front air control.



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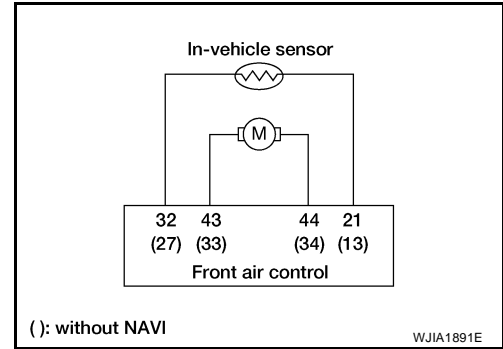
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TROUBLE DIAGNOSIS

DIAGNOSTIC PROCEDURE FOR IN-VEHICLE SENSOR

SYMPTOM: In-vehicle sensor circuit is open or shorted. Using the CONSULT-II, DTC B2578 or B2579 is displayed. Without a CONSULT-II code 30, 31 is indicated on front air control as a result of conducting self-diagnosis.



1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

YES or NO

- YES >> GO TO 2.
- NO >> GO TO 8.

2. CHECK IN-VEHICLE SENSOR CIRCUIT

Self-diagnosis DTC B2578 or B2579 (with CONSULT-II) or code 30 or 31 (without CONSULT-II) is present?

YES or NO

- YES >> GO TO 7.
- NO >> GO TO 3.

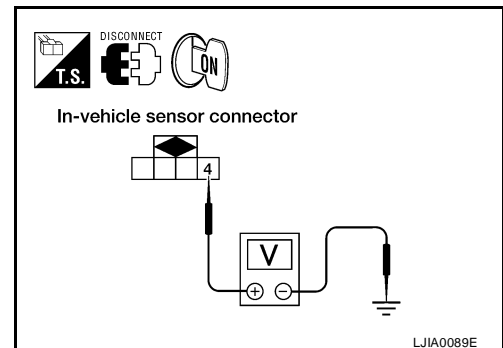
3. CHECK VOLTAGE BETWEEN IN-VEHICLE SENSOR AND GROUND

1. Disconnect in-vehicle sensor connector.
2. Turn ignition switch ON.
3. Check voltage between in-vehicle sensor harness connector M32 terminal 4 and ground.

4 - Ground : Approx. 5V.

OK or NG

- OK >> GO TO 4.
- NG >> GO TO 6.



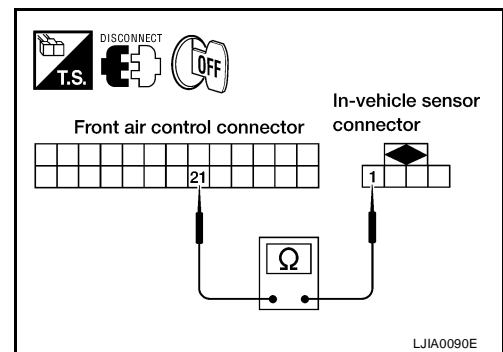
4. CHECK CIRCUIT CONTINUITY BETWEEN IN-VEHICLE SENSOR AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect front air control connector M49.
3. Check continuity between in-vehicle sensor harness connector M32 terminal 1 and front air control harness connector M49 terminal 21.

1 - 21 : Continuity should exist.

OK or NG

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



TROUBLE DIAGNOSIS

5. CHECK IN-VEHICLE SENSOR

Check in-vehicle sensor. Refer to [ATC-155, "Intake Sensor Circuit"](#) .

OK or NG

- OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#) .
2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.
- NG >> 1. Replace in-vehicle sensor. Refer to [ATC-161, "IN-VEHICLE SENSOR"](#) .
2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

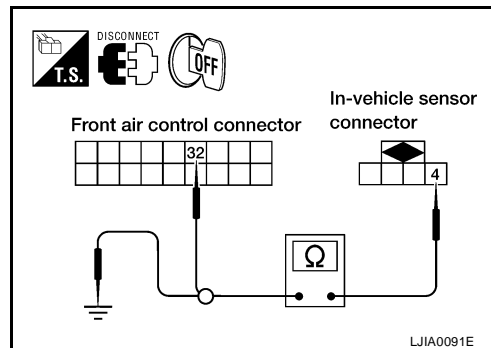
6. CHECK CIRCUIT CONTINUITY BETWEEN IN-VEHICLE SENSOR AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between in-vehicle sensor harness connector M32 terminal 4 and front air control harness connector M50 terminal 32.

4 - 32 : Continuity should exist.

4. Check continuity between in-vehicle sensor harness connector M32 terminal 4 and ground.

4 - Ground Continuity should not exist.



OK or NG

- OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#) .
2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.
- NG >> Repair harness or connector.

7. CHECK CIRCUIT CONTINUITY BETWEEN IN-VEHICLE SENSOR MOTOR AND FRONT AIR CONTROL (SELF-DIAGNOSIS CODES 30, 31 OR DTC B2578, B2579)

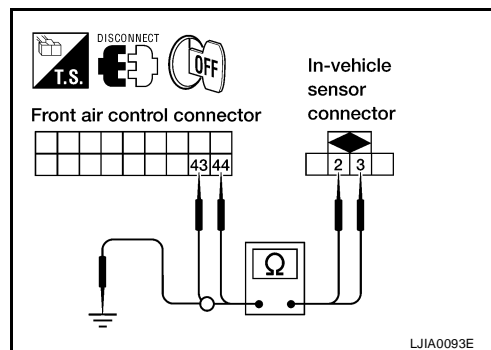
1. Turn ignition switch OFF.
2. Disconnect front air control connector and in-vehicle sensor connector.
3. Check continuity between in-vehicle sensor harness connector M32 terminal 2 and 3 and front air control harness connector M50 terminal 44 and 43.

2 - 44 : Continuity should exist.

3 - 43 : Continuity should exist.

4. Check continuity between in-vehicle sensor harness connector M32 terminal 2 and 3 and ground.

2, 3 - Ground :Continuity should not exist.



OK or NG

- OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#) .
2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.
- NG >> Repair harness or connector.

8. CHECK IN-VEHICLE SENSOR CIRCUIT

Self-diagnosis DTC B2578 or B2579 (with CONSULT-II) or code 30 or 31 (without CONSULT-II) is present?

YES or NO

- YES >> GO TO 13.
NO >> GO TO 9.

TROUBLE DIAGNOSIS

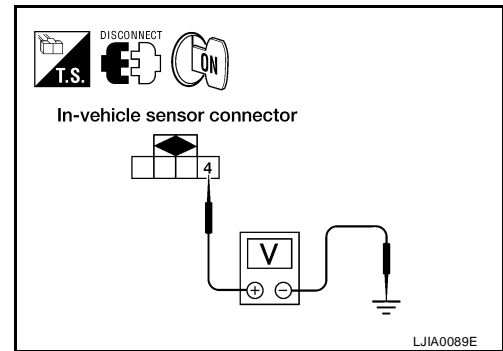
9. CHECK VOLTAGE BETWEEN IN-VEHICLE SENSOR AND GROUND

1. Disconnect in-vehicle sensor connector.
2. Turn ignition switch ON.
3. Check voltage between in-vehicle sensor harness connector M32 terminal 4 and ground.

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

OK or NG

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



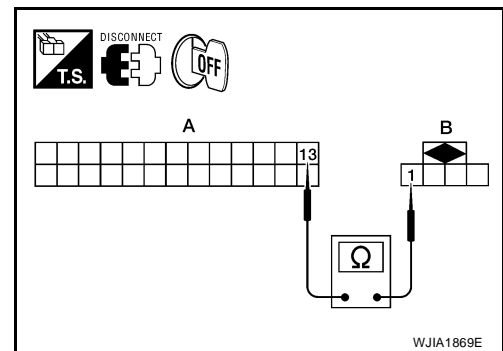
10. CHECK CIRCUIT CONTINUITY BETWEEN IN-VEHICLE SENSOR AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect front air control connector M49.
3. Check continuity between in-vehicle sensor harness connector (B) M32 terminal 1 and front air control harness connector (A) M49 terminal 13.

1 - 13 : **Continuity should exist.**

OK or NG

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



11. CHECK IN-VEHICLE SENSOR

Check in-vehicle sensor. Refer to [ATC-155, "Intake Sensor Circuit"](#) .

OK or NG

- OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#) .
2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.
- NG >> 1. Replace in-vehicle sensor. Refer to [ATC-161, "IN-VEHICLE SENSOR"](#) .
2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

12. CHECK CIRCUIT CONTINUITY BETWEEN IN-VEHICLE SENSOR AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between in-vehicle sensor harness connector M32 terminal 4 and front air control harness connector M50 terminal 27.

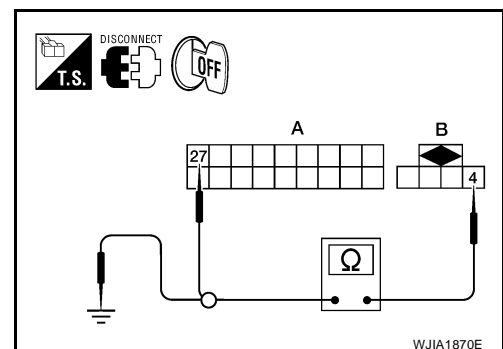
4 - 27 : **Continuity should exist.**

4. Check continuity between in-vehicle sensor harness connector M32 terminal 4 and ground.

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

OK or NG

- OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#) .
2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.
- NG >> Repair harness or connector.



TROUBLE DIAGNOSIS

13. CHECK CIRCUIT CONTINUITY BETWEEN IN-VEHICLE SENSOR MOTOR AND FRONT AIR CONTROL (SELF-DIAGNOSIS CODES 30, 31 OR DTC B2578, B2579)

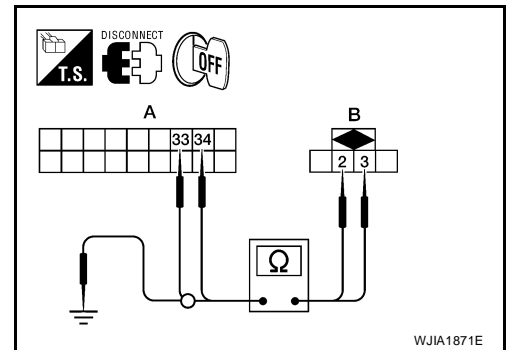
1. Turn ignition switch OFF.
2. Disconnect front air control connector and in-vehicle sensor connector.
3. Check continuity between in-vehicle sensor harness connector M32 terminal 2 and 3 and front air control harness connector M50 terminal 34 and 33.

2 - 34 : Continuity should exist.

3 - 33 : Continuity should exist.

4. Check continuity between in-vehicle sensor harness connector M32 terminal 2 and 3 and ground.

2, 3 - Ground :Continuity should not exist.



OK or NG

- OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#) .
2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

NG >> Repair harness or connector.

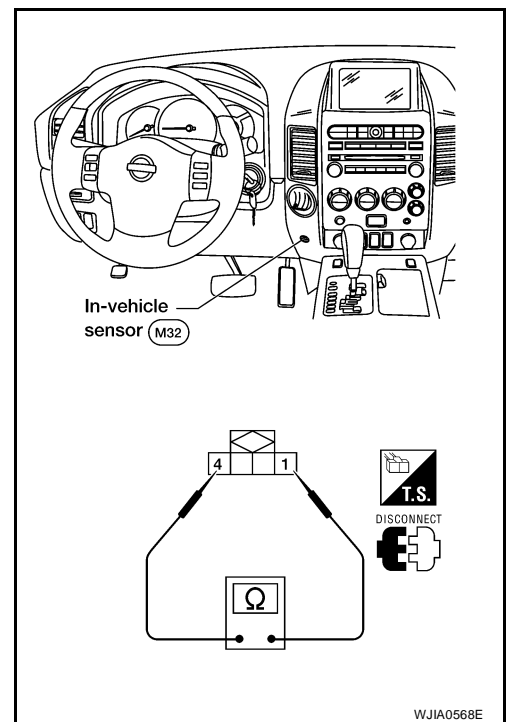
COMPONENT INSPECTION

In-vehicle Sensor

After disconnecting in-vehicle sensor connector M32, measure resistance between terminals 1 and 4 at sensor component side, using the table below.

Temperature °C (°F)	Resistance kΩ
-15 (5)	21.40
-10 (14)	16.15
-5 (23)	12.29
0 (32)	9.41
5 (41)	7.27
10 (50)	5.66
15 (59)	4.45
20 (68)	3.51
25 (77)	2.79
30 (86)	2.24
35 (95)	1.80
40 (104)	1.45
45 (113)	1.18

If NG, replace in-vehicle sensor.

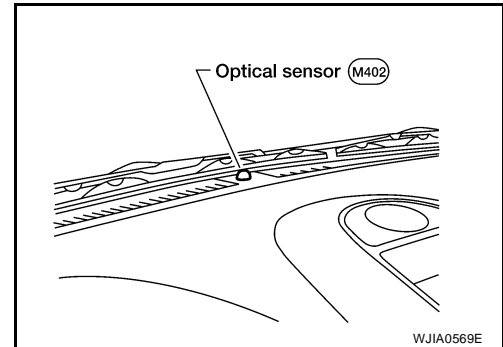


TROUBLE DIAGNOSIS

EJS004V3

Optical Sensor Circuit COMPONENT DESCRIPTION

The optical sensor is located in the center of the defroster grille. It detects sunload entering through windshield by means of a photo diode. The sensor converts the sunload into a current value which is then input into the front air control.



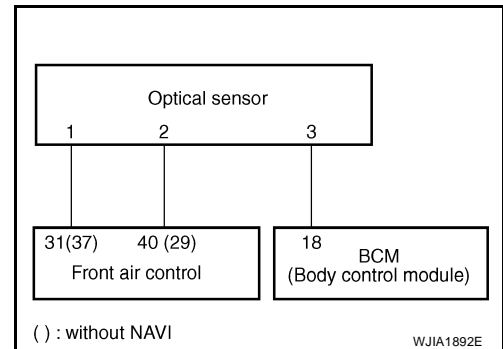
OPTICAL INPUT PROCESS

The front air control includes a processing circuit which averages the variations in detected sunload over a period of time. This prevents adjustments in the ATC system operation due to small or quick variations in detected sunload.

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

DIAGNOSTIC PROCEDURE FOR OPTICAL SENSOR

SYMPTOM: Optical sensor circuit is open or shorted. Using the CONSULT-II, DTC B257F or B2580 is displayed. Without a CONSULT-II code 50 or 52 is indicated on front air control as a result of conducting self-diagnosis.



1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

YES or NO

YES >> GO TO 2.

NO >> GO TO 4.

TROUBLE DIAGNOSIS

2. CHECK CIRCUIT CONTINUITY BETWEEN OPTICAL SENSOR AND FRONT AIR CONTROL

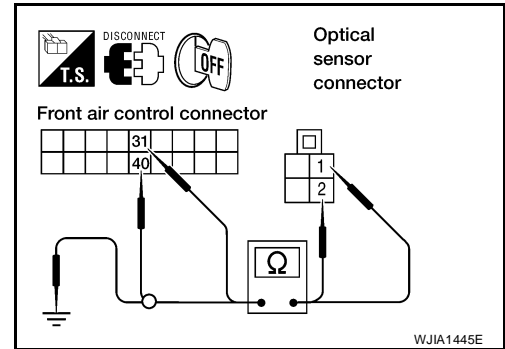
1. Turn ignition switch OFF.
2. Disconnect front air control connector and optical sensor connector.
3. Check continuity between optical sensor harness connector M402 terminal 1 and 2 and front air control harness connector M50 terminal 31 and 40.

1 - 31 : Continuity should exist.

2 - 40 : Continuity should exist.

4. Check continuity between optical sensor harness connector M402 terminal 1 and 2 and ground.

1, 2 - Ground. : Continuity should not exist.



OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

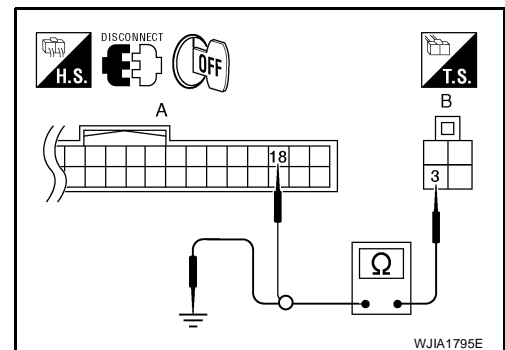
3. CHECK CIRCUIT CONTINUITY BETWEEN OPTICAL SENSOR AND BCM

1. Disconnect BCM connector.
2. Check continuity between optical sensor harness connector (B) M402 terminal 3 and BCM harness connector (A) M18 terminal 18.

3 - 18 : Continuity should exist.

3. Check continuity between optical sensor harness connector (A) M402 terminal 3 and ground.

3 - Ground : Continuity should not exist.



OK or NG

OK >> Replace optical sensor. Refer to [ATC-162, "OPTICAL SENSOR"](#) .

NG >> Repair harness or connector.

4. CHECK CIRCUIT CONTINUITY BETWEEN OPTICAL SENSOR AND FRONT AIR CONTROL

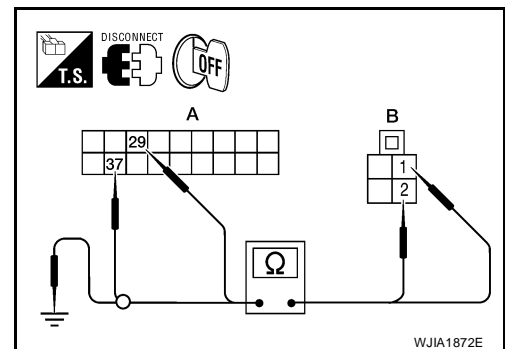
1. Turn ignition switch OFF.
2. Disconnect front air control connector and optical sensor connector.
3. Check continuity between optical sensor harness connector (B) M402 terminal 1 and 2 and front air control harness connector (A) M50 terminal 37 and 29.

1 - 37 : Continuity should exist.

2 - 29 : Continuity should exist.

4. Check continuity between optical sensor harness connector M402 terminal 1 and 2 and ground.

1, 2 - Ground. : Continuity should not exist.



OK or NG

OK >> GO TO 5.

NG >> Repair harness or connector.

TROUBLE DIAGNOSIS

5. CHECK CIRCUIT CONTINUITY BETWEEN OPTICAL SENSOR AND BCM

1. Disconnect BCM connector.
2. Check continuity between optical sensor harness connector (B) M402 terminal 3 and BCM harness connector (A) M18 terminal 18.

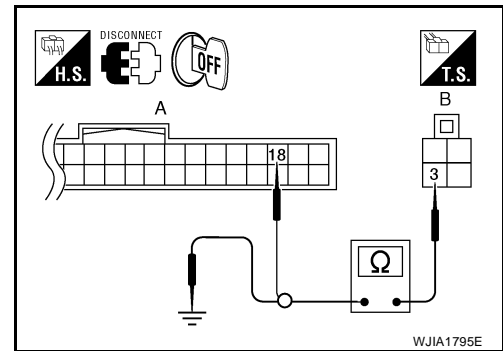
3 - 18 : **Continuity should exist.**

3. Check continuity between optical sensor harness connector (A) M402 terminal 3 and ground.

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

OK or NG

- OK >> Replace optical sensor. Refer to [ATC-162, "OPTICAL SENSOR"](#) .
NG >> Repair harness or connector.



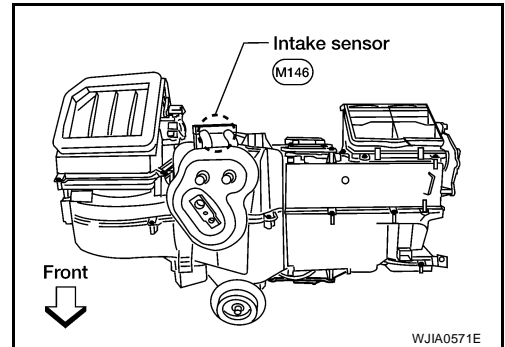
TROUBLE DIAGNOSIS

EJS004V4

Intake Sensor Circuit COMPONENT DESCRIPTION

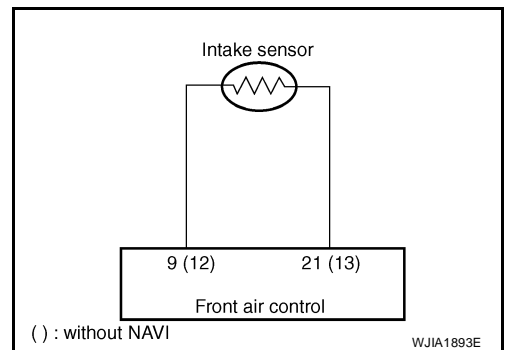
Intake Sensor

The intake sensor is located on the heater & cooling unit assembly. 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. Using the CONSULT-II, DTC B2581 or B2582 is displayed. Without a CONSULT-II code 56 or 57 is indicated on front air control as a result of conducting self-diagnosis.



1. CHECK VEHICLE EQUIPMENT

Is vehicle equipped with navi?

YES or NO

YES >> GO TO 2.

NO >> GO TO 6.

2. 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 M146 terminal 2 and ground.

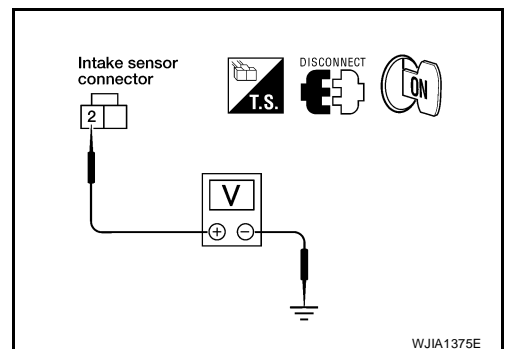
2 - Ground

: Approx. 5V

OK or NG

OK >> GO TO 3.

NG >> GO TO 5.



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ATC

TROUBLE DIAGNOSIS

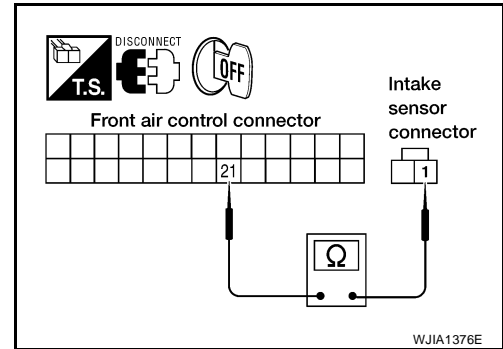
3. CHECK CIRCUIT CONTINUITY BETWEEN INTAKE SENSOR AND FRONT AIR CONTROL

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between intake sensor harness connector M146 terminal 1 and front air control harness connector M49 terminal 21.

1 - 21 : Continuity should exist.

OK or NG

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



4. CHECK INTAKE SENSOR

Check intake sensor. Refer to [ATC-158, "Intake Sensor"](#).

OK or NG

- OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.
- NG >> 1. Replace intake sensor. Refer to [ATC-163, "INTAKE SENSOR"](#).
2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

5. 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 M146 terminal 2 and front air control harness connector M49 terminal 9.

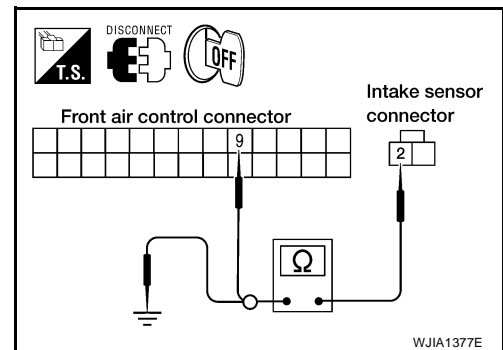
2 - 9 : Continuity should exist.

4. Check continuity between intake sensor harness connector M146 terminal 2 and ground.

2 - Ground : Continuity should not exist.

OK or NG

- OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#).
2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.
- NG >> Repair harness or connector.



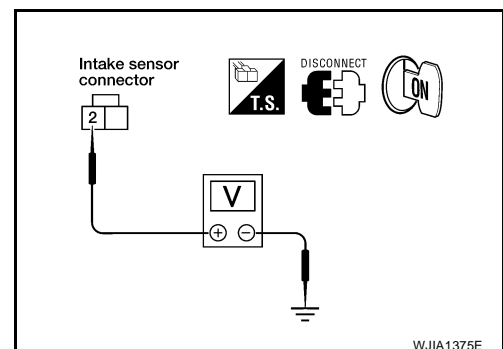
6. CHECK VOLTAGE BETWEEN INTAKE SENSOR AND GROUND

1. Disconnect intake sensor connector.
2. Turn ignition switch ON.
3. Check voltage between intake sensor harness connector M146 terminal 2 and ground.

2 - Ground : Approx. 5V

OK or NG

- OK >> GO TO 7.
NG >> GO TO 9.



TROUBLE DIAGNOSIS

7. CHECK CIRCUIT CONTINUITY BETWEEN INTAKE SENSOR AND FRONT AIR CONTROL

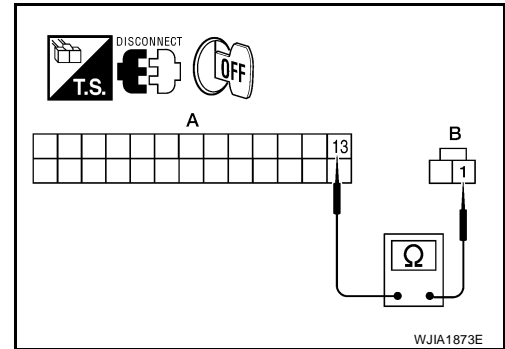
1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. Check continuity between intake sensor harness connector M146 terminal 1 and front air control harness connector M49 terminal 13.

1 - 13 : Continuity should exist.

OK or NG

OK >> GO TO 8.

NG >> Repair harness or connector.



8. CHECK INTAKE SENSOR

Check intake sensor. Refer to [ATC-158, "Intake Sensor"](#).

OK or NG

OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#).

2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

NG >> 1. Replace intake sensor. Refer to [ATC-163, "INTAKE SENSOR"](#).

2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

9. 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 (B) M146 terminal 2 and front air control harness connector (A) M49 terminal 12.

2 - 12 : Continuity should exist.

4. Check continuity between intake sensor harness connector M146 terminal 2 and ground.

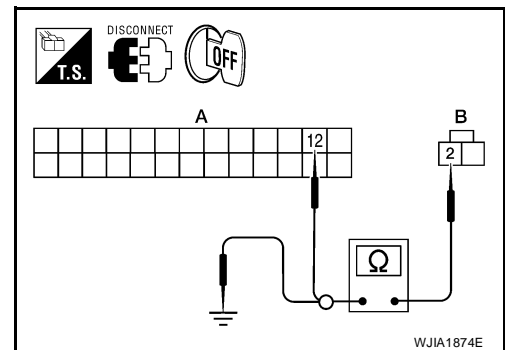
2 - Ground : Continuity should not exist.

OK or NG

OK >> 1. Replace front air control. Refer to [ATC-159, "REMOVAL"](#).

2. Go to [ATC-60, "A/C System Self-diagnosis Function"](#) and perform self-diagnosis.

NG >> Repair harness or connector.



TROUBLE DIAGNOSIS

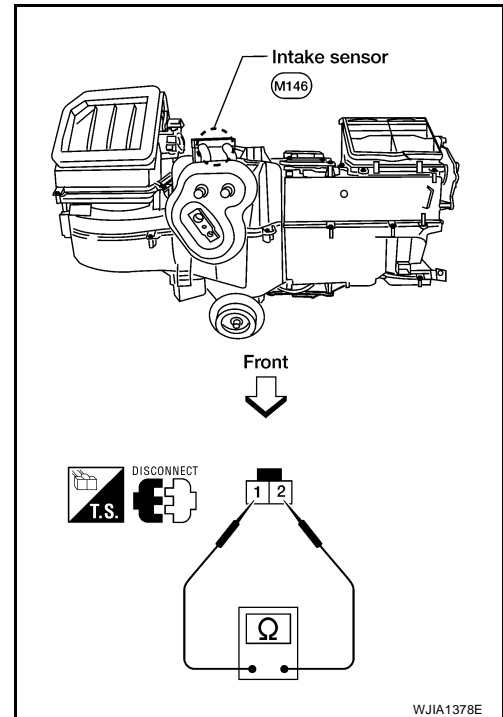
COMPONENT INSPECTION

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

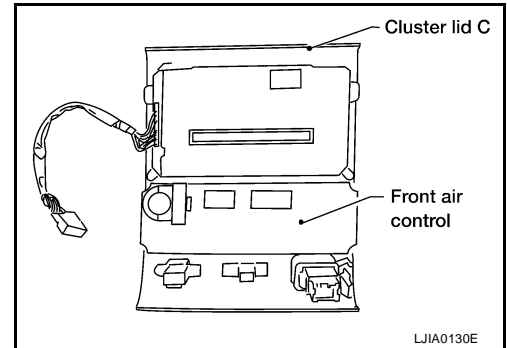
PFP:27500

EJS004V5

Removal and Installation

REMOVAL

1. Remove the five control knobs from the front air control unit.
2. Remove the cluster lid C. Refer to [IP-12, "CLUSTER LID C"](#).
3. Remove the four screws securing the front air control unit to cluster lid C.
4. Remove the front air control unit.



INSTALLATION

Installation is in the reverse order of removal.

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AMBIENT SENSOR

AMBIENT SENSOR

PF2:27722

Removal and Installation

EJS004V6

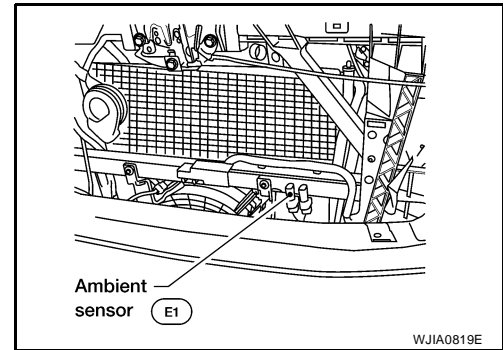
REMOVAL

1. Disconnect the ambient sensor electrical connector.

NOTE:

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

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



WJIA0819E

INSTALLATION

Installation is in the reverse order of removal.

IN-VEHICLE SENSOR

IN-VEHICLE SENSOR

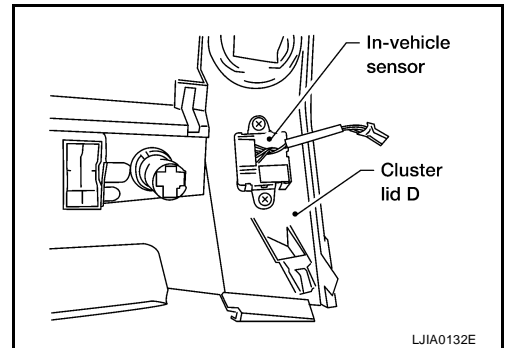
PFP:27720

Removal and Installation

EJS004V7

REMOVAL

1. Remove the cluster lid D. Refer to [IP-12, "CLUSTER LID D"](#) .
2. Remove the two screws and remove the in-vehicle sensor from cluster lid D.



INSTALLATION

Installation is in the reverse order of removal.

A
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M

ATC

OPTICAL SENSOR

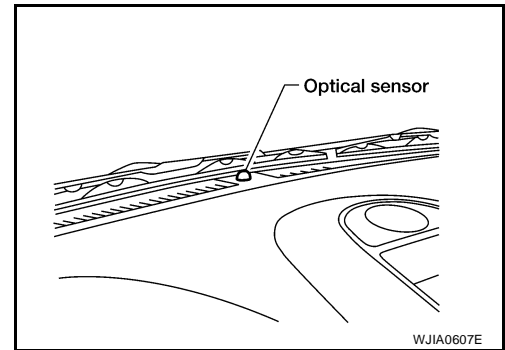
OPTICAL SENSOR

PF2:28576

Removal and Installation

EJS004V8

The optical sensor is located in the top center of the instrument panel. Refer to [LT-64, "Removal and Installation"](#) .



INTAKE SENSOR

PF2:27723

INTAKE SENSOR

Removal and Installation

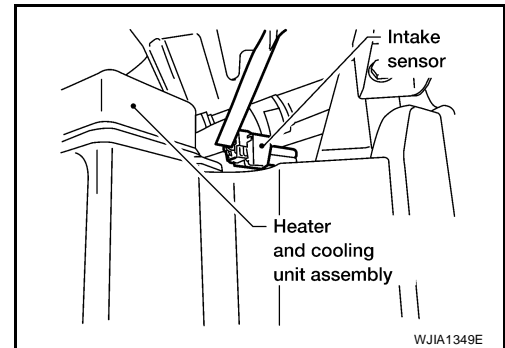
EJS004V9

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

NOTE:

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

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



INSTALLATION

Installation is in the reverse order of removal.

A
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ATC

BLOWER MOTOR

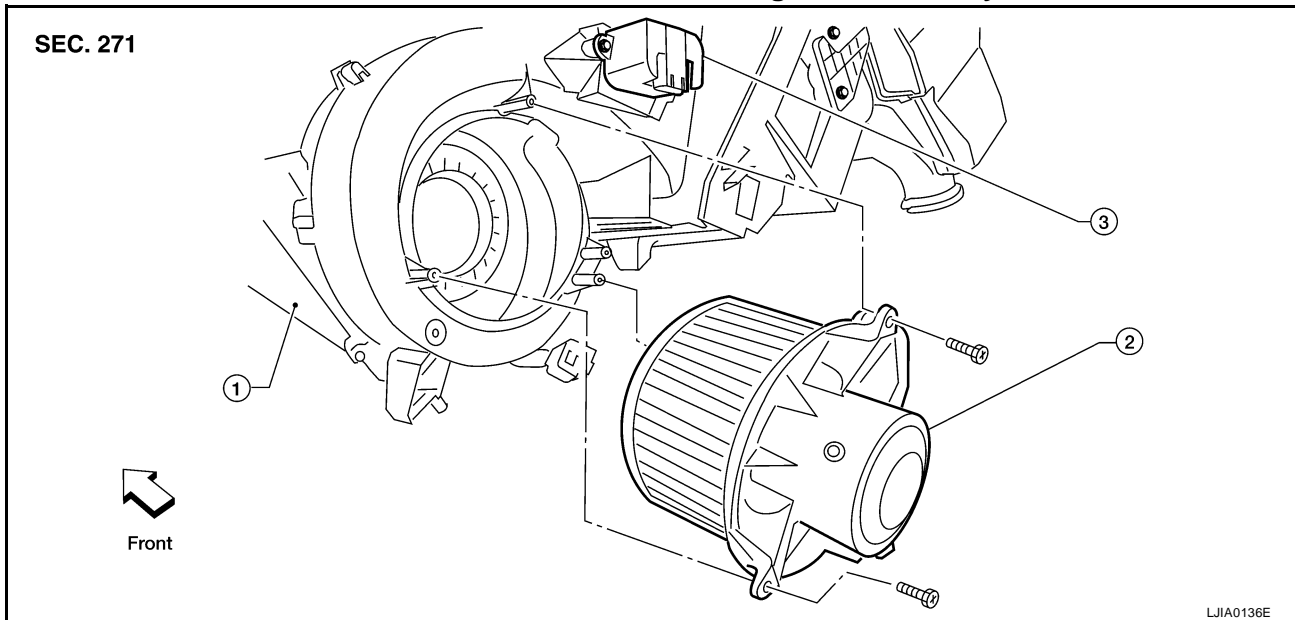
BLOWER MOTOR

PF2:27226

Removal and Installation

EJS004VB

Blower Motor - Heater and Cooling Unit Assembly



1. Heater and cooling unit assembly

2. Blower motor

3. Variable blower control

REMOVAL

1. Remove the glove box assembly. Refer to [JP-14, "LOWER INSTRUMENT PANEL RH AND GLOVE BOX"](#).
2. Disconnect the blower motor electrical connector.
3. Remove the three screws and remove the blower motor.

INSTALLATION

Installation is in the reverse order of removal.

IN-CABIN MICROFILTER

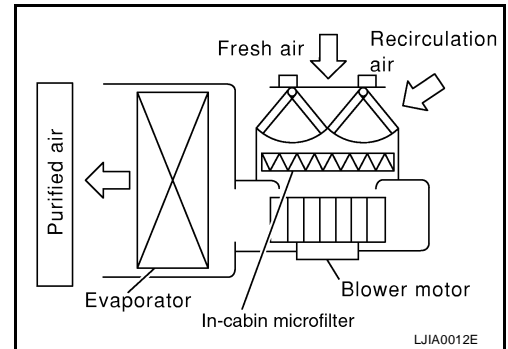
PFP:27277

EJS004VC

IN-CABIN MICROFILTER

Removal and Installation FUNCTION

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 heater and cooling unit assembly.

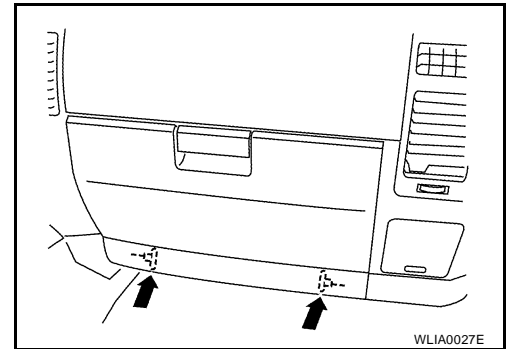


REPLACEMENT TIMING

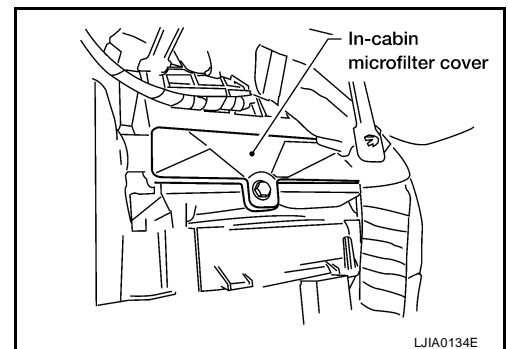
Replacement of the two in-cabin microfilters is recommended on a regular interval depending on the driving conditions. Refer to [MA-7, "PERIODIC MAINTENANCE"](#). It may also be necessary to replace the two in-cabin microfilters as part of a component replacement if the in-cabin microfilters are damaged.

REPLACEMENT PROCEDURE

1. Remove the two lower glove box hinge pins to remove the glove box from the instrument panel and let it hang from the cord.



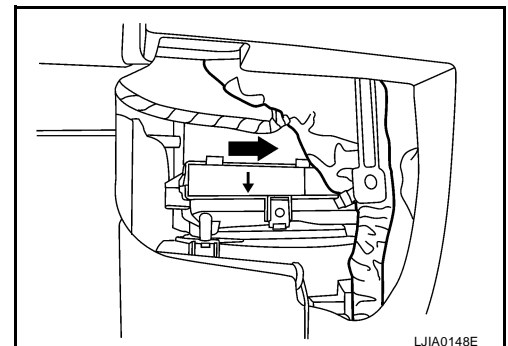
2. Remove the screw and remove the in-cabin microfilter cover.
3. Remove the in-cabin microfilters from the heater and cooling unit assembly housing.



4. Insert the first new in-cabin microfilter into the heater and cooling unit assembly housing and slide it over to the right. Insert the second new in-cabin microfilter into the heater and cooling unit assembly housing.

NOTE:

The in-cabin microfilters are marked with air flow arrows. The end of the microfilter with the arrow should face the rear of the vehicle. The arrows should point downward.

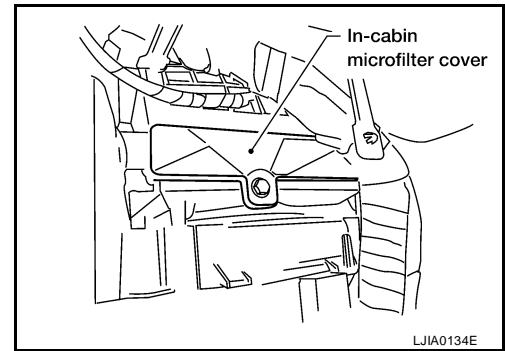


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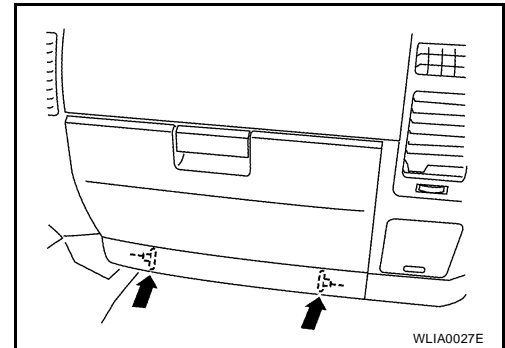
ATC

IN-CABIN MICROFILTER

5. Install the in-cabin microfilter cover.



6. Install the lower glove box in the instrument panel and secure it with the two hinge pins.



HEATER & COOLING UNIT ASSEMBLY

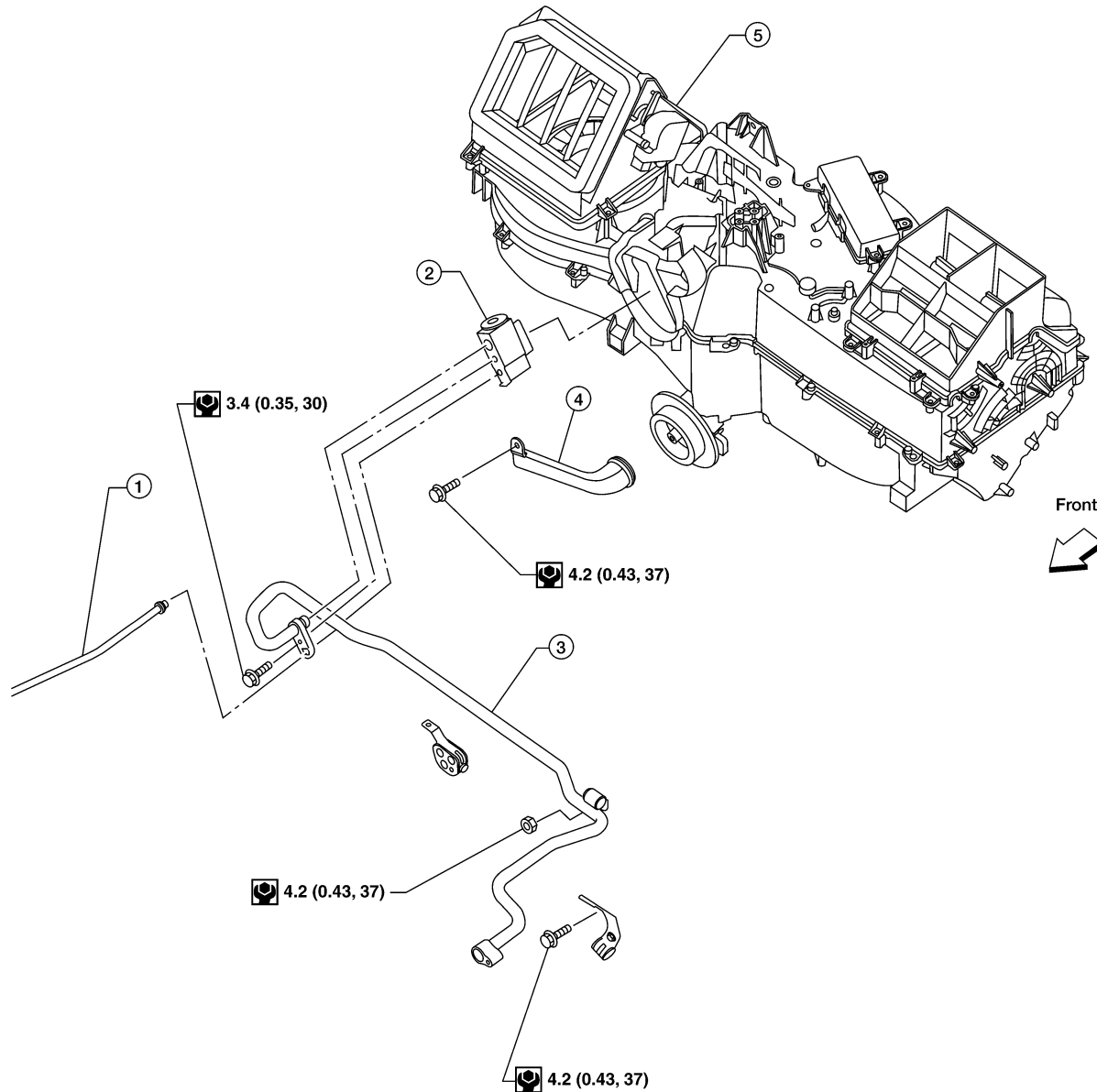
HEATER & COOLING UNIT ASSEMBLY


PF27110

Removal and Installation

EJS004VE

SEC. 271 • 276 • 278



 N-m (kg-m, in-lb)

- | | | |
|---------------------------|-------------------------------------|--------------------------|
| 1. High-pressure A/C pipe | 2. Expansion valve | 3. Low-pressure A/C pipe |
| 4. A/C drain hose | 5. Heater and cooling unit assembly | |

WJIA0695E

REMOVAL

1. Move the two front seats to the rearmost position on the seat track.
2. Disconnect the battery negative terminal and battery positive terminal.
3. Discharge the refrigerant from the A/C system. Refer to [ATC-180, "HFC-134a \(R-134a\) Service Procedure"](#).
4. Drain the coolant from the engine cooling system. Refer to [MA-13, "DRAINING ENGINE COOLANT"](#).
5. Disconnect the heater hoses from the heater core.
6. Disconnect the high/low pressure pipes from the expansion valve.

HEATER & COOLING UNIT ASSEMBLY

7. Remove the instrument panel and console panel. Refer to [IP-10, "INSTRUMENT PANEL"](#) .
8. Remove the steering column. Refer to [PS-9, "STEERING COLUMN"](#) .
9. 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-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
10. Disconnect the steering member from each side of the vehicle body.
11. Remove the heater and cooling unit assembly with it attached to the steering member, from the vehicle.

CAUTION:

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

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

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

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

NOTE:

- Fill the engine cooling system with the specified coolant mixture. Refer to [MA-14, "REFILLING ENGINE COOLANT"](#) .
- Recharge the A/C system. Refer to [ATC-180, "HFC-134a \(R-134a\) Service Procedure"](#) .

HEATER CORE

HEATER CORE

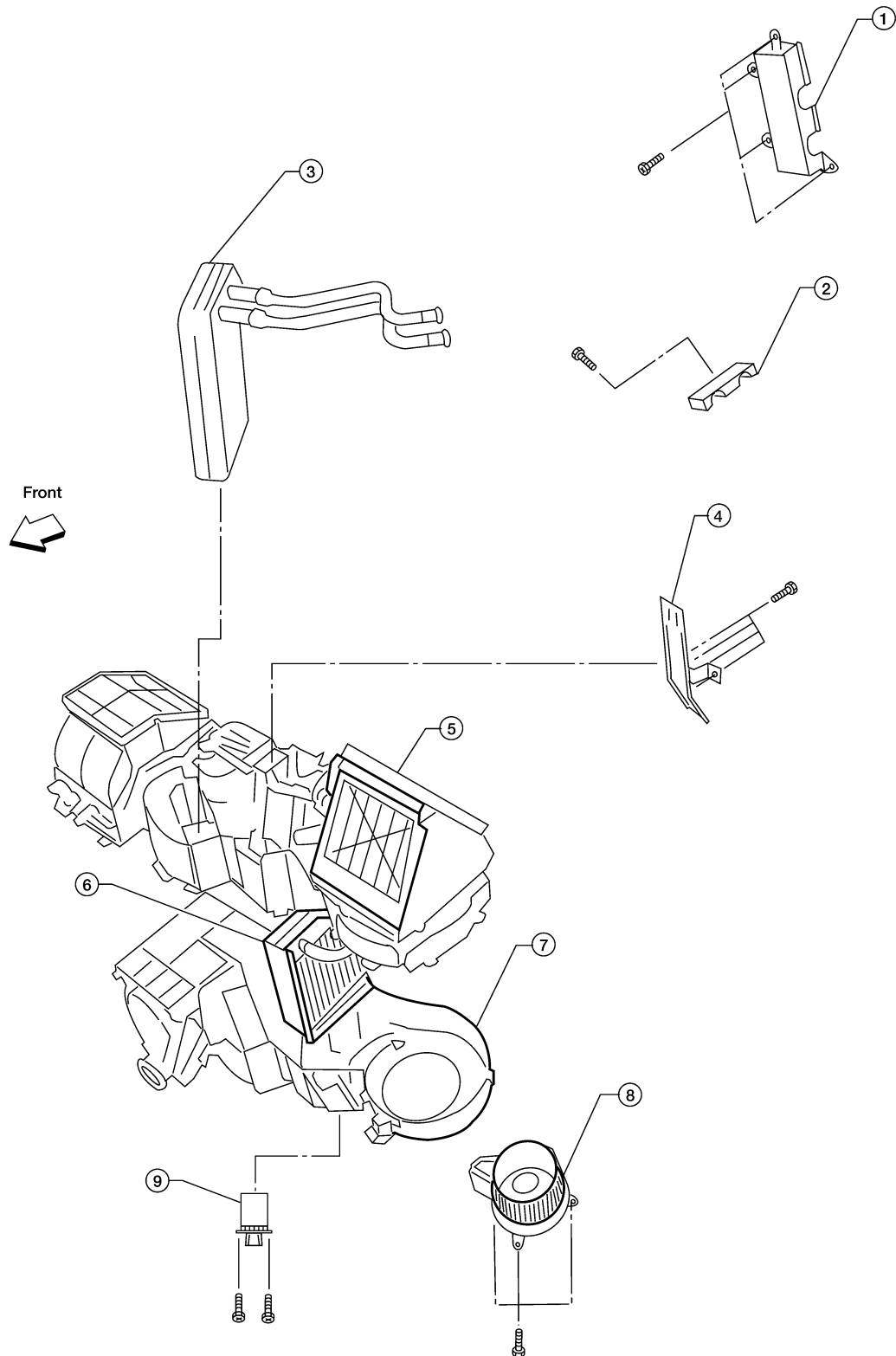
Removal and Installation

PFP:27140

EJS004VG

Heater and Cooling Unit Assembly

SEC. 271



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

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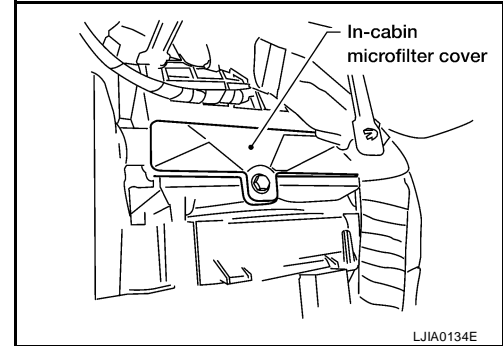
HEATER CORE

REMOVAL

1. Remove the heater and cooling unit assembly. Refer to [ATC-167, "HEATER & COOLING UNIT ASSEMBLY"](#) .
2. Remove the four screws and remove the upper bracket.
3. Remove the four screws and remove the heater core cover.
4. Remove the heater core pipe bracket.
5. Remove the heater core.

NOTE:

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



INSTALLATION

Installation is in the reverse order of removal.

DEFROSTER DOOR MOTOR

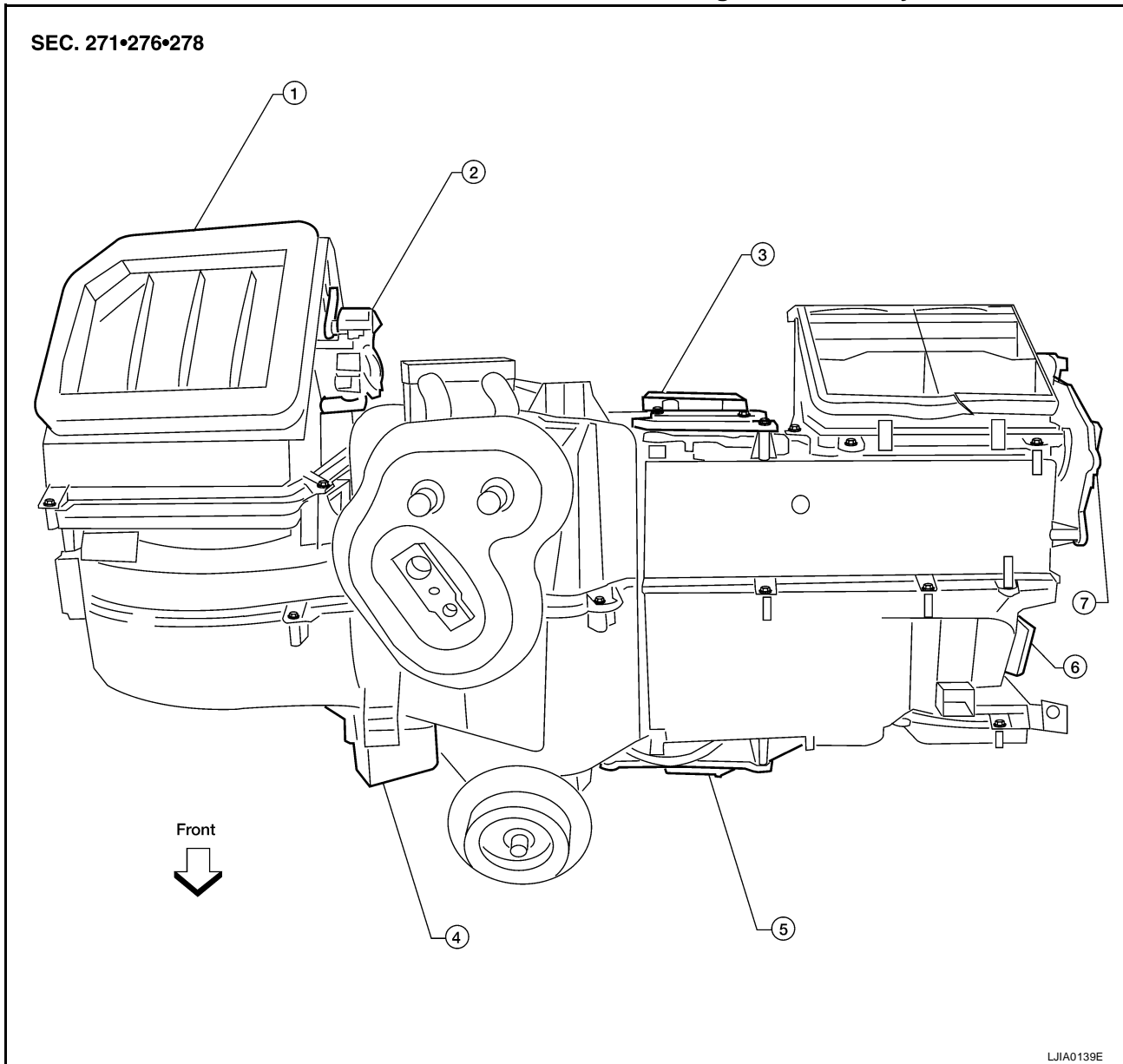
PF2:27733

DEFROSTER DOOR MOTOR

Removal and Installation

EJS004VH

Defroster Door Motor - Heater and Cooling Unit Assembly



- | | | |
|-------------------------------------|--------------------------------|-----------------------------------|
| 1. Heater and cooling unit assembly | 2. Intake door motor | 3. Air mix door motor (passenger) |
| 4. Variable blower control | 5. Air mix door motor (driver) | 6. Mode door motor |
| 7. Defroster door motor | | |

REMOVAL

1. Remove the BCM. Refer to [BCS-20, "BCM"](#).
2. Remove the audio amplifier, if equipped. Refer to [AV-74, "AUDIO AMP."](#)
3. Disconnect the defroster door motor electrical connector.
4. Remove the three screws and remove the defroster door motor.

INSTALLATION

Installation is in the reverse order of removal.

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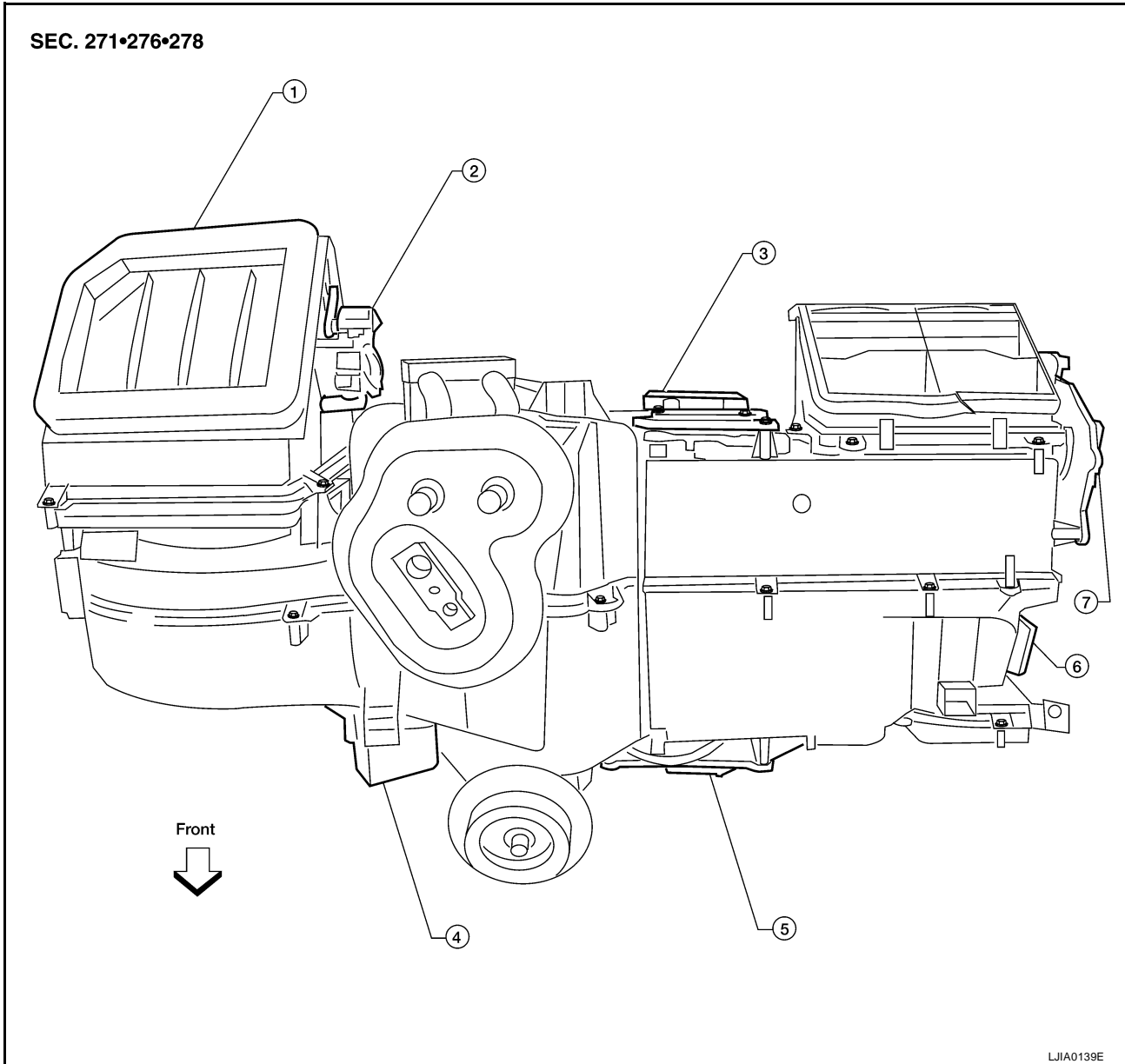
INTAKE DOOR MOTOR

PF2:27730

EJS004VI

INTAKE DOOR MOTOR Removal and Installation

Intake Door Motor - Heater and Cooling Unit Assembly



- | | | |
|-------------------------------------|--------------------------------|-----------------------------------|
| 1. Heater and cooling unit assembly | 2. Intake door motor | 3. Air mix door motor (passenger) |
| 4. Variable blower control | 5. Air mix door motor (driver) | 6. Mode door motor |
| 7. Defroster door motor | | |

REMOVAL

1. Remove the heater and cooling unit assembly. Refer to [ATC-167, "HEATER & COOLING UNIT ASSEMBLY"](#).
2. Remove the steering member from the 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.

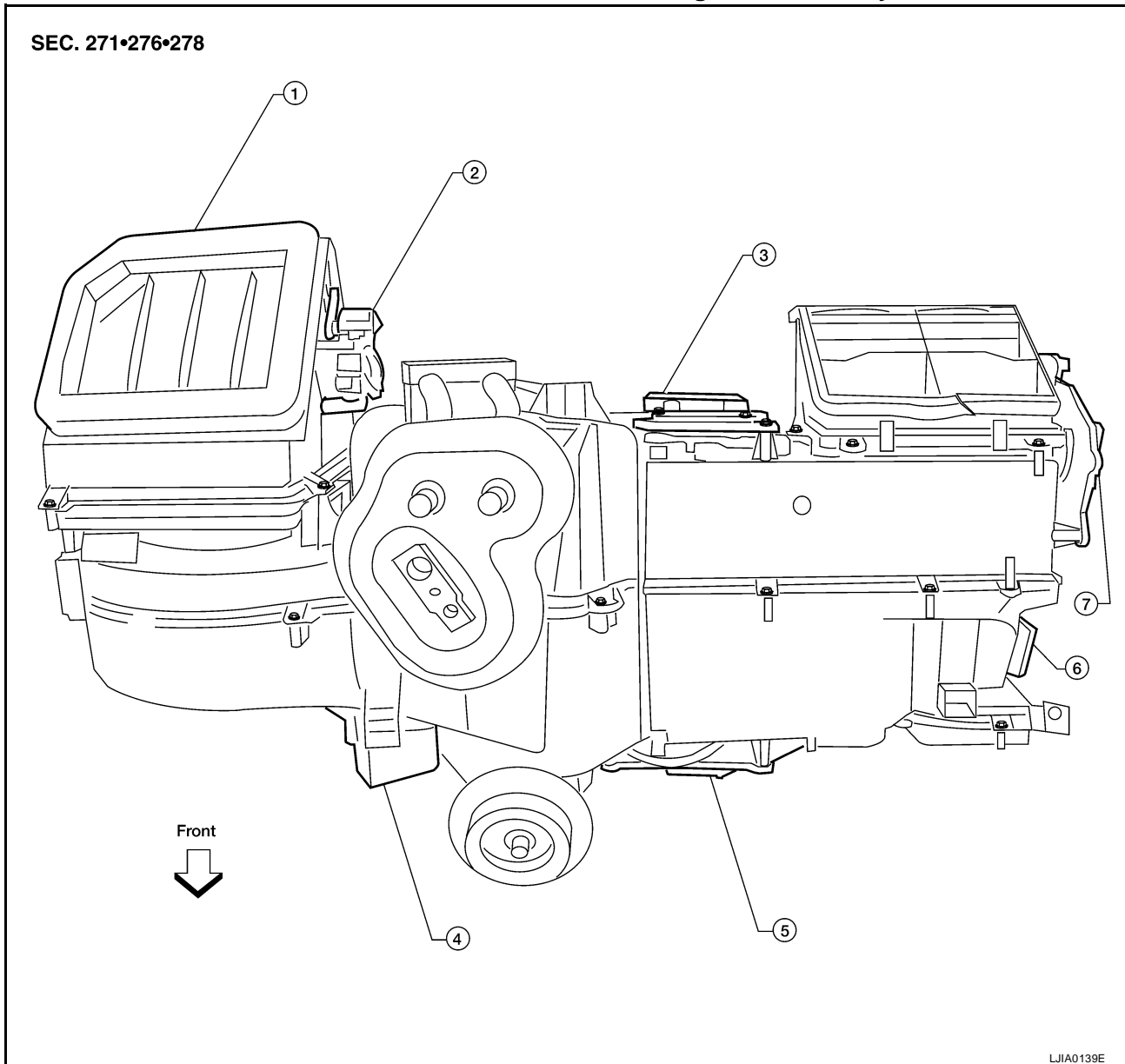
MODE DOOR MOTOR

PF2:27731

EJS004VJ

MODE DOOR MOTOR Removal and Installation

Mode Door Motor - Heater and Cooling Unit Assembly



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|-------------------------------------|--------------------------------|-----------------------------------|
| 1. Heater and cooling unit assembly | 2. Intake door motor | 3. Air mix door motor (passenger) |
| 4. Variable blower control | 5. Air mix door motor (driver) | 6. Mode door motor |
| 7. Defroster door motor | | |

REMOVAL

1. Remove the center console lower cover LH. Refer to [IP-15, "REMOVAL AND INSTALLATION"](#).
2. Disconnect the mode door motor electrical connector.
3. Remove the two screws and remove the mode door motor.

INSTALLATION

Installation is in the reverse order of removal.

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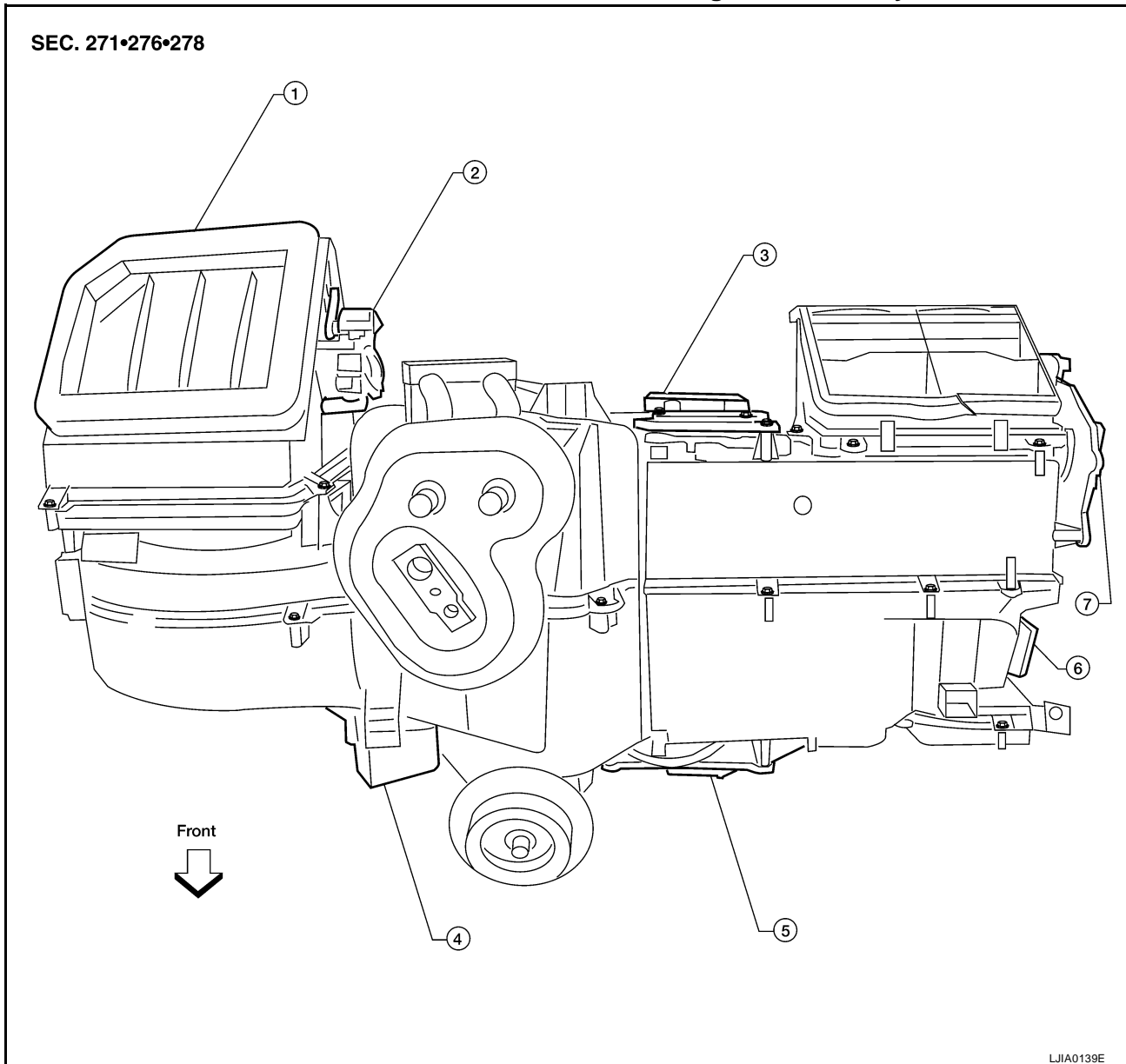
AIR MIX DOOR MOTOR

AIR MIX DOOR MOTOR Removal and Installation

PF2:27732

EJS004VL

Air Mix Door Motors - Heater and Cooling Unit Assembly



- | | | |
|-------------------------------------|--------------------------------|-----------------------------------|
| 1. Heater and cooling unit assembly | 2. Intake door motor | 3. Air mix door motor (passenger) |
| 4. Variable blower control | 5. Air mix door motor (driver) | 6. Mode door motor |
| 7. Defroster door motor | | |

AIR MIX DOOR MOTOR (DRIVER)

Removal

1. Remove the center console lower cover LH. Refer to [IP-15, "REMOVAL AND INSTALLATION"](#).
2. Disconnect the air mix door motor electrical connector.
3. Remove the three screws and remove the air mix door motor.

Installation

Installation is in the reverse order of removal.

AIR MIX DOOR MOTOR

AIR MIX DOOR MOTOR (PASSENGER)

Removal

1. Remove the heater and cooling unit assembly. Refer to [ATC-167, "HEATER & COOLING UNIT ASSEMBLY"](#).
2. Remove the steering member from the heater and cooling unit assembly.
3. Disconnect the air mix door motor electrical connector.
4. Remove the three screws and remove the air mix door motor.

Installation

Installation is in the reverse order of removal.

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VARIABLE BLOWER CONTROL

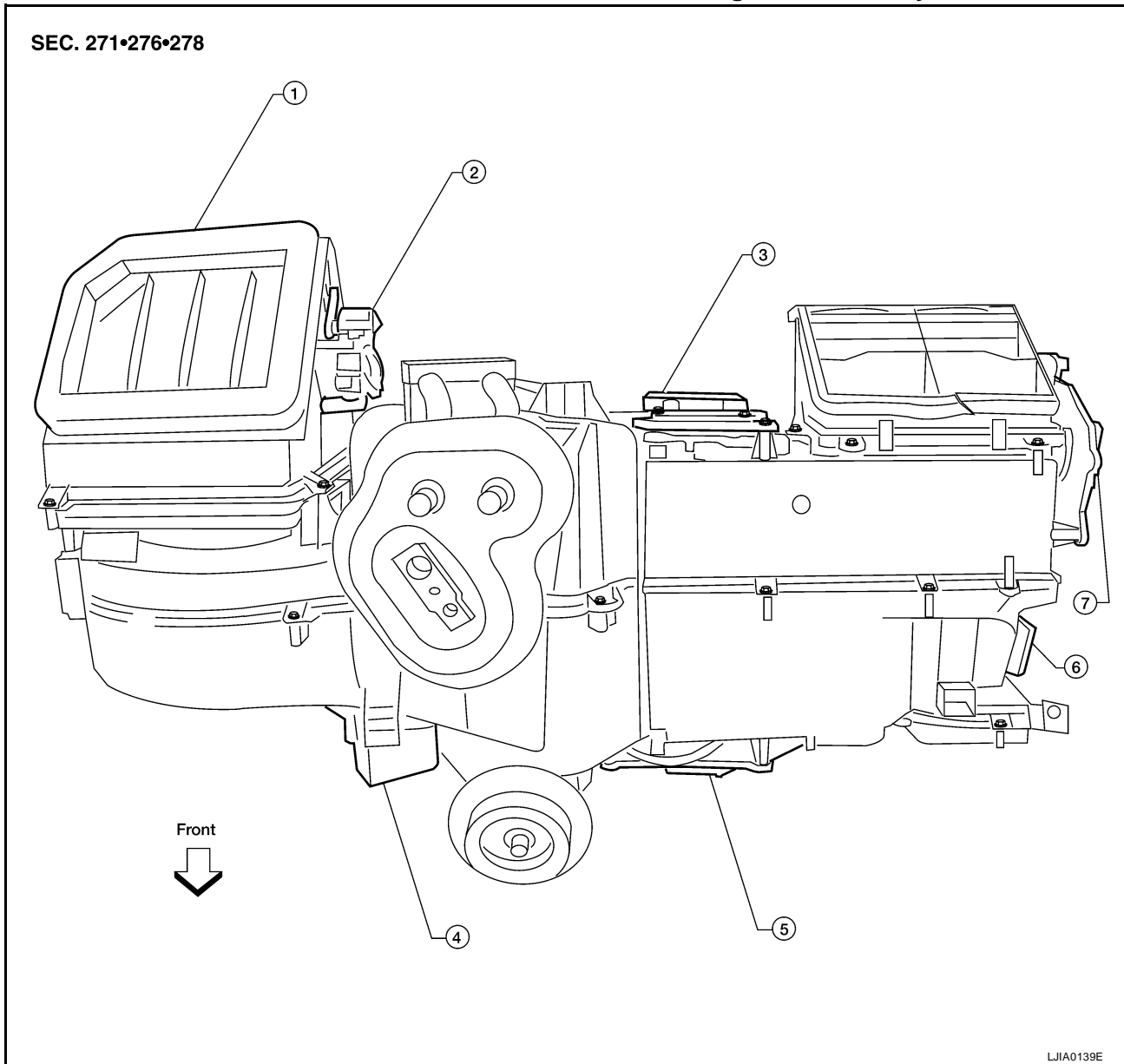
VARIABLE BLOWER CONTROL

PF2:27200

Removal and Installation

EJS004VM

Variable Blower Control - Heater and Cooling Unit Assembly



- | | | |
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| 1. Heater and cooling unit assembly | 2. Intake door motor | 3. Air mix door motor (passenger) |
| 4. Variable blower control | 5. Air mix door motor (driver) | 6. Mode door motor |
| 7. Defroster door motor | | |

REMOVAL

1. Remove the glove box assembly. Refer to [IP-14, "LOWER INSTRUMENT PANEL RH AND GLOVE BOX"](#).
2. Disconnect the variable blower control electrical connector.
3. Remove the two screws and remove the variable blower control.

INSTALLATION

Installation is in the reverse order of removal.

DUCTS AND GRILLES

DUCTS AND GRILLES

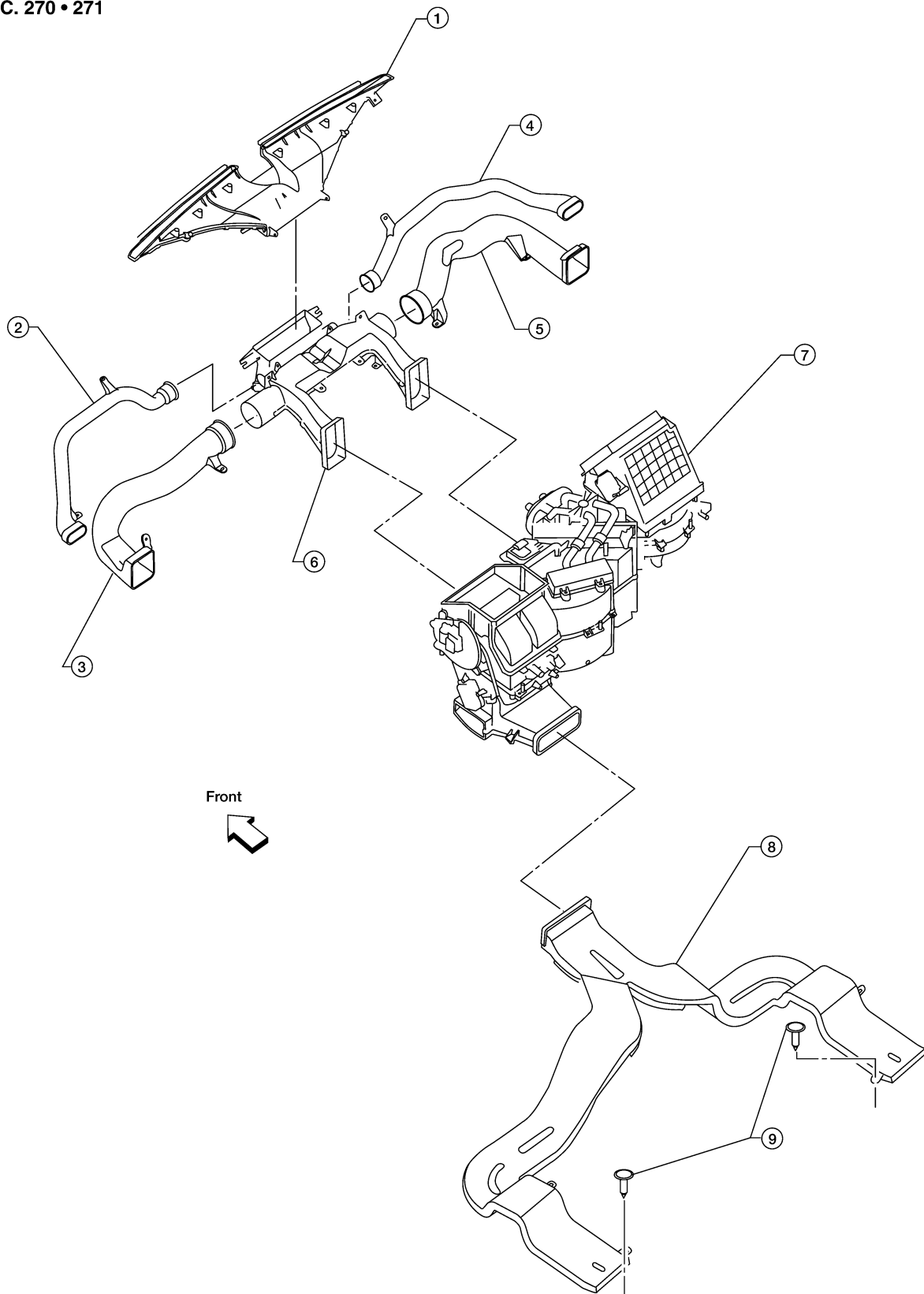
PFP:27860

Components

EJS004VO

Ducts - Heater and Cooling Unit Assembly

SEC. 270 • 271



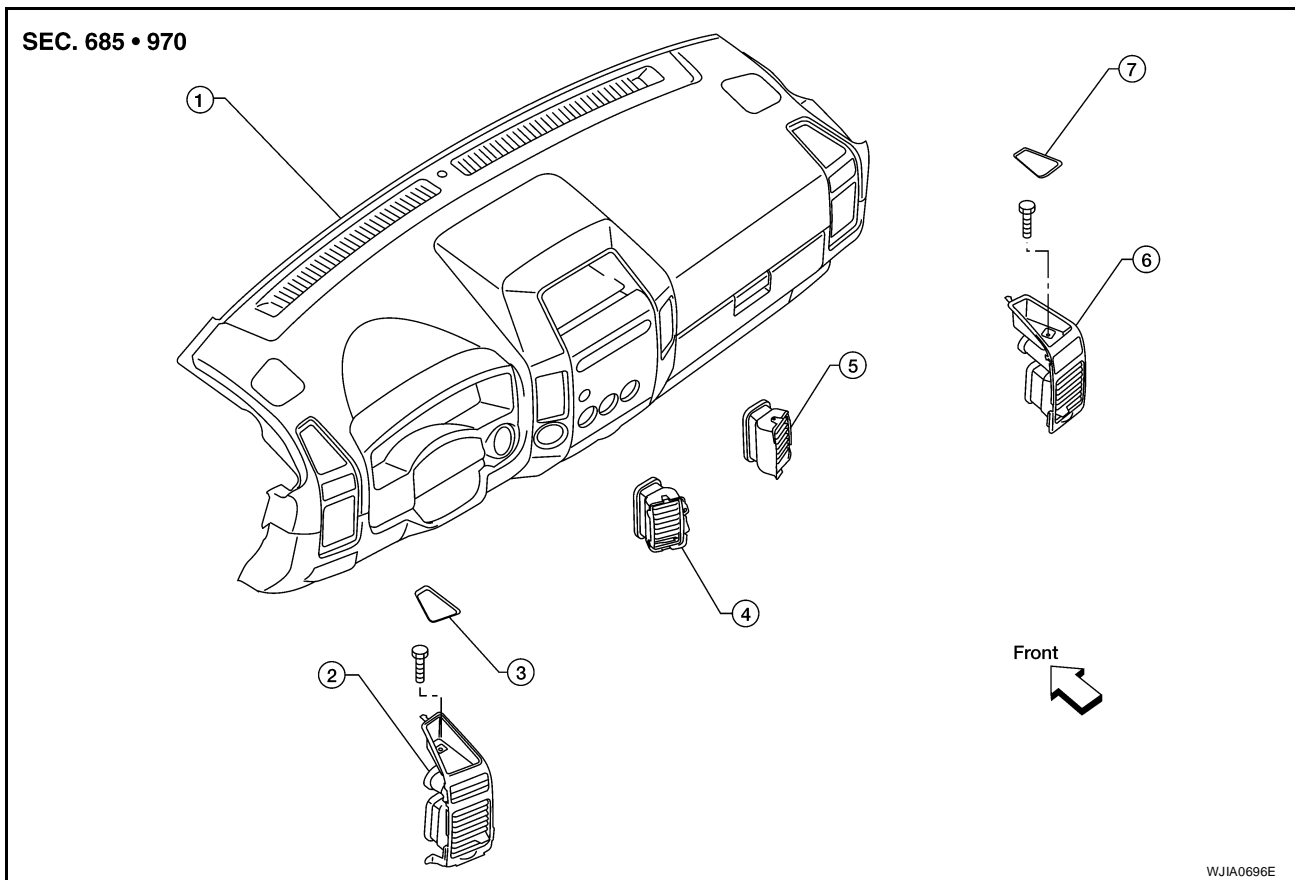
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DUCTS AND GRILLES

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

Grilles



- | | | |
|-----------------------------------|--------------------------------|-----------------------------------|
| 1. Instrument panel | 2. Side ventilator assembly LH | 3. Storage tray bottom cover (LH) |
| 4. Cluster lid D ventilator LH | 5. Cluster lid D ventilator RH | 6. Side ventilator assembly RH |
| 7. Storage tray bottom cover (RH) | | |

Removal and Installation DEFROSTER NOZZLE

EJS004VP

Removal

1. Remove the instrument panel trim. Refer to [IP-10, "INSTRUMENT PANEL"](#).
2. Remove the heater and cooling unit assembly. Refer to [ATC-167, "HEATER & COOLING UNIT ASSEMBLY"](#).
3. Remove the defroster nozzle.

Installation

Installation is in the reverse order of removal.

RH AND LH SIDE DEMISTER DUCT

Removal

1. Remove the instrument panel trim. Refer to [IP-10, "INSTRUMENT PANEL"](#).
2. Remove the heater and cooling unit assembly. Refer to [ATC-167, "HEATER & COOLING UNIT ASSEMBLY"](#).
3. Remove the RH or LH side demister duct.

Installation

Installation is in the reverse order of removal.

DUCTS AND GRILLES

RH AND LH VENTILATOR DUCT

Removal

1. Remove the instrument panel trim. Refer to [IP-10, "INSTRUMENT PANEL"](#) .
2. Remove the heater and cooling unit assembly. Refer to [ATC-167, "HEATER & COOLING UNIT ASSEMBLY"](#) .
3. Remove the RH or LH ventilator duct.

Installation

Installation is in the reverse order of removal.

CENTER VENTILATOR DUCT

Removal

1. Remove the instrument panel trim. Refer to [IP-10, "INSTRUMENT PANEL"](#) .
2. Remove the heater and cooling unit assembly. Refer to [ATC-167, "HEATER & COOLING UNIT ASSEMBLY"](#) .
3. Remove the defroster nozzle.
4. Remove the RH and LH side demister ducts.
5. Remove the RH and LH ventilator ducts.
6. Remove the center ventilator duct.

Installation

Installation is in the reverse order of removal.

FLOOR DUCT

Removal

1. Remove the floor carpet. Refer to [EI-41, "FLOOR TRIM"](#) .
2. Remove the two clips and remove the floor duct.

Installation

Installation is in the reverse order of removal.

GRILLES

Removal

1. Remove the interior trim panels as necessary. Refer to [IP-10, "INSTRUMENT PANEL"](#) or [EI-43, "HEAD-LINING"](#) .
2. Remove the ventilator grille from the interior trim panel.

Installation

Installation is in the reverse order of removal.

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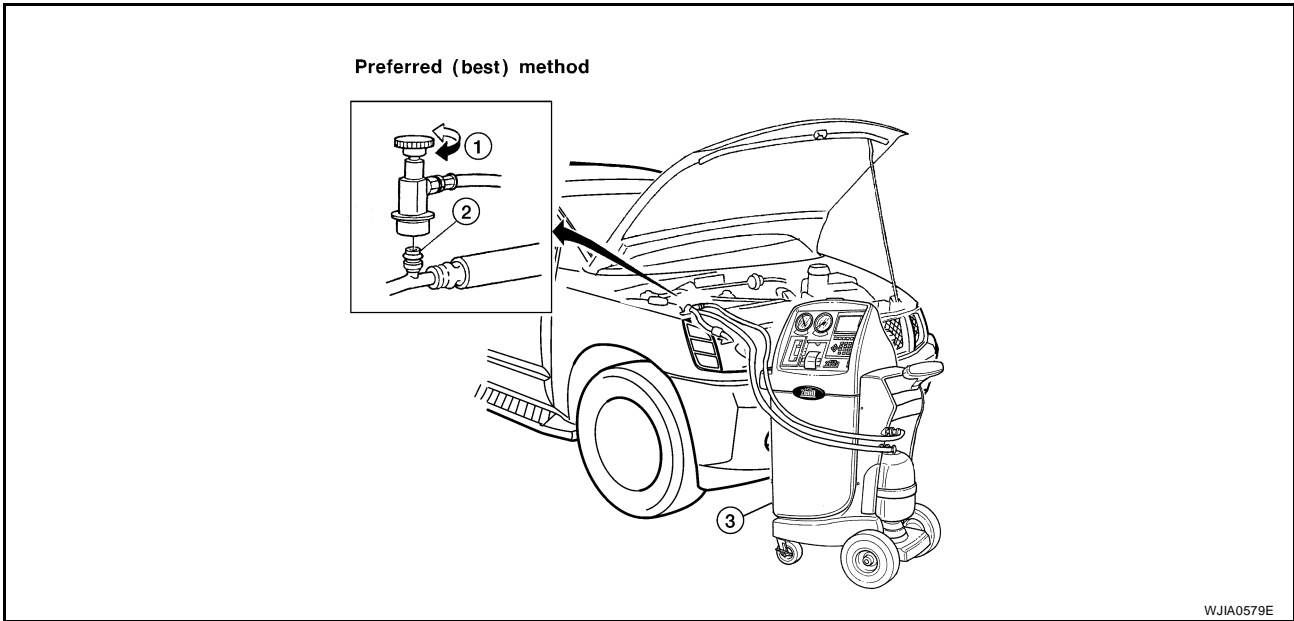
REFRIGERANT LINES

PF9:92600

EJS004VQ

REFRIGERANT LINES

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



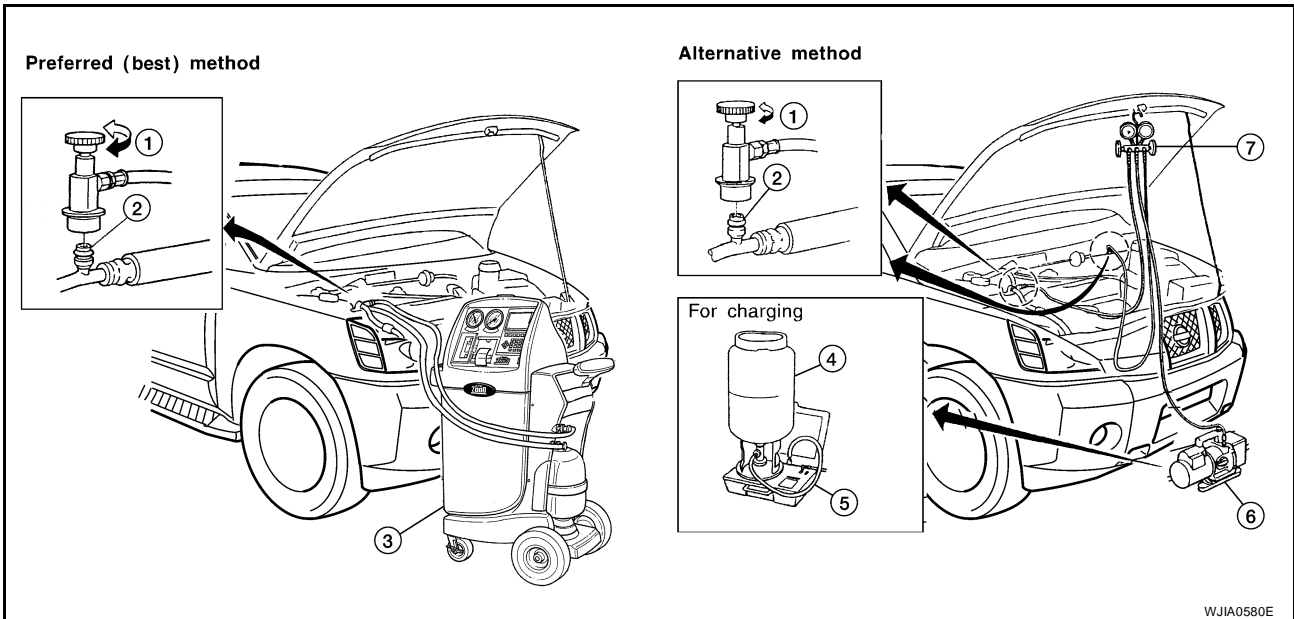
WJIA0579E

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

WARNING:

Avoid breathing A/C refrigerant and oil 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 oil manufacturers.

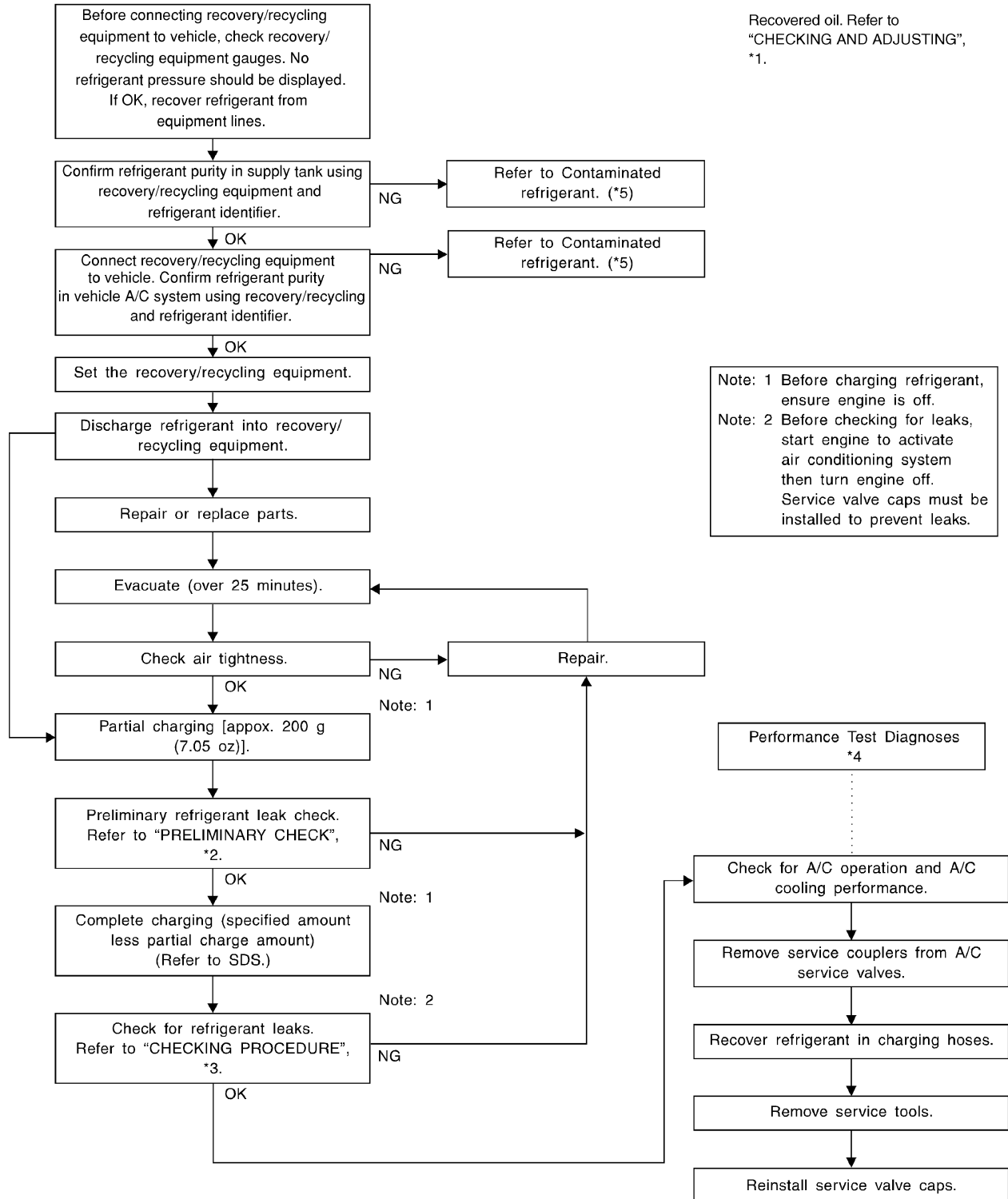
Evacuating System and Charging Refrigerant



WJIA0580E

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 [ATC-20, "CHECKING AND ADJUSTING"](#)

*2 [ATC-191, "PRELIMINARY CHECK"](#)

*3 [ATC-193, "CHECKING PROCEDURE"](#)

*4 [ATC-130, "PERFORMANCE TEST DIAGNOSES"](#)

*5 [ATC-4, "Contaminated Refrigerant"](#)

WJIA1923E

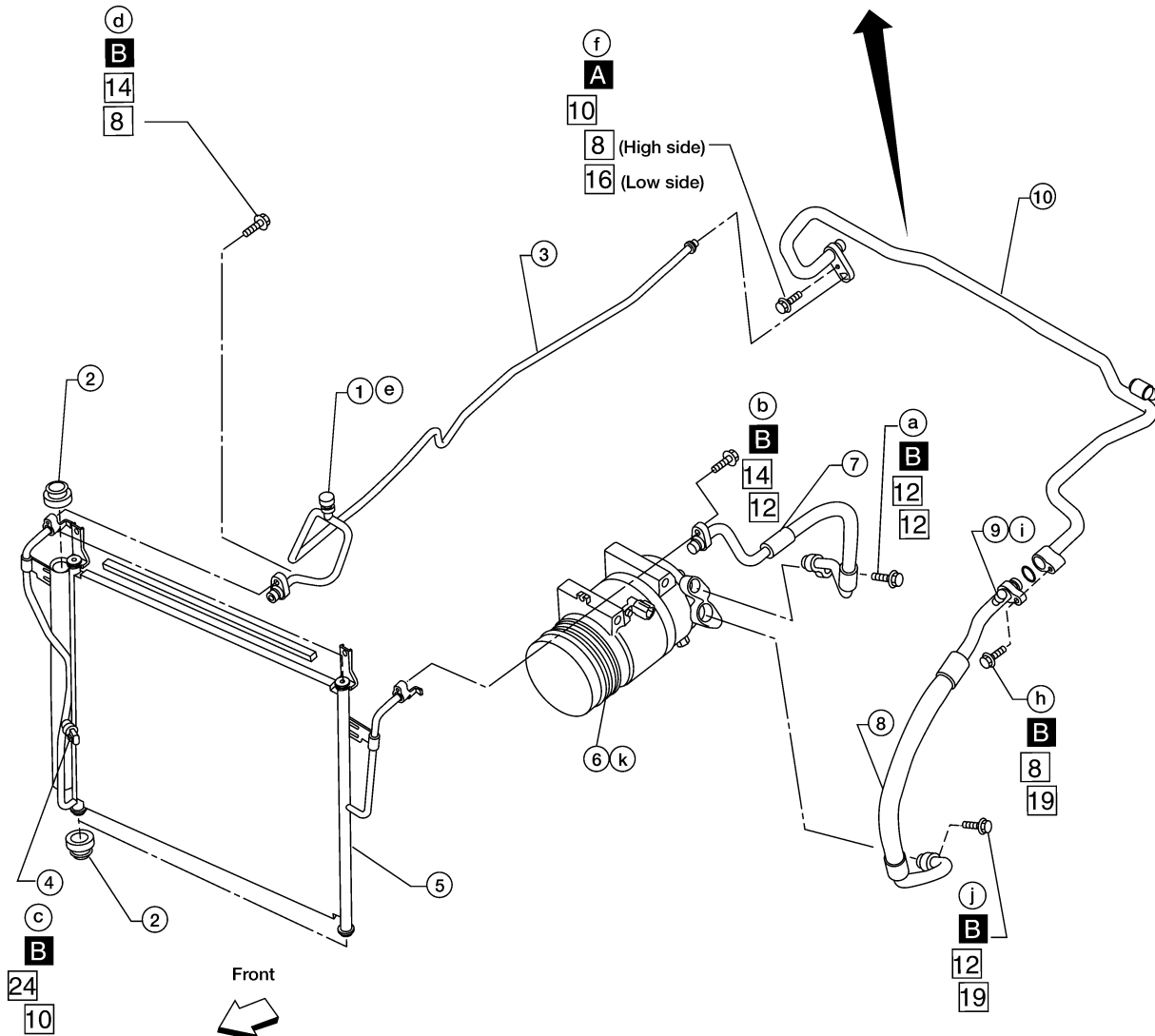
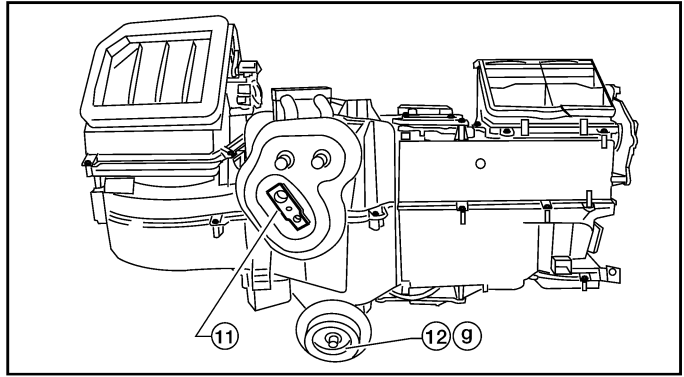
REFRIGERANT LINES

Components

EJS004VR

A/C Compressor and Condenser

SEC. 214 • 271 • 274 • 276



- : Refrigerant leak checking order (a-k)
- : Tightening torque
- : Wrench size
- : O-ring size
- ⊗ : N·m (kg-m, in-lb)
- A** ⊗ : 3.4 (0.35, 30)
- B** ⊗ : 9.3 (0.95, 82)

WJIA1577E

REFRIGERANT LINES

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

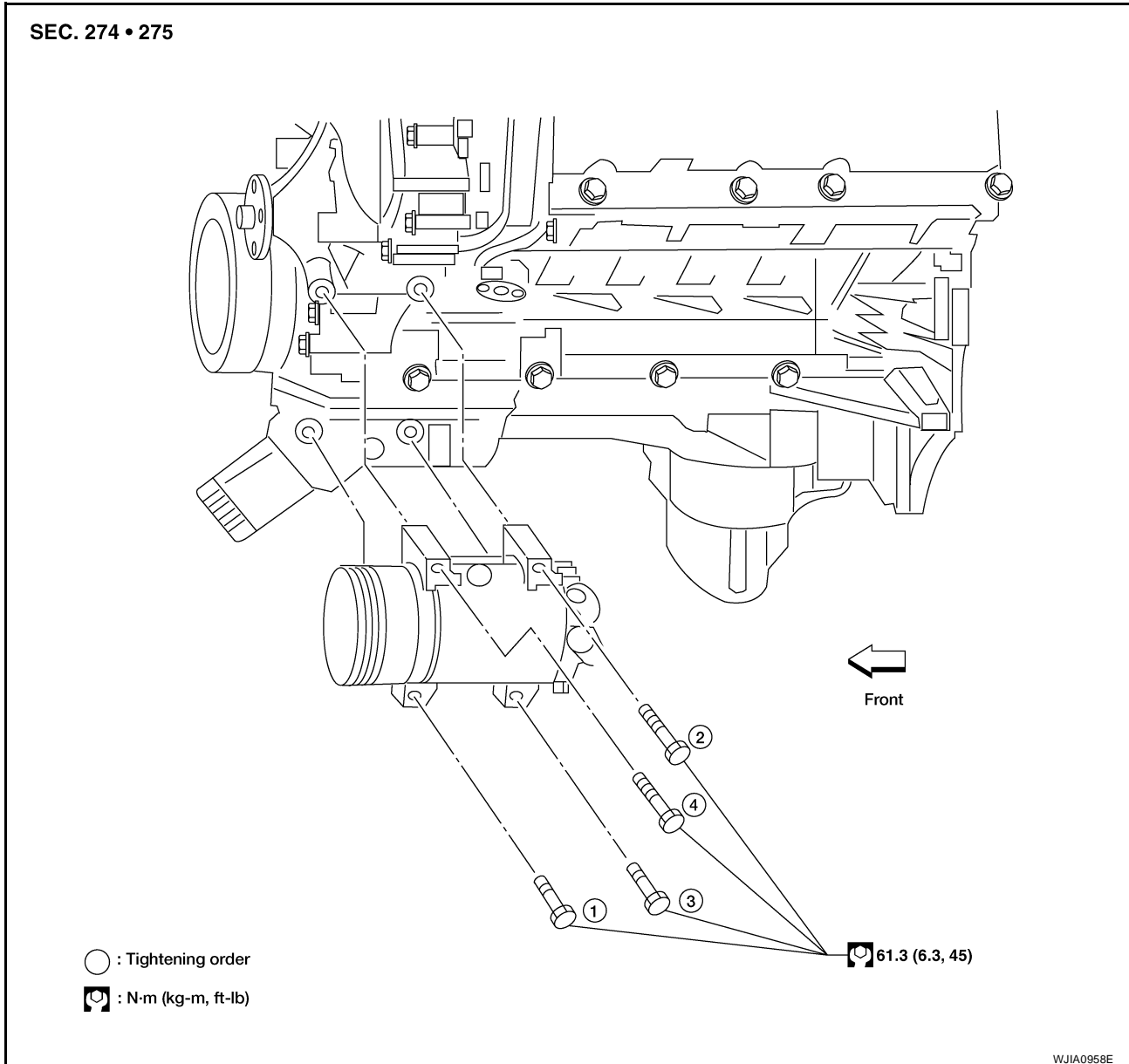
NOTE:

Refer to [ATC-6, "Precautions for Refrigerant Connection"](#).

Removal and Installation for Compressor

EJS004VS

A/C Compressor Mounting



REMOVAL

1. Discharge the refrigerant. Refer to [ATC-180, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the front right wheel and tire assembly. Refer to [WT-8, "Rotation"](#).
3. Remove the engine under cover and the splash shield using power tool.
4. Remove the engine air cleaner and air ducts. Refer to [EM-15, "AIR CLEANER AND AIR DUCT"](#).
5. Remove the drive belt. Refer to [EM-13, "DRIVE BELTS"](#).
6. Disconnect the compressor electrical connector.
7. Disconnect the high-pressure flexible hose and low-pressure flexible hose from the compressor.

REFRIGERANT LINES

CAUTION:

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

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

INSTALLATION

Installation is in the reverse order of removal.

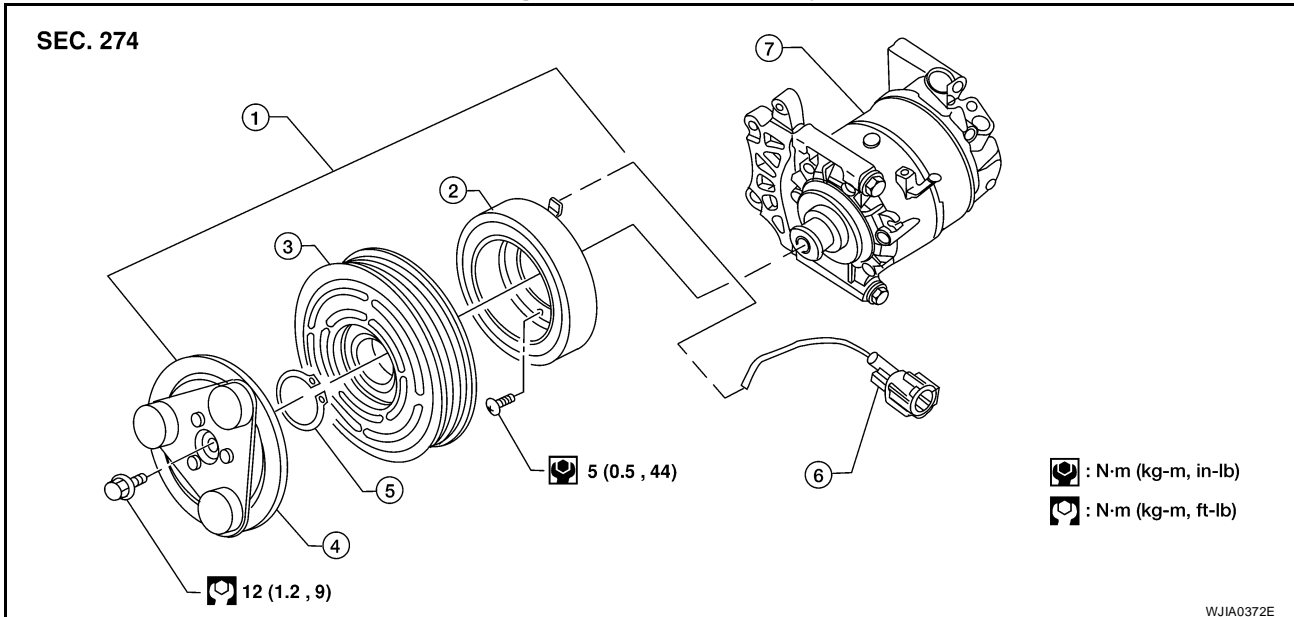
CAUTION:

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

Removal and Installation for Compressor Clutch

EJS004VT

Magnet Clutch Assembly



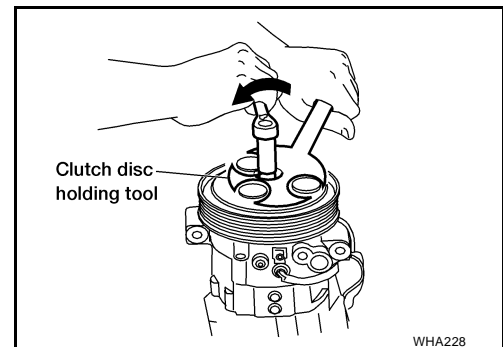
- | | | |
|---------------------------|----------------|---------------------------------|
| 1. Magnet clutch assembly | 2. Magnet coil | 3. Pulley |
| 4. Clutch disc | 5. Snap ring | 6. Thermal protector (built in) |
| 7. Compressor | | |

REMOVAL

1. Remove the compressor. Refer to [ATC-183, "Removal and Installation for Compressor"](#) .
2. Remove the center bolt while holding the clutch disc stationary using Tool as shown.

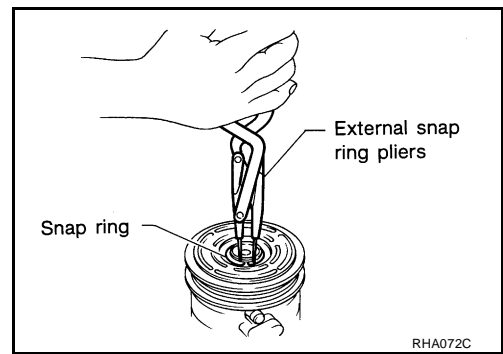
Tool number : J-44614

3. Remove the clutch disc.



REFRIGERANT LINES

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

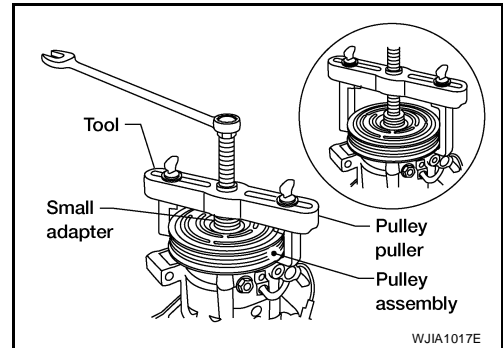


5. Remove the pulley using Tool with a small adapter. Position the small adapter on the end of the drive shaft and the center of the puller on the small adapter.

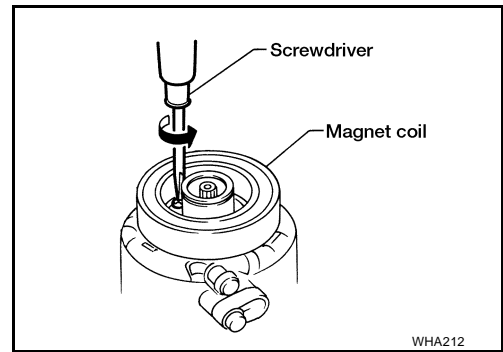
Tool number : KV99233130 (J-29884)

CAUTION:

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



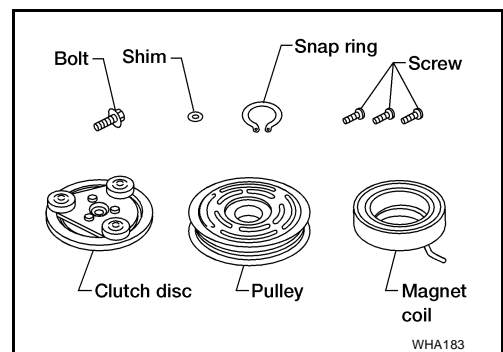
6. Remove the magnet coil harness clip using a screwdriver, remove the three magnet coil fixing screws and remove the magnet coil.



INSPECTION

Clutch Disc

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



Pulley

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

Coil

Check magnet coil for loose connections or any cracked insulation.

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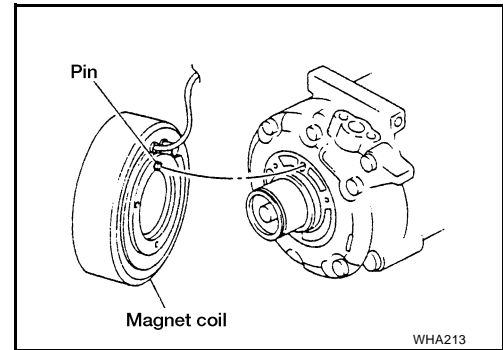
REFRIGERANT LINES

INSTALLATION

1. Install the magnet coil.

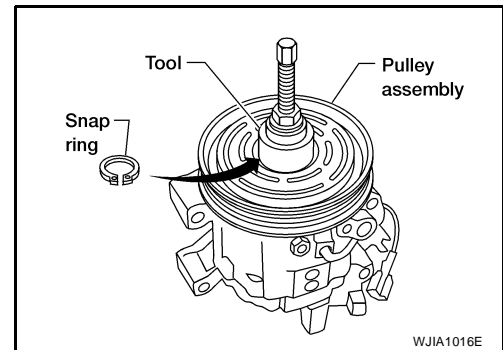
CAUTION:

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

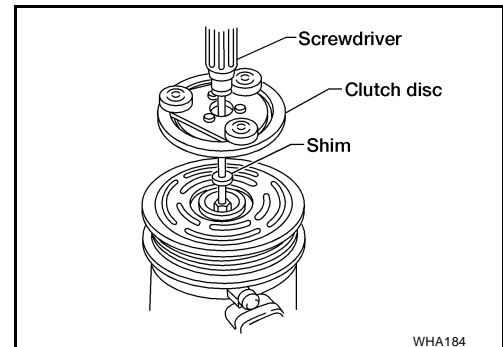


2. Install the magnet coil harness clip using a screwdriver.
3. Install the pulley assembly using Tool and a wrench, then install the snap ring using snap ring pliers.

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.

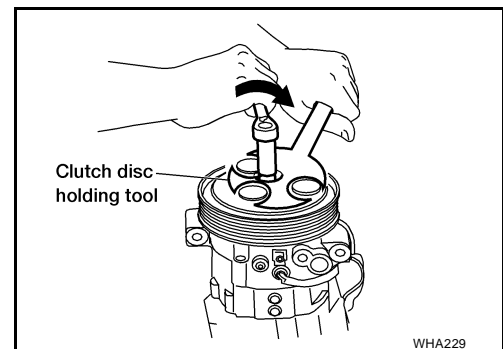


5. Install the clutch pulley bolt using Tool, to prevent the clutch disc from turning and tighten the bolt to specification.

Tool number : J-44614

CAUTION:

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

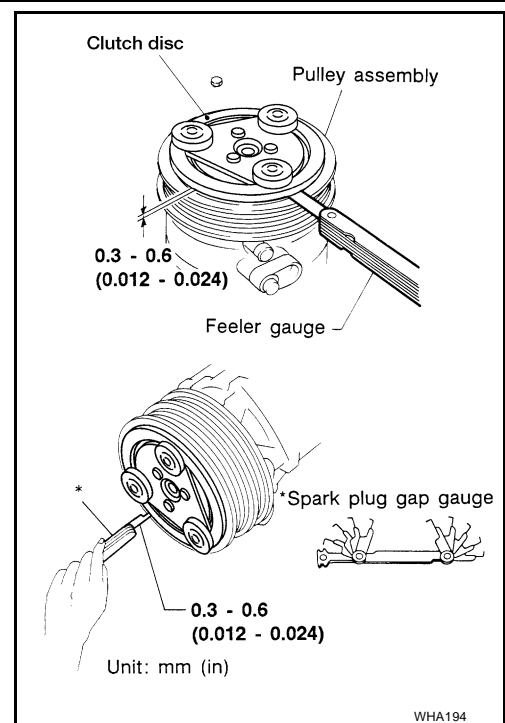


REFRIGERANT LINES

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

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

7. If the specified clearance is not obtained, replace the adjusting spacer to readjust.
8. Connect the compressor electrical connector.
9. Install the drive belt. Refer to [EM-13, "DRIVE BELTS"](#).
10. Install the engine under cover and the splash shield.



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

EJS004VU

REMOVAL

1. Remove the engine room cover using power tools.
2. Remove the engine air cleaner and air ducts. Refer to [EM-15, "AIR CLEANER AND AIR DUCT"](#).
3. Discharge the refrigerant. Refer to [ATC-180, "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.

4. Remove the low-pressure flexible hose.

INSTALLATION

Installation is in the reverse order of removal.
Refer to [ATC-182, "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

EJS004VV

REMOVAL

1. Remove the engine under cover.
2. Remove the engine air cleaner and air ducts. Refer to [EM-15, "AIR CLEANER AND AIR DUCT"](#).
3. Discharge the refrigerant. Refer to [ATC-180, "HFC-134a \(R-134a\) Service Procedure"](#).
4. Remove the high-pressure flexible hose.

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 [ATC-182, "Components"](#).

REFRIGERANT LINES

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

EJS004VW

REMOVAL

1. Disconnect the battery negative terminal and battery positive terminal.
2. Reposition the IPDM E/R aside.
3. Remove the front right wheel and tire assembly. Refer to [WT-8, "Rotation"](#) .
4. Position aside the front floor insulator.
5. Discharge the refrigerant. Refer to [ATC-180, "HFC-134a \(R-134a\) Service Procedure"](#) .
6. Remove the low pressure pipe.
7. Remove the high-pressure pipe.

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 [ATC-182, "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.

Removal and Installation for Low-pressure Pipe

EJS004VX

REMOVAL

1. Discharge the refrigerant. Refer to [ATC-180, "HFC-134a \(R-134a\) Service Procedure"](#) .
2. Remove the low-pressure pipe.

CAUTION:

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

INSTALLATION

Installation is in the reverse order of removal.
Refer to [ATC-182, "Components"](#) .

CAUTION:

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

Removal and Installation for Refrigerant Pressure Sensor

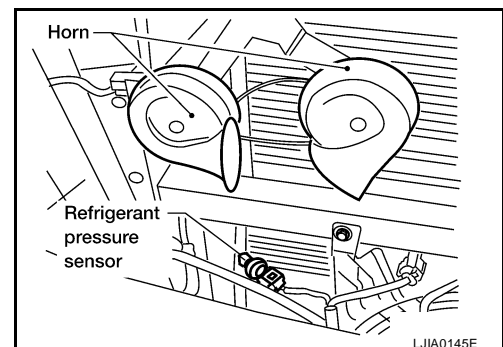
EJS004VY

REMOVAL

1. Discharge the refrigerant. Refer to [ATC-180, "HFC-134a \(R-134a\) Service Procedure"](#) .
2. Disconnect the refrigerant pressure sensor electrical connector and remove the refrigerant pressure sensor from the condenser.

CAUTION:

Be careful not to damage the condenser fins.



INSTALLATION

Installation is in the reverse order of removal.
Refer to [ATC-182, "Components"](#) .

REFRIGERANT LINES

CAUTION:

- Be careful not to damage the condenser fins.
- Replace the O-ring of the refrigerant pressure sensor with a new one, then apply compressor oil to it when installing it.
- After charging refrigerant, check for leaks.

Removal and Installation for Condenser

EJS004VZ

REMOVAL

1. Discharge the refrigerant. Refer to [ATC-180, "HFC-134a \(R-134a\) Service Procedure"](#) .
2. Remove the radiator. Refer to [CO-14, "RADIATOR"](#) .

CAUTION:

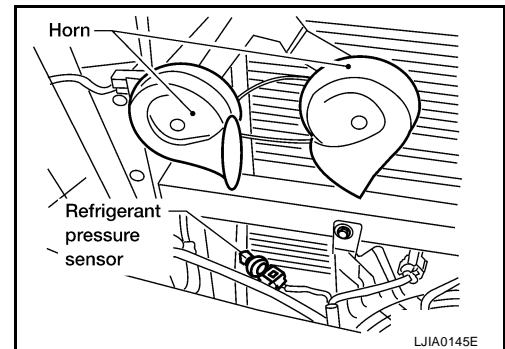
Be careful not to damage the core surface of the condenser and the radiator.

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



INSTALLATION

Installation is in the reverse order of removal.
Refer to [ATC-182, "Components"](#) .

CAUTION:

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

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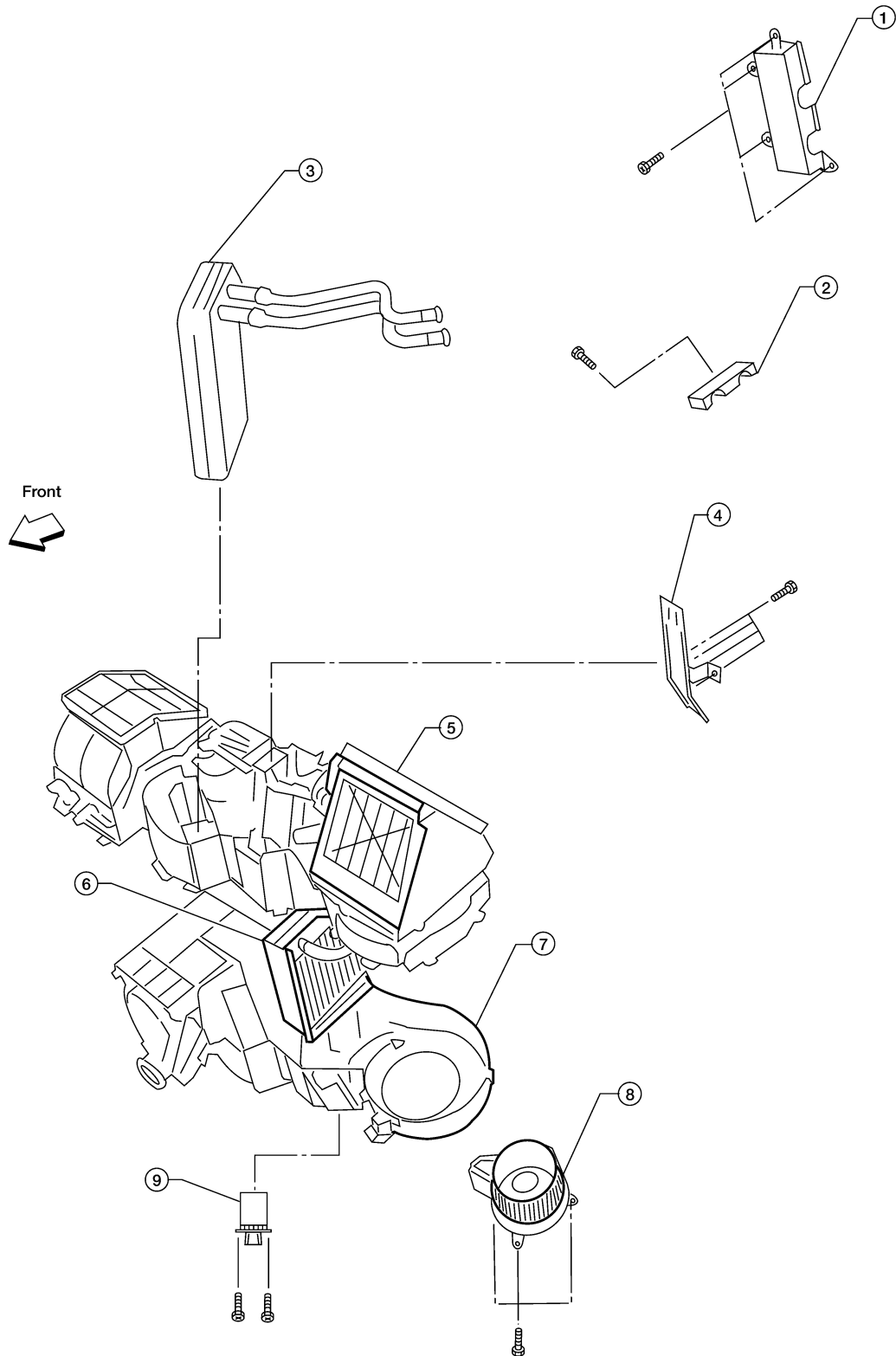
REFRIGERANT LINES

Removal and Installation for Evaporator

EJS004W0

Heater and Cooling Unit Assembly

SEC. 271



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

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REMOVAL

1. Remove the heater core. Refer to [ATC-169, "HEATER CORE"](#).

REFRIGERANT LINES

2. Remove the defroster mode door arm.
3. Separate the heater core and cooling unit case.
4. Remove the evaporator.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

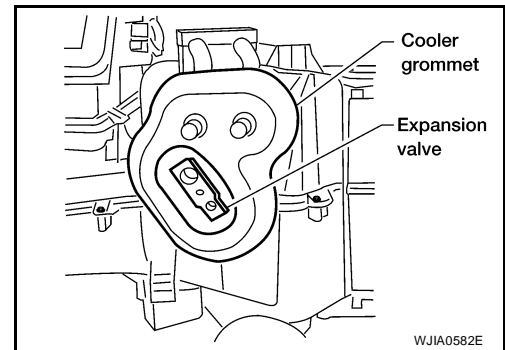
Replace the O-rings on the low-pressure flexible hose and the high-pressure pipe with new ones, then apply compressor oil to them when installing them.

Removal and Installation for Expansion Valve

EJS004W2

REMOVAL

1. Discharge the refrigerant. Refer to [ATC-180, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the evaporator. Refer to [ATC-190, "Removal and Installation for Evaporator"](#).
3. Remove the cooler grommet.
4. Remove the expansion valve.



INSTALLATION

Installation is in the reverse order of removal.

- Expansion valve bolts : 4 N-m (0.41 kg-m, 35 in-lb)
- A/C refrigerant pipe to expansion valve bolt : Refer to [ATC-182, "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

EJS004W4

PRELIMINARY CHECK

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

EJS004W5

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

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REFRIGERANT LINES

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 refrigerant 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 oils, 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

EJS004W6

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/cm² , 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 refrigerant dye injector (J-41459) to the low-pressure service valve.
4. Start the engine and switch the A/C system ON.
5. 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.
6. With the engine still running, disconnect the HFC-134a (R-134a) dye injector (J-41459) from the low-pressure service valve.
7. 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

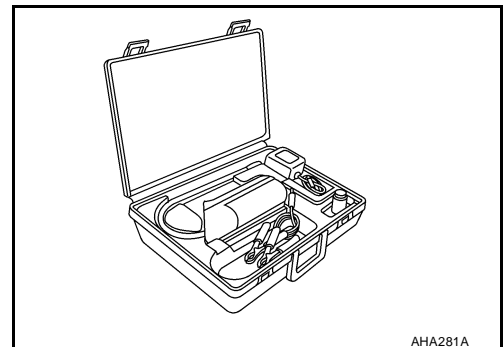
EJS004W7

PRECAUTIONS FOR HANDLING LEAK DETECTOR

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.

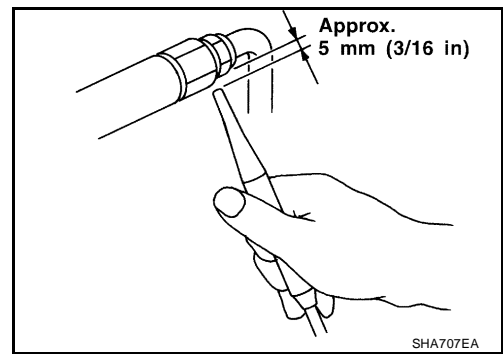
The electronic refrigerant leak detector (J-41995) is a delicate device. To use the electronic refrigerant leak detector (J-41995) properly, read the manufacturer's operating instructions and perform any specified maintenance.



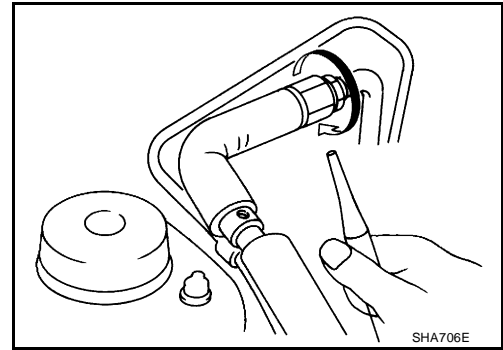
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REFRIGERANT LINES

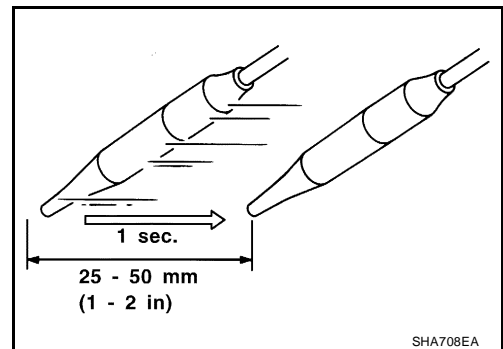
1. Position the probe approximately 5 mm (3/16 in) away from the point to be checked as shown.



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



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 [ATC-180, "HFC-134a \(R-134a\) Service Procedure"](#).
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.52 kg/cm², 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 [ATC-180, "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/cm², 50 psi) pressure.

4. Perform the leak test from the high-pressure side (A/C compressor discharge "a" to evaporator inlet "f") to the low-pressure side (A/C evaporator drain hose "g" to shaft seal "k"). Refer to [ATC-182, "Components"](#). Clean the component to be checked and carefully move the electronic refrigerant leak detector probe completely around the following connections and components.

- Check the compressor shaft seal
- Check the high and low-pressure pipe and hose fittings, relief valve, and compressor shaft seal
- Check the liquid tank

REFRIGERANT LINES

- Check the refrigerant pressure sensor
- Check all around the service valves. Check that the service valve caps are screwed tightly 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:

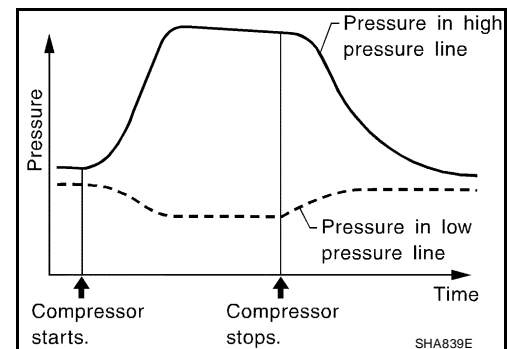
NOTE:

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 fan 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.
14. Confirm the refrigerant purity in the vehicle's A/C system using recovery/recycling equipment and refrigerant identifier equipment.
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 [ATC-62, "Operational Check"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Service Data and Specifications (SDS) COMPRESSOR

EJS004W8

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

OIL

Name	NISSAN A/C System Oil Type S (DH-PS)
Part number	KLH00-PAGS0
Capacity	200 ml (6.8 US fl oz, 7.0 Imp fl oz)

REFRIGERANT

Type	HFC 134a (R-134a)
Capacity	0.70 ± 0.05 kg (1.54 ± 0.11 lb)

ENGINE IDLING SPEED

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

BELT TENSION

Refer to [EM-13, "Checking Drive Belts"](#).

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SERVICE DATA AND SPECIFICATIONS (SDS)
