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SECTION MTC

MANUAL AIR CONDITIONER

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PRECAUTIONS

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PRECAUTIONS

Precaution 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 WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

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NOTE:

- This Procedure is applied only to models with Intelligent Key system and NATS (NISSAN ANTI-THEFT SYSTEM).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the "LOCK" position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NATS, an electrically controlled steering lock mechanism is adopted on the key cylinder.

For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.

If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.

NOTE:

Supply power using jumper cables if battery is discharged.

2. Use the Intelligent Key or mechanical key to turn the ignition switch to the "ACC" position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.

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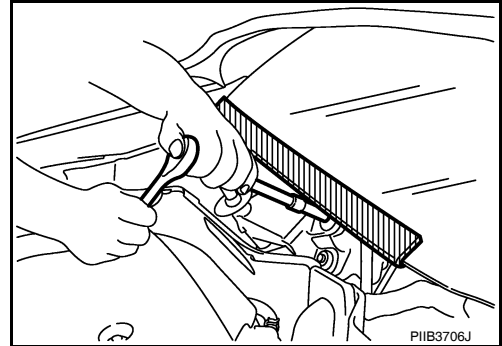
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- When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
- Perform a self-diagnosis check of all control units using CONSULT-III.

Precaution for Procedure without Cowl Top Cover

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When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



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

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WARNING:

- CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. These refrigerants must never be mixed, even in the smallest amounts. If the refrigerants are mixed a compressor malfunction is likely to occur.
- 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 malfunction 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. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.
 - Do not allow A/C oil to come in contact with styrofoam parts. Damage may result.

General Refrigerant Precaution

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WARNING:

- Avoid breathing A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.
- 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 (126° 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

PRECAUTIONS

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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.

Oil Precaution

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- 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 malfunction 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. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.
- Do not allow A/C oil to come in contact with styrofoam parts. Damage may result.

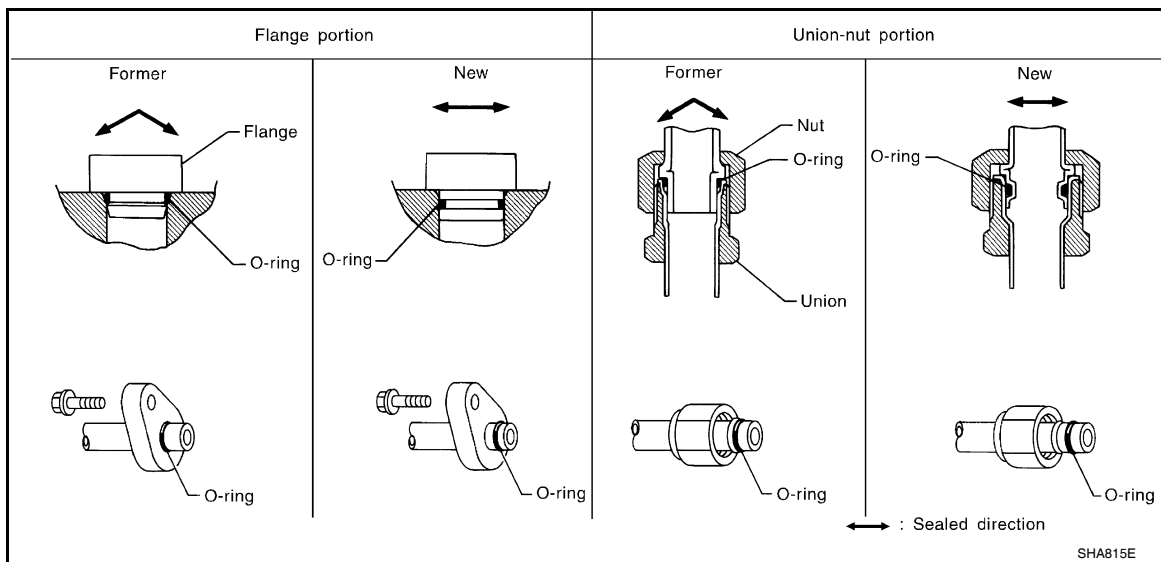
Precaution for Refrigerant Connection

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

- Expansion valve to evaporator
- Refrigerant pressure sensor to condenser

FEATURES OF NEW TYPE REFRIGERANT CONNECTION



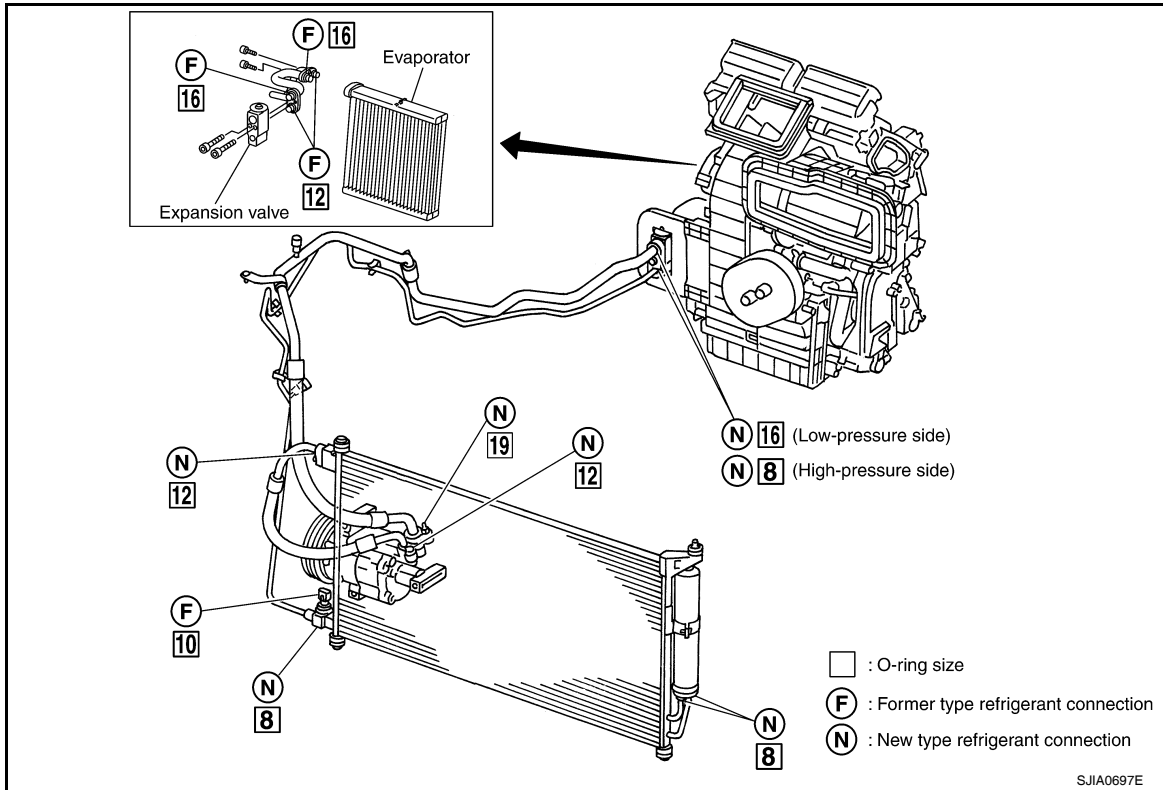
- The O-ring has been relocated. It has also been provided with a groove for proper installation. This eliminates the chance of the O-ring being caught in, or damaged by, the mating part. The sealing direction of the O-ring is now set vertically in relation to the contacting surface of the mating part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

O-RING AND REFRIGERANT CONNECTION

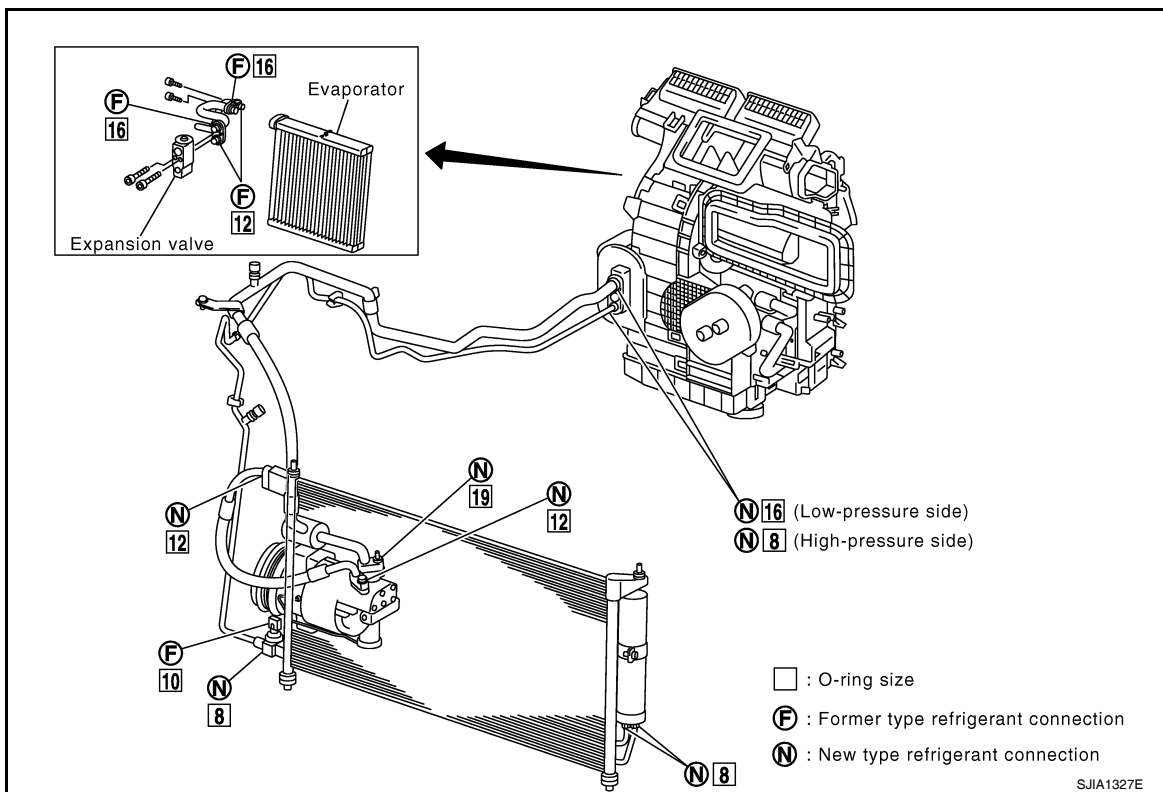
PRECAUTIONS

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MR18DE - TYPE 1 and HR16DE



MR18DE - TYPE 2



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:

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

PRECAUTIONS

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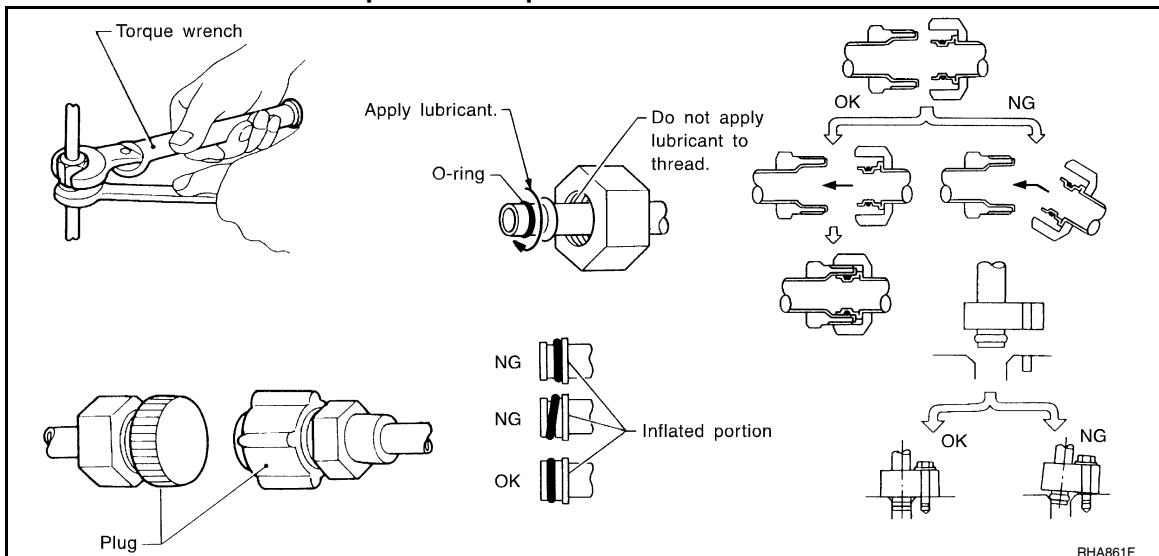
O-Ring Part Numbers and Specifications

Connection type	Piping connection point		Part number	QTY	O-ring size	
New	Condenser to high-pressure flexible hose		92472 N8210	1	12	
	Condenser to high-pressure pipe		92471 N8210	1	8	
	Low-pressure flexible hose to expansion valve		92473 N8210	1	16	
	High-pressure pipe to expansion valve		92471 N8210	1	8	
	Compressor to low-pressure flexible hose		92474 N8210	1	19	
	Compressor to high-pressure flexible hose		92472 N8210	1	12	
	Liquid tank to condenser pipe		Inlet	92471 N8210	1	8
Outlet			1			
Former	Refrigerant pressure sensor to condenser		J2476 89956	1	10	
	Expansion valve to evaporator		Inlet	92471 N8200	2	12
			Outlet	92473 N8200	2	16

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 installed on the vehicle. Doing 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 the specified A/C oil to circle of the O-rings. Be careful not to apply oil to threaded portion. Refer to [MTC-90, "Oil"](#).
- 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, perform leak test and make sure that there is no leakage from connections. When the refrigerant leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.



Precaution for Service of Compressor

- Plug all openings to prevent moisture and foreign matter from entering.

PRECAUTIONS

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- 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 [MTC-17, "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 five 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 one hour.
- After replacing the compressor magnet clutch, apply voltage to the new one and check for usual operation.

Precaution for Service Equipment

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RECOVERY/RECYCLING EQUIPMENT

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

ELECTRONIC LEAK DETECTOR

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

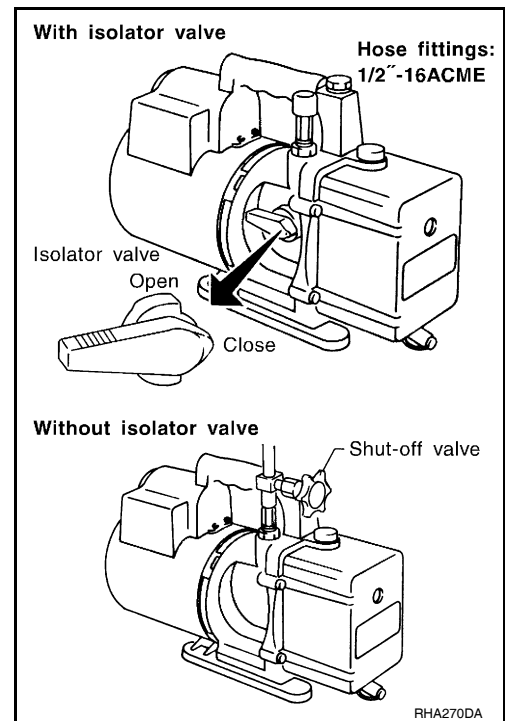
VACUUM PUMP

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

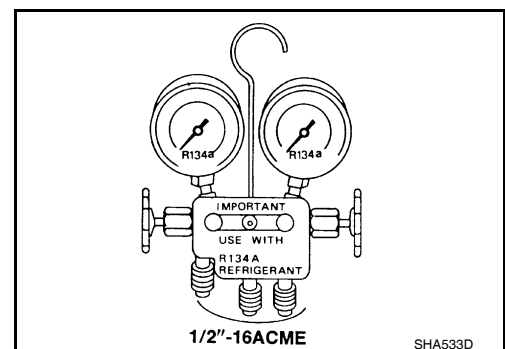
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has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

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



MANIFOLD GAUGE SET

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

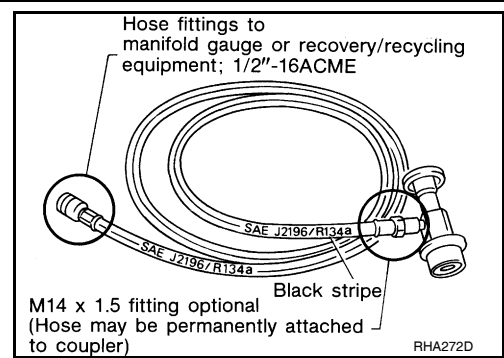


SERVICE HOSES

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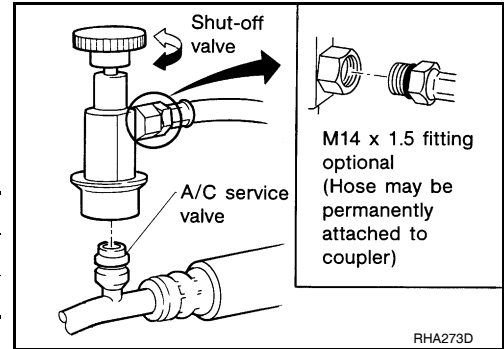
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

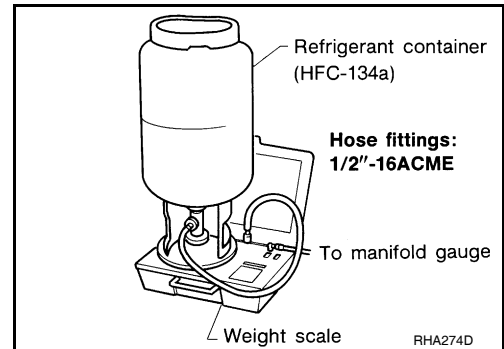
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



REFRIGERANT WEIGHT SCALE

Verify that no refrigerant other than HFC-134a (R-134a) and specified 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.

Precaution for Leak Detection Dye

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- 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 to pinpoint refrigerant leaks.
- For your safety and your customer's satisfaction, read and follow all manufacturer's operating instructions and precautions prior to performing the work.
- 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.
- Always remove any remaining dye from the leak area after repairs are complete to avoid a misdiagnosis during a future service.
- Do not allow dye to come into contact with painted body panels or interior components. If dye is spilled, clean immediately with the approved dye cleaner. Fluorescent dye left on a surface for an extended period of time cannot be removed.

PRECAUTIONS

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- Do not spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Do not use more than one refrigerant dye bottle (1/4 ounce /7.4 cc) per A/C system.
- Leak detection dyes for HFC-134a (R-134a) and CFC-12 (R-12) A/C systems are different. Do not use HFC-134a (R-134a) leak detection dye in CFC-12 (R-12) A/C system or CFC-12 (R-12) leak detector dye in HFC-134a (R-134a) A/C system or A/C system damage may result.
- The fluorescent properties of the dye will remain for over three (3) years unless a compressor malfunction occurs.

IDENTIFICATION LABEL FOR VEHICLE

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

NOTE:

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

PREPARATION

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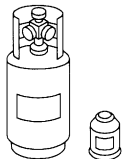


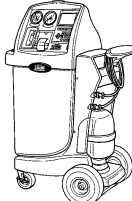
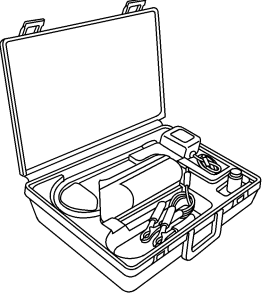
PREPARATION

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

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

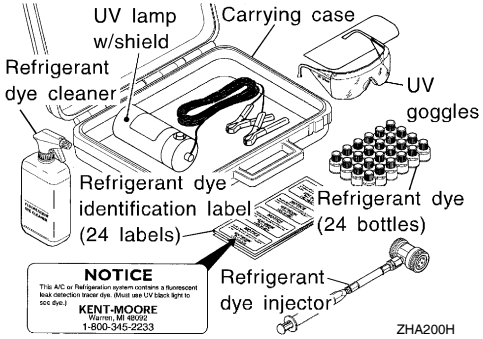
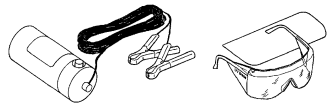

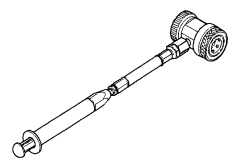

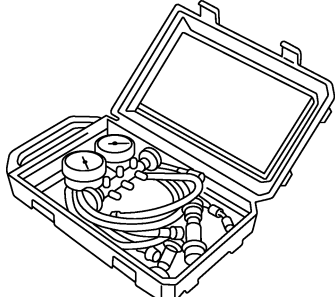
Adapters that convert one size fitting to another must never be used refrigerant/oil contamination will occur and compressor failure will result.

Tool number (Kent-Moore No.) Tool name	Description
HFC-134a (R-134a) (—) Refrigerant  S-NT196	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size • large container 1/2"-16 ACME
— (—) NISSAN A/C System Oil Type S  S-NT197	Type: Poly Alkylene glycol oil (PAG), type S Application: HFC-134a (R-134a) variable displacement swash plate compressors (NISSAN only)
— (—) NISSAN A/C System Oil Type R  S-NT197	Type: Poly Alkylene glycol oil (PAG), type R Application: HFC-134a (R-134a) vane rotary compressors (NISSAN only)
KV991J0130 (ACR2005-NI) ACR5 A/C Service Center  WJIA0293E	Refrigerant recovery, recycling and recharging
— (J-41995) Electronic refrigerant leak detector  AHA281A	Checking for refrigerant leaks Power supply: DC 12V (battery terminal)

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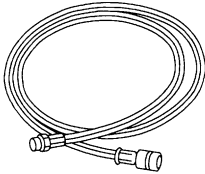
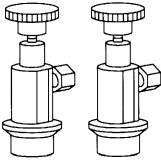

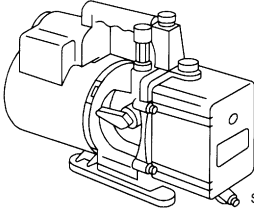
PREPARATION

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Tool number (Kent-Moore No.) Tool name	Description
<p>— (J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) Refrigerant dye injector (J-41447) Quantity 24, 1/4 ounce bottles of HFC-134a (R-134a) fluorescent leak detection dye (J-43872) Refrigerant dye cleaner</p>	<p>Leak detection dye Power supply: DC 12V (battery terminal)</p>  <p>NOTICE This A/C or Refrigeration system contains a fluorescent leak detection tracer dye. Must use UV black light to see dye. KENT-MOORE Warren, MI 48090 1-800-345-2233</p> <p>ZHA200H</p>
<p>— (J-42220) Fluorescent dye leak detector</p>	<p>Checking for refrigerant leaks when fluorescent dye is installed in A/C system. Includes: UV lamp and UV safety goggles Power supply: DC 12V (battery terminal)</p>  <p>SHA438F</p>
<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>  <p>Refrigerant dye (24 bottles)</p> <p>SHA439F</p>
<p>— (J-41459) HFC-134a (R-134a) Dye injector Use with (J-41447) 1/4 ounce bottles</p>	<p>For injecting 1/4 ounce of fluorescent leak detection dye into A/C system.</p>  <p>SHA440F</p>
<p>— (J-43872) Refrigerant dye cleaner</p>	<p>For cleaning dye spills.</p>  <p>SHA441F</p>
<p>— (J-39183-C) Manifold gauge set (with hoses and couplers)</p>	<p>Identification: • The gauge face indicates R-134a. Fitting size: Thread size • 1/2"-16 ACME</p>  <p>RJIA0196E</p>

PREPARATION

< SERVICE INFORMATION >

Tool number (Kent-Moore No.) Tool name	Description	A
Service hoses: • (J-39500-72B) High side hose • (J-39500-72R) Low side hose • (J-39500-72Y) Utility hose	 <p style="text-align: center;">S-NT201</p> Hose colors: • 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: • 1/2" -16 ACME	B C
Service couplers: • (J-39500-20A) High side coupler • (J-39500-24A) Low side coupler	 <p style="text-align: center;">S-NT202</p> Hose fitting to service hose: • M14 x 1.5 fitting is optional or permanently attached.	D E F
— (J-39699) Refrigerant weight scale	 <p style="text-align: center;">S-NT200</p> For measuring of refrigerant Fitting size - thread size: • 1/2" - 16 ACME	G H
— (J-39649) Vacuum pump (Including the isolator valve)	 <p style="text-align: center;">S-NT203</p> Capacity: • Air displacement: 4 CFM • Micron rating: 20 microns • Oil capacity: 482 g (17 oz) Fitting size: Thread size • 1/2" -16 ACME	I MTC

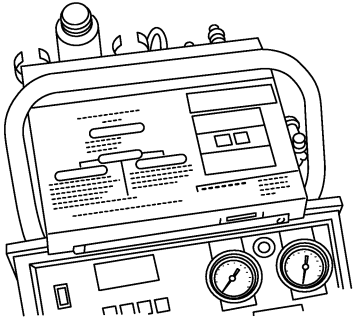

Commercial Service Tool

INFOID:000000004307052

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PREPARATION

< SERVICE INFORMATION >

(Kent-Moore No.) Tool name	Description
(J-41810-NI) Refrigerant identifier equipment (R-134a)  RJIA0197E	For checking refrigerant purity and system contamination
Power tool  PIIB1407E	Loosening bolts and nuts

REFRIGERATION SYSTEM

< SERVICE INFORMATION >

REFRIGERATION SYSTEM

Refrigerant Cycle

INFOID:000000004307053

REFRIGERANT FLOW

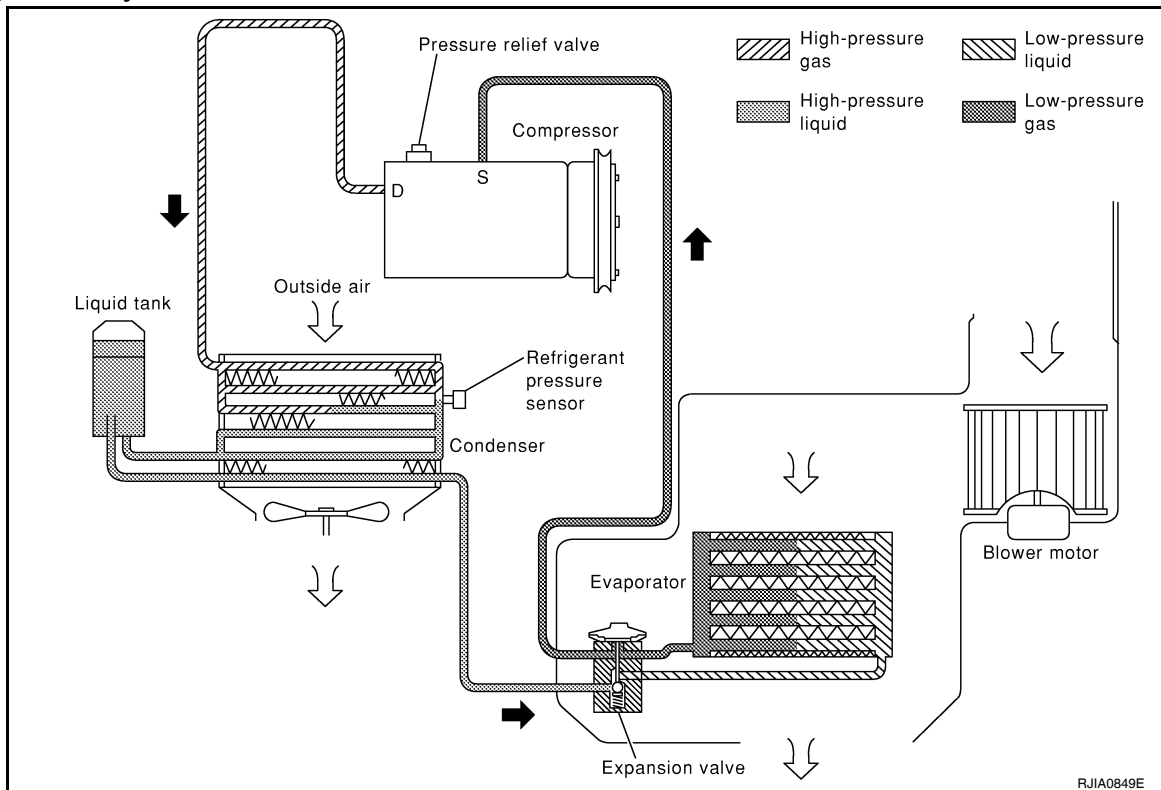
The refrigerant flows in the standard pattern, that is, through the compressor, the condenser with liquid tank, through the evaporator, and back to the compressor. The refrigerant evaporation through the evaporator is controlled by an externally equalized expansion valve, located inside the evaporator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

FREEZE PROTECTION

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

Refrigerant System Protection

INFOID:000000004307054



REFRIGERANT PRESSURE SENSOR

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 the voltage signal to the ECM. ECM makes the A/C relay go OFF and stops the compressor when pressure on the high-pressure side detected by refrigerant pressure sensor is over about 2,746 kPa (27.46 bar, 28.0 kg/cm², 398 psi), or below about 134 kPa (1.34 bar, 1.4 kg/cm², 20 psi).

PRESSURE RELIEF VALVE

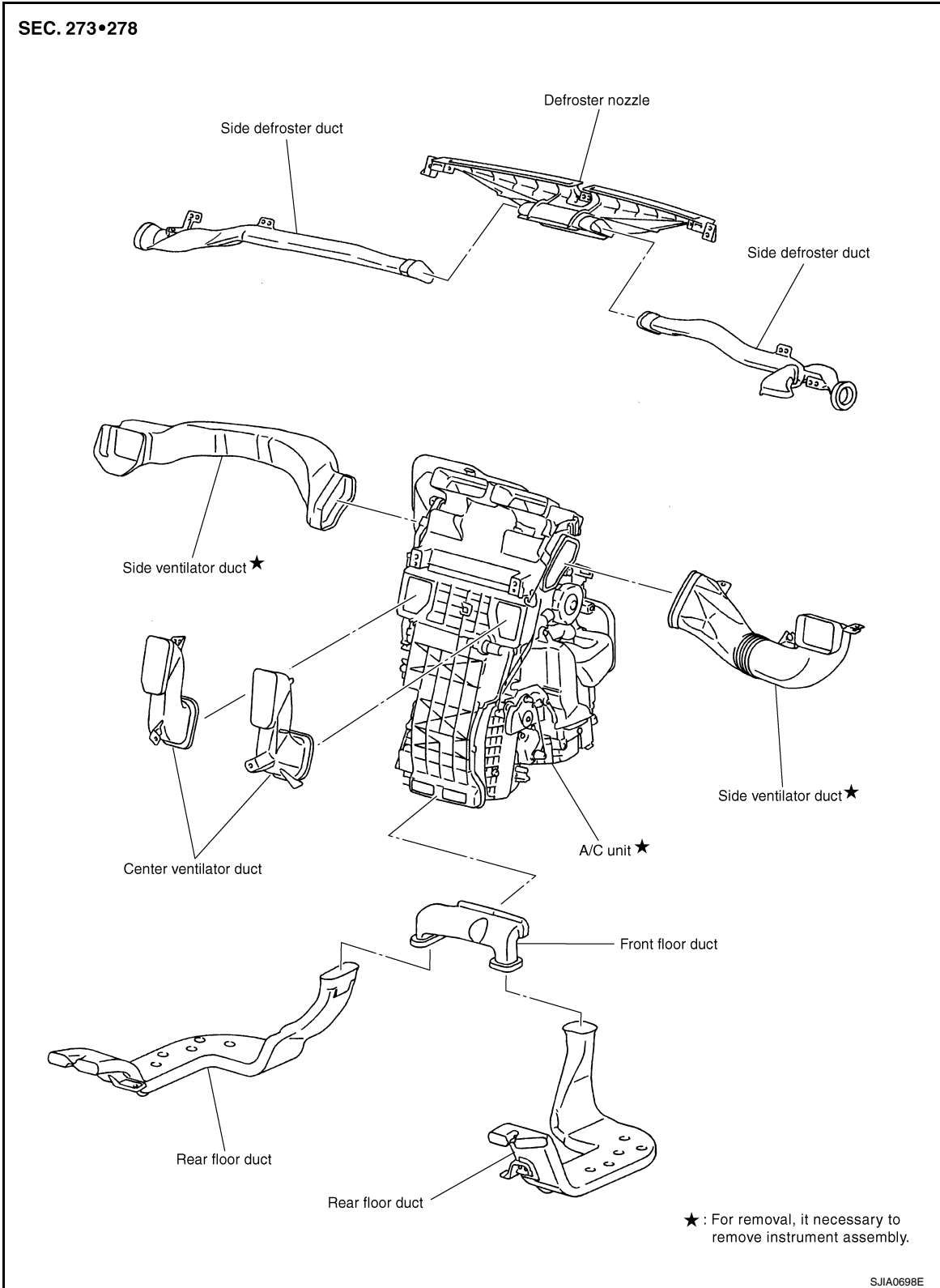
The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. When the pressure of refrigerant in the system increases to an unusual level [more than 3.8 MPa (38 bar, 38.76 kg/cm², 551 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.

REFRIGERATION SYSTEM

< SERVICE INFORMATION >

Component Part Location

INFOID:000000004307055



SJIA0698E

OIL

< SERVICE INFORMATION >

OIL

Maintenance of Oil Quantity in Compressor

INFOID:000000004307056

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 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

TYPE 1 Compressor (CR-10) : NISSAN A/C System Oil Type R

TYPE 2 Compressor (CSV511) : NISSAN A/C System Oil Type S

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 ³ (US fl oz, Imp fl oz)	
Evaporator	35 (1.2, 1.2)	-
Condenser	15 (0.5, 0.5)	-
Liquid tank	5 (0.2, 0.2)	-
In case of refrigerant leak	30 (1.0, 1.1)	Large leak
	None *1	Small leak *1

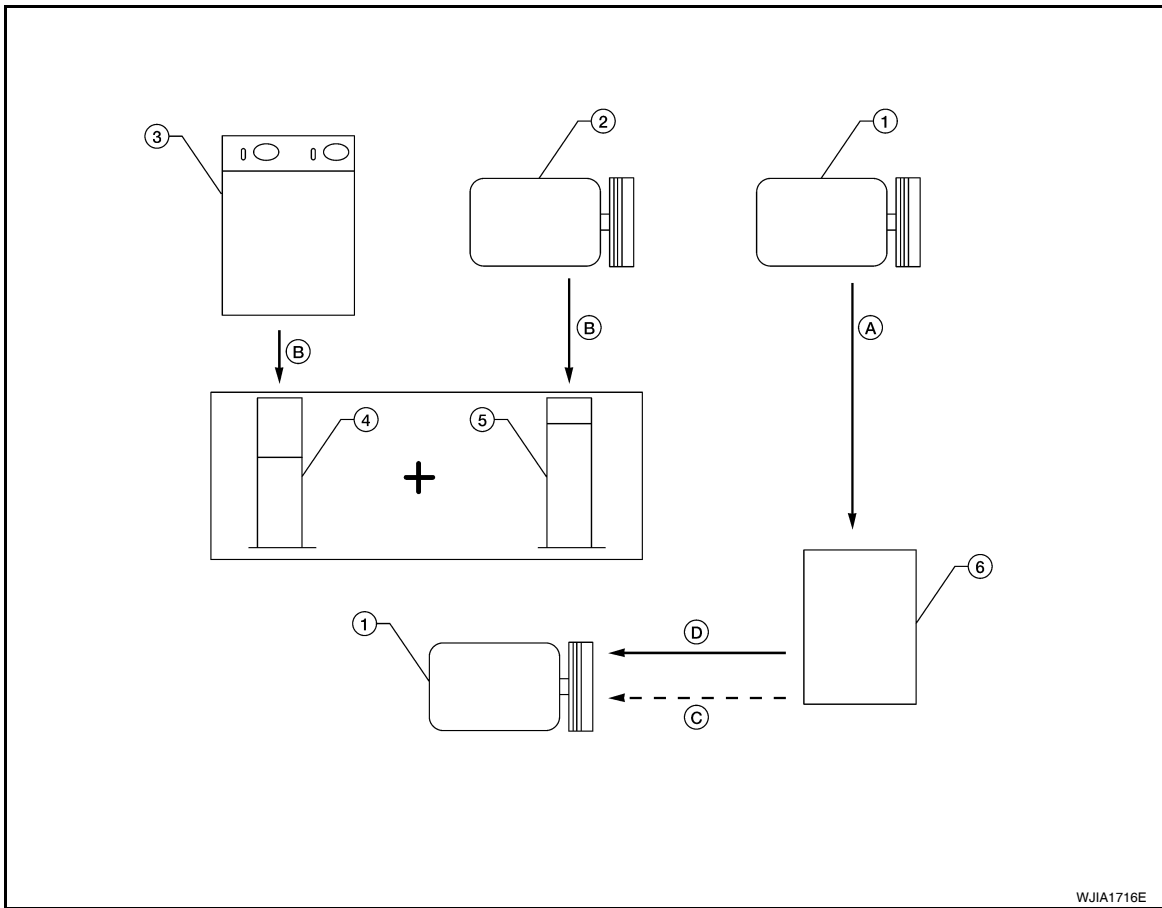
*1: If refrigerant leak is small, no addition of oil is needed.

OIL ADJUSTING PROCEDURE FOR COMPRESSOR REPLACEMENT

MTC

OIL

< SERVICE INFORMATION >



WJIA1716E

- | | | |
|---|-----------------------------------|--|
| 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 m (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 | | |

1. Before connecting recovery/recycling equipment to vehicle, check recovery/recycling equipment gauges. No refrigerant pressure should be displayed. If NG, recover refrigerant from equipment lines.
2. Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure oil discharged into the recovery/recycling equipment.
3. Drain the oil from the old (removed) compressor into a graduated container and recover the amount of oil drained.
4. Drain the oil from the new compressor into a separate, clean container.
5. 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.
6. Measure an amount of new oil equal to the amount recovered during discharging. Add this oil to new compressor through the suction port opening.
7. If the liquid tank also needs to be replaced, add another 5 m (0.2 US fl oz, 0.2 Imp fl oz.) of oil at this time.
Add this 5 m (0.2 US fl oz, 0.2 Imp fl oz.) of oil only when replacing the compressor.

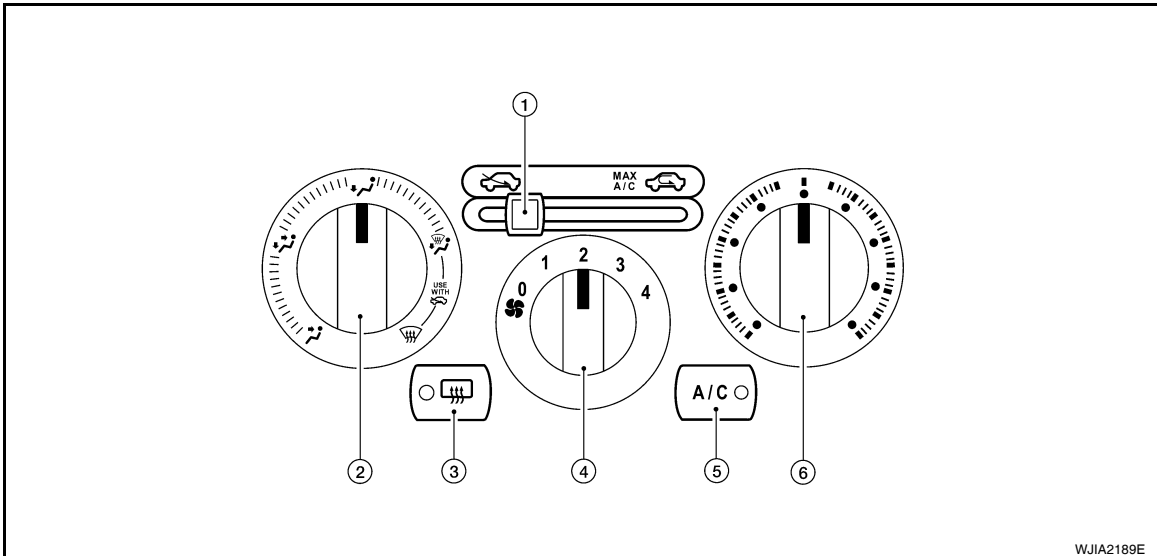
AIR CONDITIONER CONTROL

< SERVICE INFORMATION >

AIR CONDITIONER CONTROL

Control Operation

INFOID:000000004307057



1. Intake door lever
2. Mode door control dial
3. Rear window defogger switch
4. Blower control dial
5. A/C switch (if equipped)
6. Temperature control dial

BLOWER CONTROL DIAL

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

TEMPERATURE CONTROL DIAL

This dial allows you to adjust the temperature of the discharge air.

MODE DOOR CONTROL DIAL

This dial controls the outlet air flow.

INTAKE DOOR LEVER

- Recirculation (REC) position: Interior air is recirculated inside the vehicle.
- Fresh (FRE) position: Outside air is drawn into the passenger compartment.

REAR WINDOW DEFOGGER SWITCH

When illumination is ON, rear window is defogged.

A/C SWITCH (IF EQUIPPED)

The A/C switch controls the air conditioner system. When the switch is depressed with the fan ON, the compressor will turn ON. The indicator lamp also illuminates.

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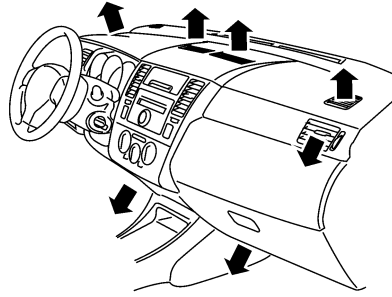
MTC

AIR CONDITIONER CONTROL

< SERVICE INFORMATION >

Discharge Air Flow

INFOID:000000004307058



WJIA2190E

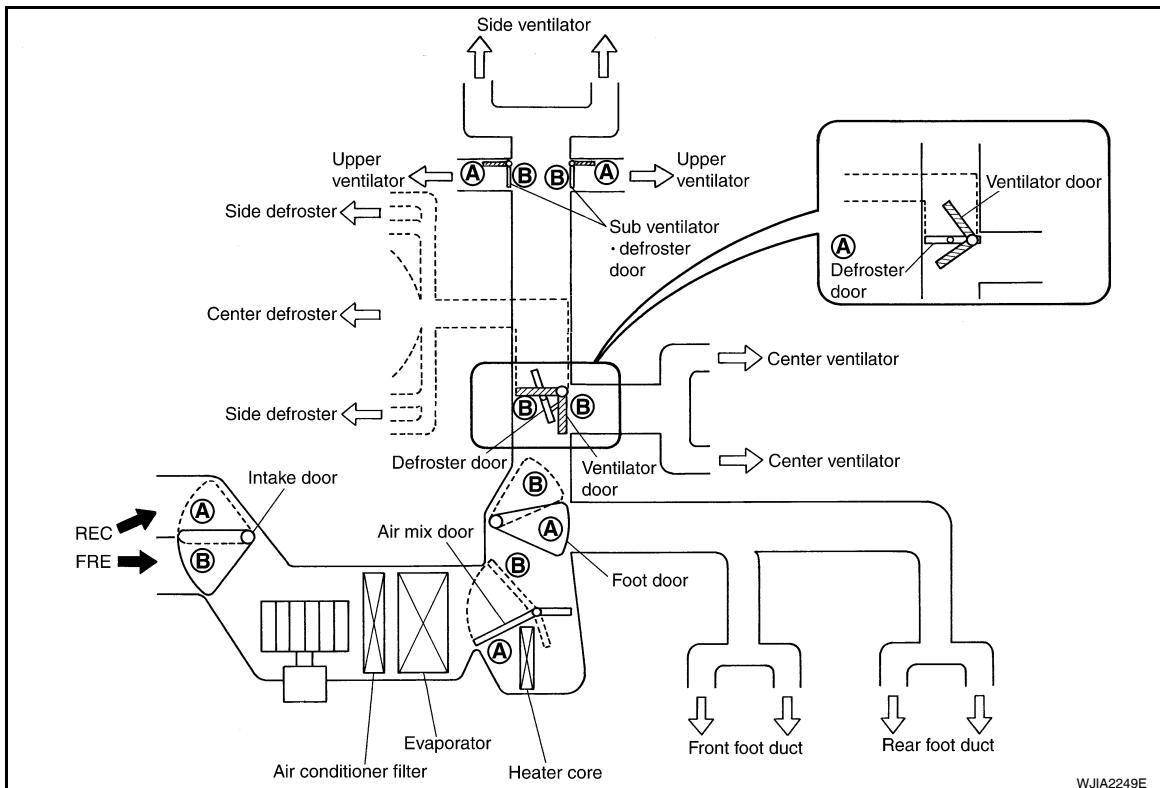
Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	100%	—	—
	56%	44%	—
	16%	64%	20%
	16%	53%	31%
	17%	—	83%

Airflow always present at driver and passenger side demisters

System Description

INFOID:000000004307059










SWITCHES AND THEIR CONTROL FUNCTION



WJIA2249E

AIR CONDITIONER CONTROL

< SERVICE INFORMATION >

Door	Mode control dial	MODE Position					Intake door lever		Temperature control dial		
		VENT	B/L	FOOT	D/F	DEF	FRE	REC			
									Full cold	←→	Full hot
Ventilator door		(A)	(A)	(B) *1	(B) *1	(B) *1	—	—	—		
Sub ventilator door		(A)	(A)	(B)	(B)	(B)	—	—	—		
Defroster door		(A)	(A)	(A ~ B) *2	(A ~ B) *3	(B)	—	—	—		
Foot door		(A)	(A ~ B)	(B) *1	(A ~ B)	(A)	—	—	—		
Intake door		—					(B)	(A)	—		
Air mix door		—					—		(A)	(A ~ B)	(B)
<p>* 1 In the (B) position, the ventilator and foot doors are not completely closed.</p> <p>* 2 In the (A) ~ (B) position, the foot door is 60% open.</p> <p>* 3 In the (A) ~ (B) position, the defroster is 75% open.</p>											
WJIA2234E											

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MTC

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

TRouble DIAGNOSIS

CONSULT-II Function (BCM)

INFOID:000000004784392

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.

DATA MONITOR

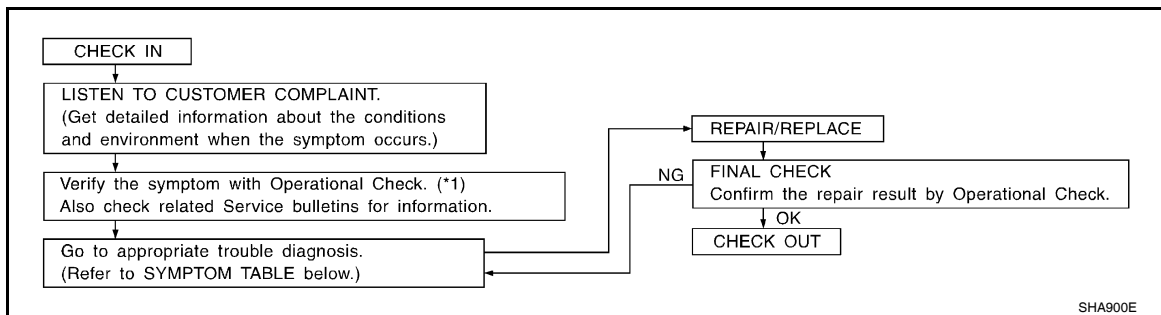
Display Item List

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 through the CAN communication.
FAN ON SIG "ON/OFF"	Displays "FAN (ON)/FAN (OFF)" status as judged from blower fan motor switch signal through CAN communication.
AIR COND SW "ON/OFF"	Displays "COMP (ON)/COMP (OFF)" status as judged from air conditioner switch signal through the CAN communication.

How to Perform Trouble Diagnosis for Quick and Accurate Repair

INFOID:000000004307062

WORK FLOW



SHA900E

*1 [MTC-30, "Operational Check"](#)

SYMPTOM TABLE

Symptom	Reference Page
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door. MTC-31
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door. MTC-32
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door. MTC-33
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor. MTC-33

TROUBLE DIAGNOSIS

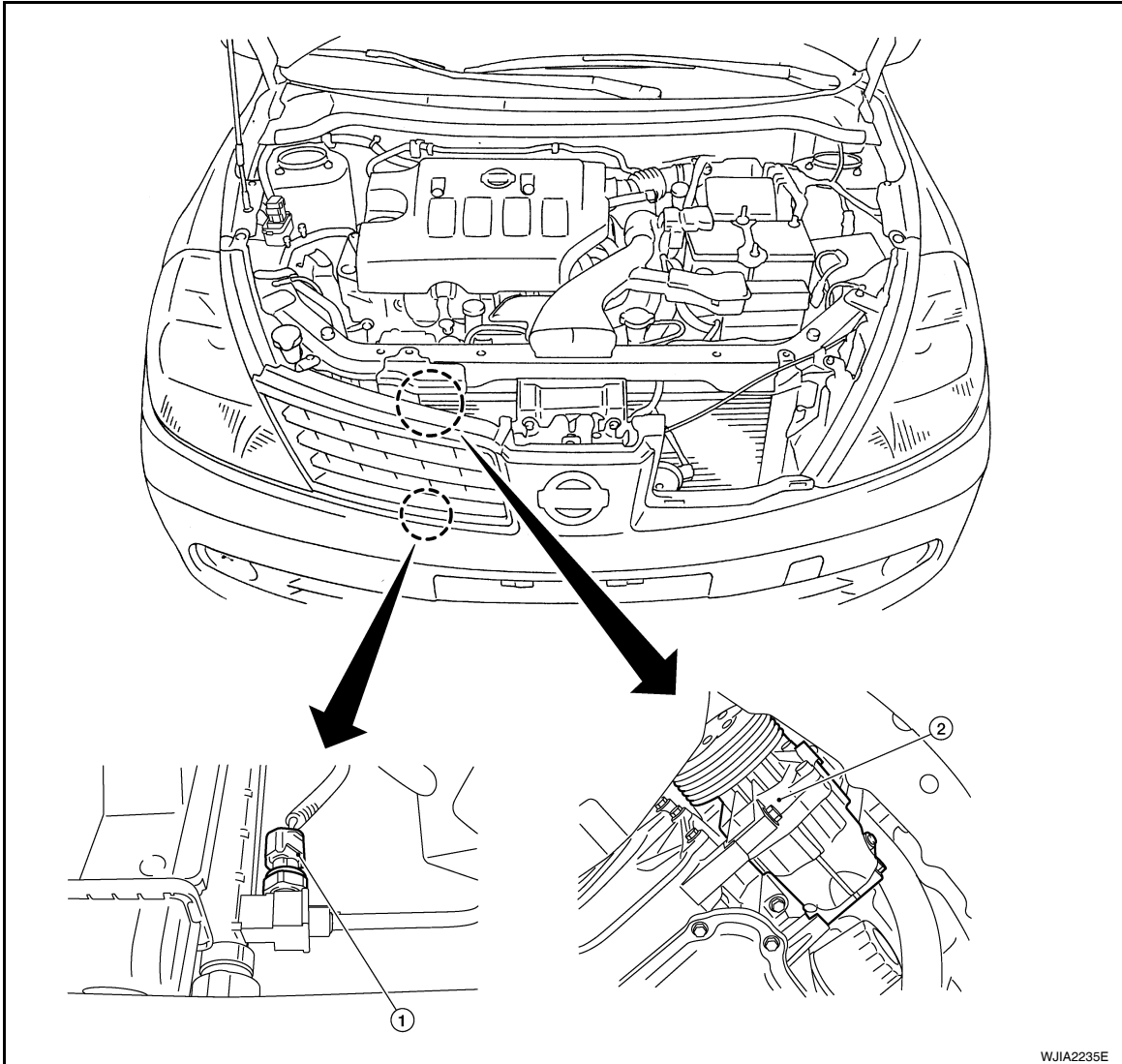
< SERVICE INFORMATION >

Symptom	Reference Page	
Magnet clutch does not engage in A/C, defrost/foot, or defrost mode.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	MTC-37
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	MTC-45
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	MTC-52
Noise	Go to Trouble Diagnosis Procedure for Noise.	MTC-53

Component Parts and Harness Connector Location

INFOID:000000004307063

ENGINE COMPARTMENT



1. Refrigerant pressure sensor E17 (if equipped)

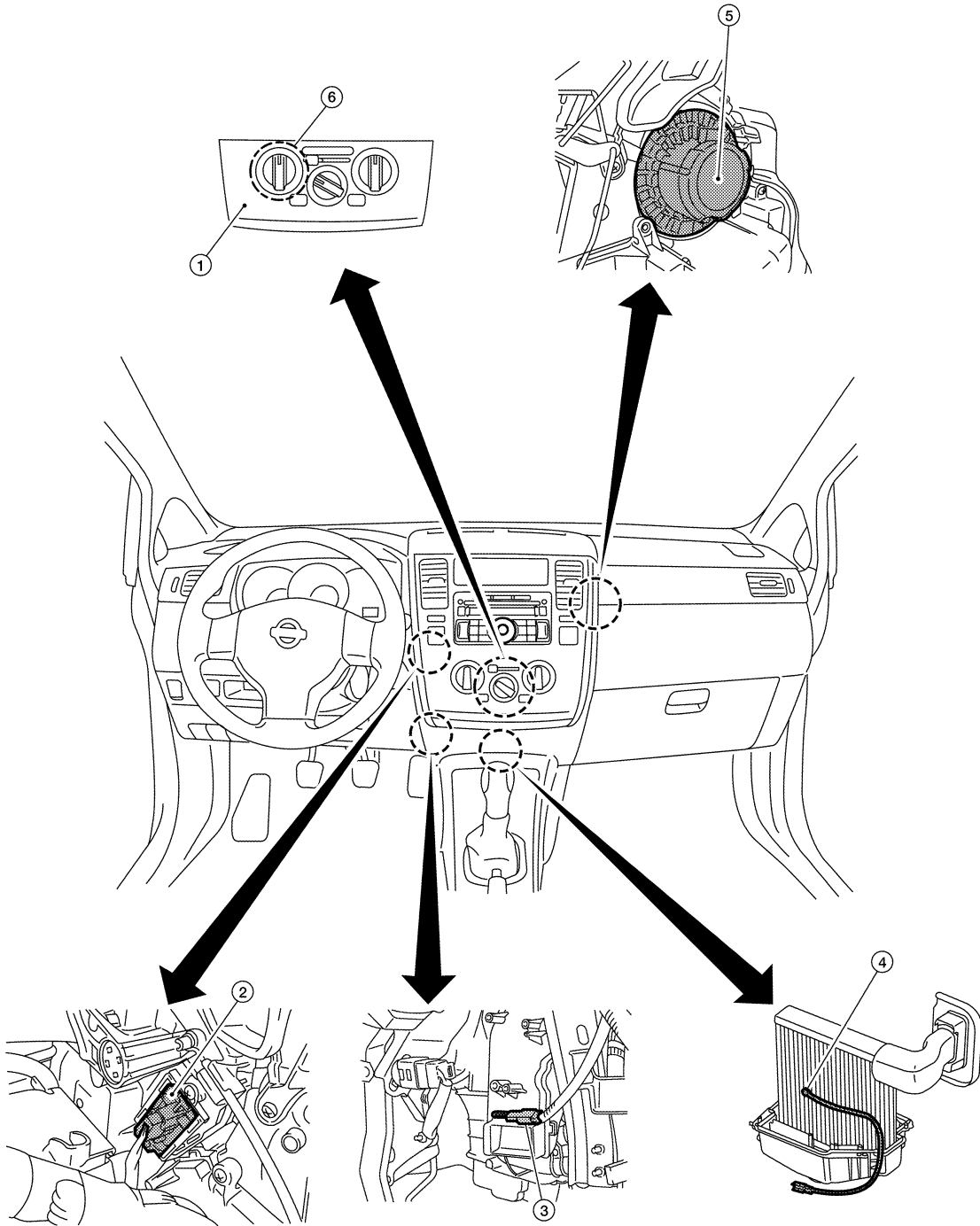
2. A/C compressor F3 (if equipped)

PASSENGER COMPARTMENT

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TROUBLE DIAGNOSIS

< SERVICE INFORMATION >



WJIA2302E

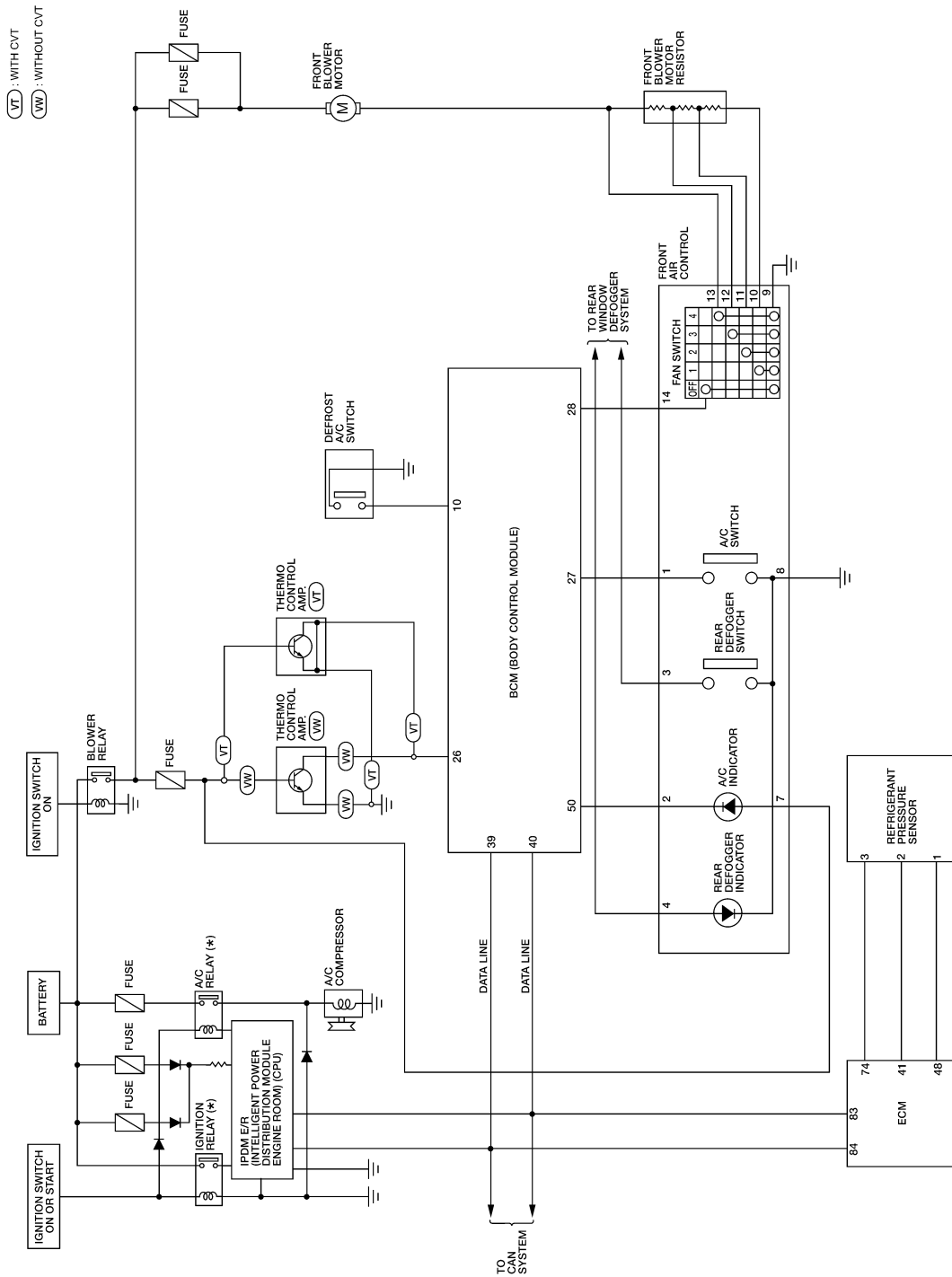
- | | | |
|---|-------------------------------------|---|
| 1. Front air control M33 | 2. Front blower motor resistor M151 | 3. Thermo control amp. jumper connector (with CVT), (if equipped) |
| 4. Thermo control amp. M42 (without CVT), (if equipped) | 5. Front blower motor M62 | 6. Defrost A/C switch M41 (located on back side of front air control) |

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Schematic

INFOID:000000004307064



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

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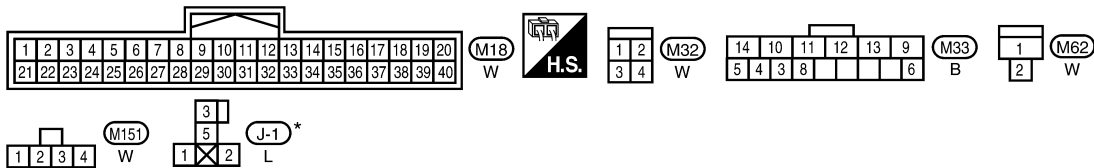
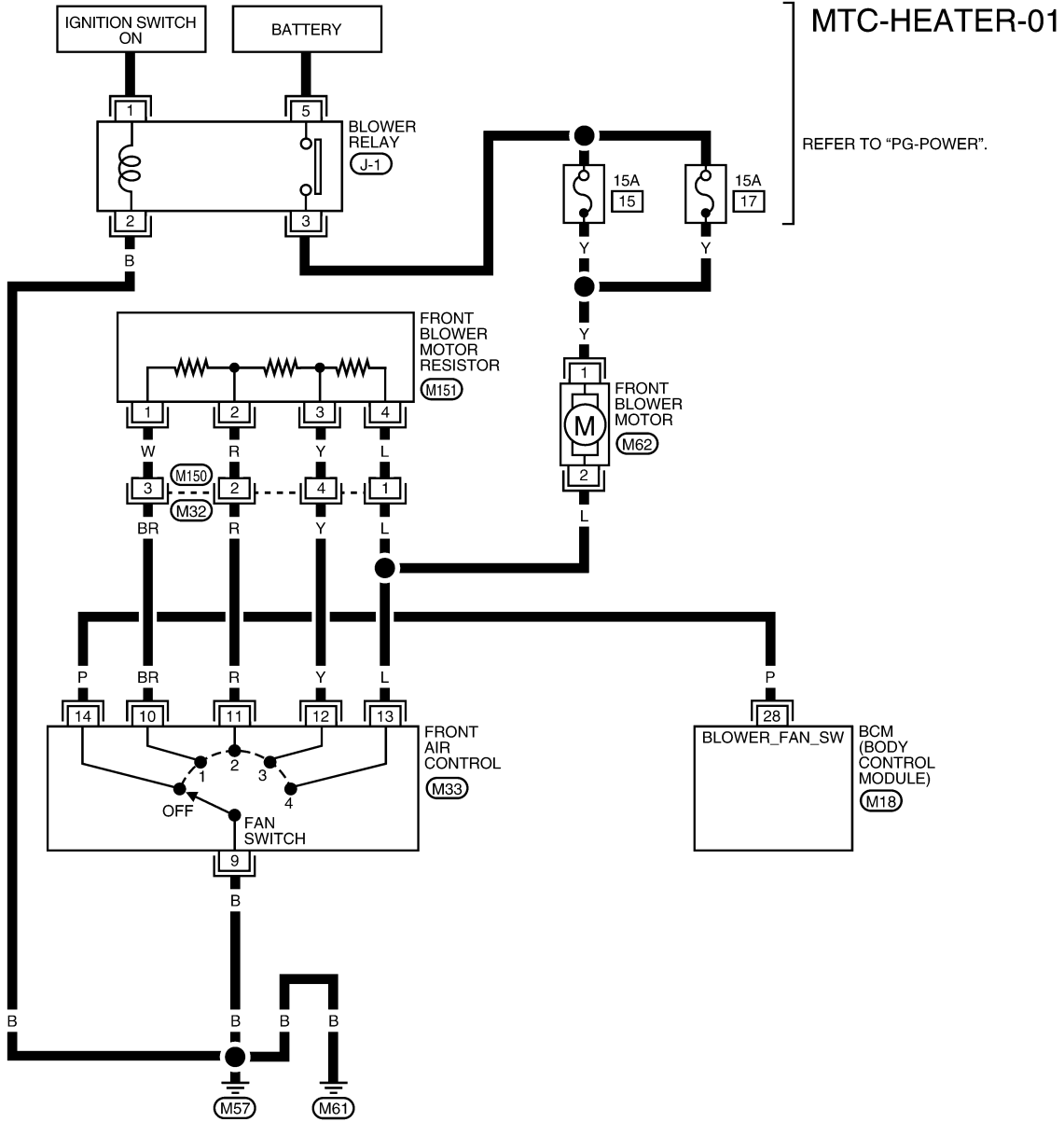
TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Wiring Diagram - Heater -

INFOID:000000004307065

WITHOUT A/C



* : THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

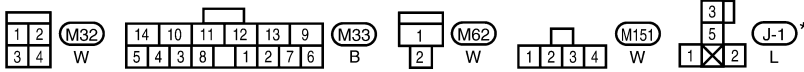
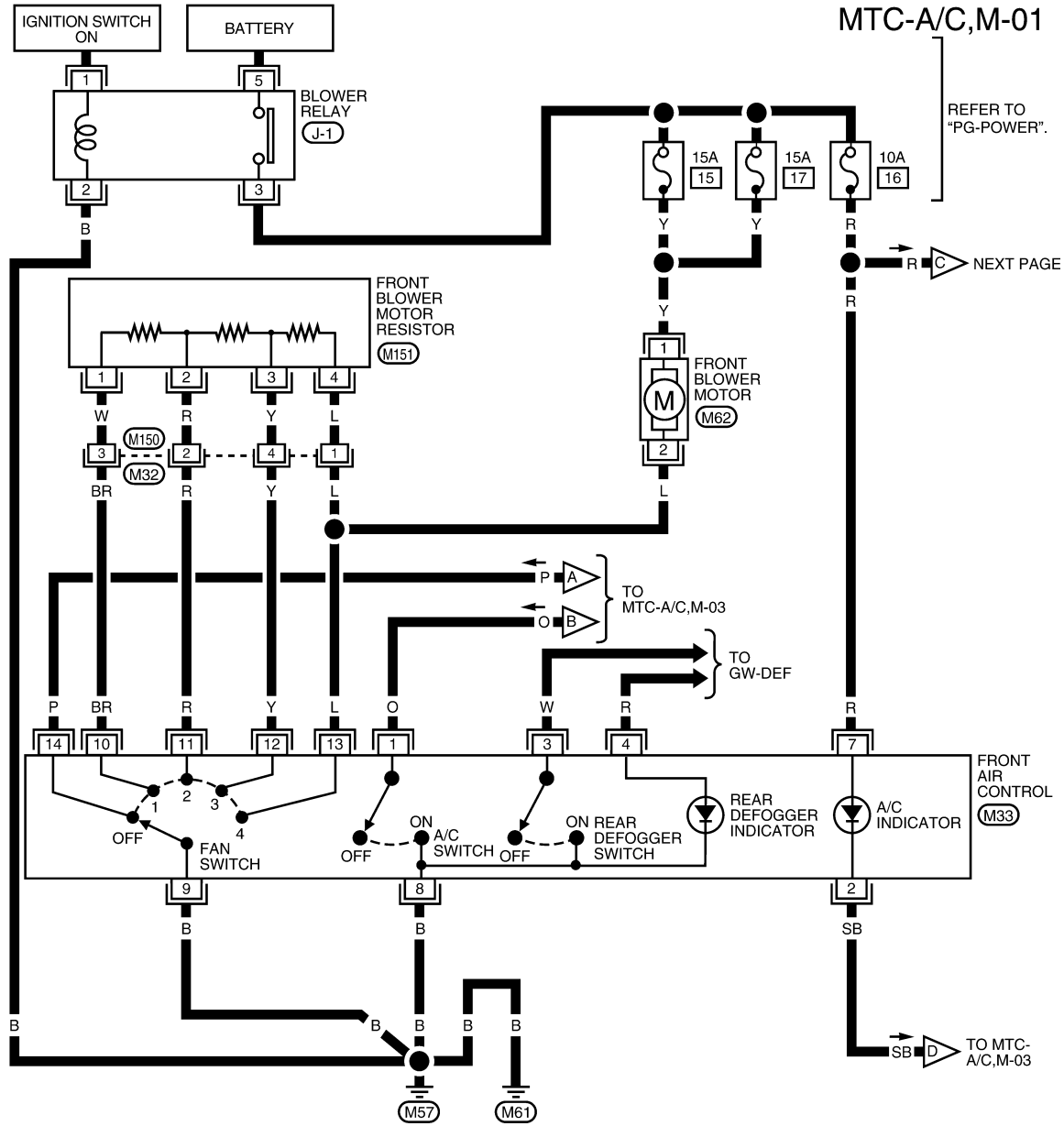
WJWA0485E

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Wiring Diagram - A/C,M -

INFOID:000000004307066



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

* : THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

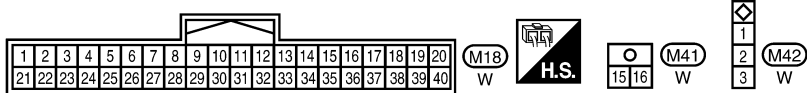
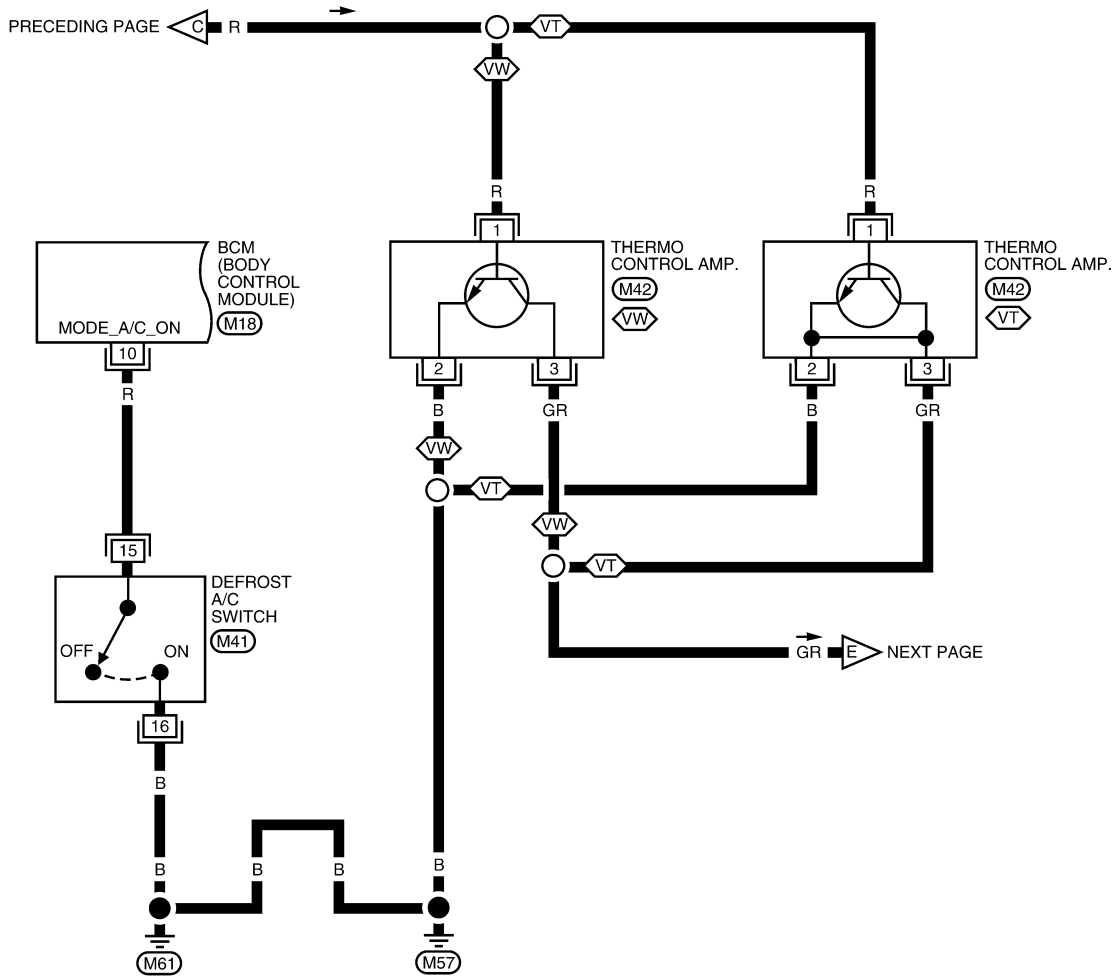
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TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

MTC-A/C,M-02

◊VT : WITH CVT
 ◊VW : WITHOUT CVT

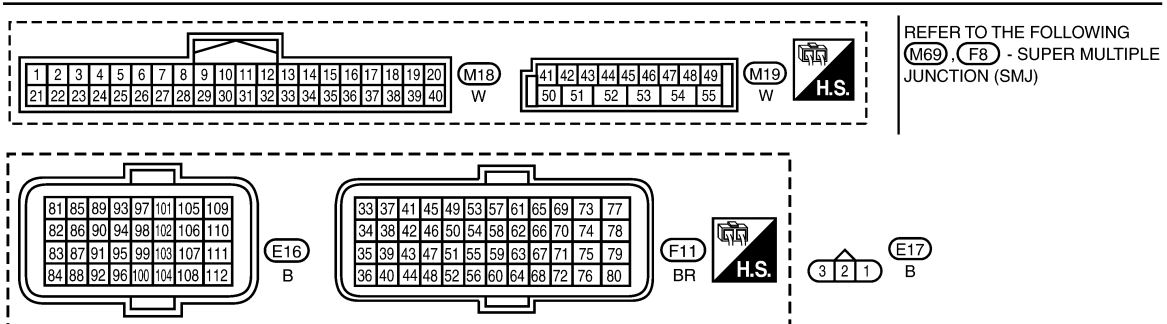
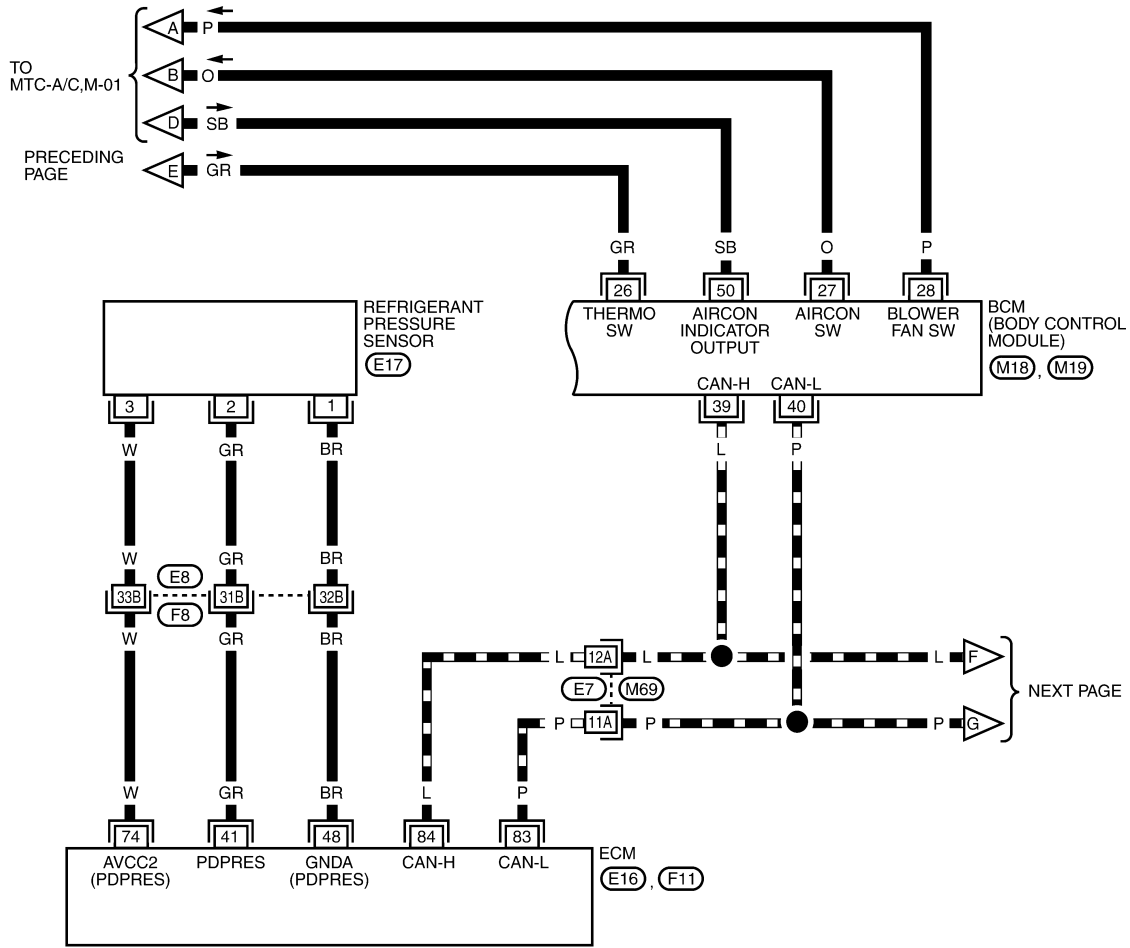


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TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

MTC-A/C,M-03
 : DATA LINE

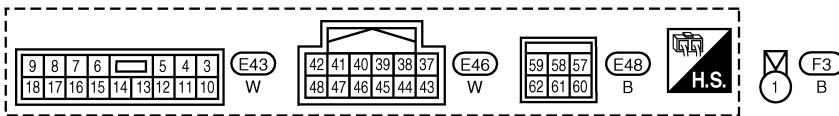
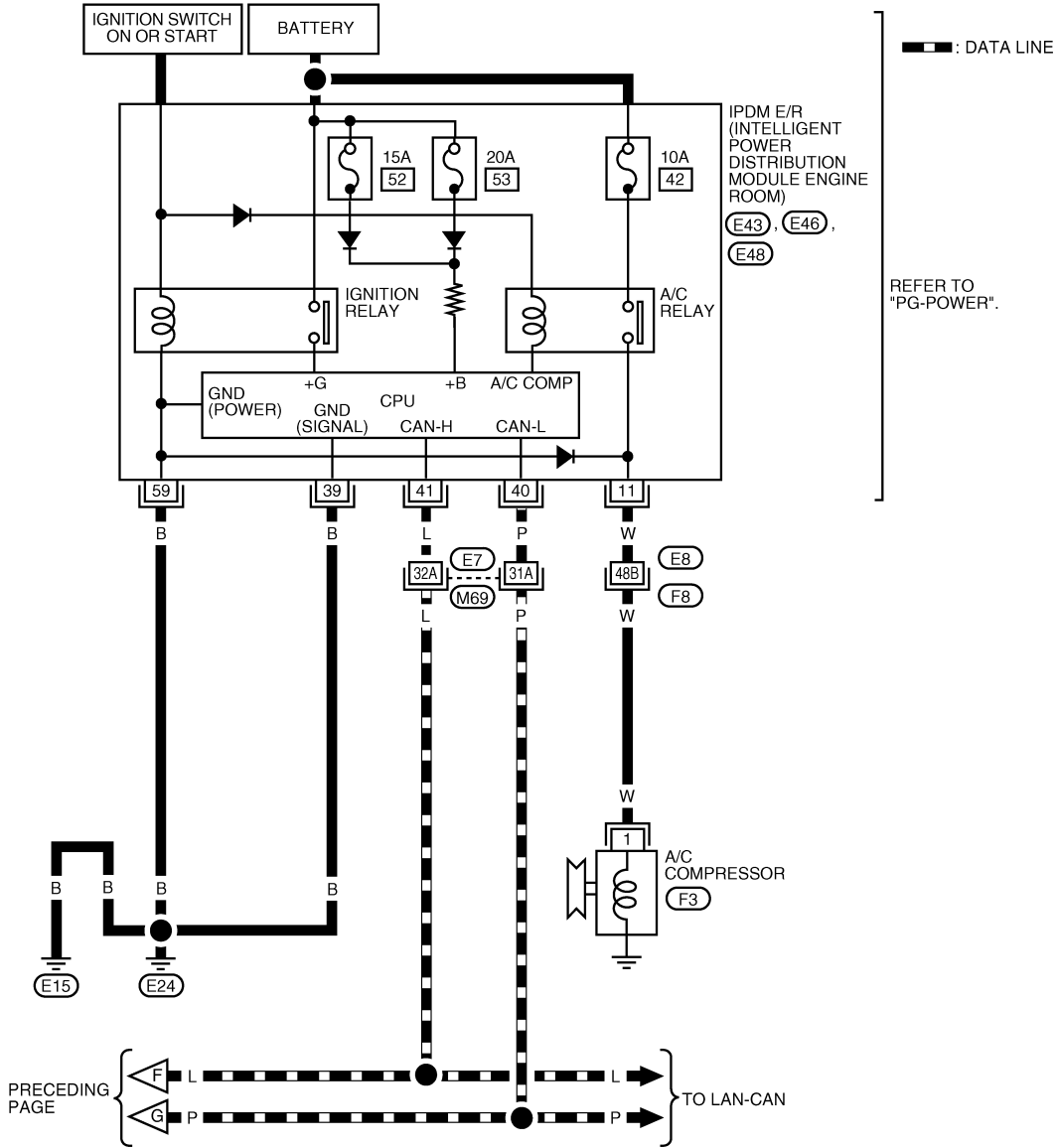


WJWA0488E

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

MTC-A/C,M-04



REFER TO THE FOLLOWING
 (M69), (F8) - SUPER MULTIPLE
 JUNCTION (SMJ)

LJWA0021E

Operational Check

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

Conditions : Engine running at normal operating temperature

CHECKING BLOWER

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

1. Turn blower control dial clockwise to "1" position. Blower should operate on low speed.
2. Turn blower control dial clockwise to "2" position, and continue checking blower speed until all speeds are checked.
3. Leave blower on Maximum speed.

If NG, go to trouble diagnosis procedure for [MTC-33, "Front Blower Motor Circuit"](#).

If OK, continue the check.



CHECKING DISCHARGE AIR

1. Turn mode door control dial to each position.
2. Confirm that discharge air comes out according to the air distribution table. Refer to [MTC-20, "Discharge Air Flow"](#).

If NG, go to trouble diagnosis procedure for [MTC-31, "Mode Door"](#).

If OK, continue the check.

CHECKING RECIRCULATION

1. Set intake door lever to REC  position.
2. Operate intake door lever to FRE  position.
3. Listen for intake door position change (you should hear blower sound change slightly).

If NG, go to trouble diagnosis procedure for [MTC-33, "Intake Door"](#).

If OK, continue the check.

CHECKING TEMPERATURE DECREASE

1. Turn temperature control dial counterclockwise to full cold position.
2. Check for cold air at discharge air outlets.

If NG, go to trouble diagnosis procedure for [MTC-45, "Insufficient Cooling"](#).

If OK, continue the check.

CHECKING TEMPERATURE INCREASE

1. Turn temperature control dial clockwise to full hot position.
2. Check for hot air at discharge air outlets.

If NG, go to trouble diagnosis procedure for [MTC-52, "Insufficient Heating"](#).

If OK, continue the check.


CHECKING A/C SWITCH (IF EQUIPPED)

1. Turn fan control dial to the desired (1 to 4 speed) position.
2. Press A/C switch.
3. A/C switch indicator will turn ON.
 - Confirm that the compressor clutch engages (sound or visual inspection).

If NG, go to trouble diagnosis procedure for [MTC-37, "Magnet Clutch Circuit \(If Equipped\)"](#).

If OK, continue the check.

CHECKING DEFROST A/C SWITCH (IF EQUIPPED)

1. Turn fan control dial to the desired (1 to 4 speed) position.
2. Turn mode dial to () DEF.
3. Confirm that the compressor clutch engages (sound or visual inspection) and the A/C switch indicator illuminates.

If NG, go to trouble diagnosis procedure for [MTC-37, "Magnet Clutch Circuit \(If Equipped\)"](#).

If all operational checks are OK (symptom cannot be duplicated), go to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#) and perform tests as outlined. If symptom appears, refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#) and perform applicable trouble diagnosis procedures.

Mode Door

INFOID:000000004307068

SYMPTOM: Air outlet does not change.

INSPECTION FLOW

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MTC

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

1. CONFIRM SYMPTOM BY PERFORMING OPERATIONAL CHECK - DISCHARGE AIR

1. Rotate the mode door control dial to each position.
2. Confirm that discharge air comes out according to the air distribution table. Refer to [MTC-20, "Discharge Air Flow"](#).

NOTE:

Confirm that the compressor clutch (with A/C) is engaged (visual inspection) when DEF (■) or D/F (■) is selected.

Can a symptom be duplicated?

- YES >> GO TO 3.
NO >> GO TO 2.

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to [MTC-30, "Operational Check"](#).

Can a symptom be duplicated?

- YES >> Refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

4. CHECK MODE DOOR CONTROL CABLE

Check and verify mode door mechanism for smooth operation in each mode.

OK or NG

- OK >> If the symptom still exists, perform a complete operational check and check for other symptoms. Refer to [MTC-30, "Operational Check"](#). If other symptoms exist, refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).
- NG >> Repair or adjust mode door control cable. Refer to [MTC-65, "Mode Door Cable Adjustment"](#).

Air Mix Door

INFOID:000000004307069

SYMPTOM: Air mix door does not change.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATIONAL CHECK - TEMPERATURE INCREASE

1. Turn the temperature control dial clockwise until maximum heat.
2. Check for hot air at discharge air outlets.

>> GO TO 2.

2. CONFIRM SYMPTOM BY PERFORMING OPERATIONAL CHECK - TEMPERATURE DECREASE

1. Turn the temperature control dial counterclockwise until maximum cold.
2. Check for cold air at discharge air outlets.

Can a symptom be duplicated?

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

3. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to [MTC-30, "Operational Check"](#).

Can a symptom be duplicated?

- YES >> Refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).
NO >> System OK.

4. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

>> GO TO 5.

5. CHECK AIR MIX DOOR CONTROL LINKAGE

Check and verify air mix door mechanism for smooth operation.

OK or NG

- OK >> If the symptom still exists, perform a complete operational check. Refer to [MTC-30, "Operational Check"](#) . If other symptoms exist, refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#) .
- NG >> Repair or adjust air mix door control linkage. Refer to [MTC-64, "Air Mix Door Cable Adjustment"](#) .

Intake Door

INFOID:000000004307070

SYMPTOM:

- Intake door does not change.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATIONAL CHECK - REC ()

1. Slide the intake door lever to the REC () position.
2. Turn the blower motor to maximum speed.
3. Slide the intake door lever to the FRE () position.
4. Listen for intake door position change (you should hear blower sound change slightly).

Can a symptom be duplicated?

- YES >> GO TO 3.
NO >> GO TO 2.

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to [MTC-30, "Operational Check"](#) .

Can a symptom be duplicated?

- YES >> Refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#) .
- NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

4. CHECK INTAKE DOOR CONTROL LINKAGE

Check intake door control linkage mechanism for smooth operation.

OK or NG

- OK >> If the symptom still exists, perform a complete operational check. Refer to [MTC-30, "Operational Check"](#) . If other symptoms exist, refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#) .
- NG >> Repair or adjust control linkage. Refer to [MTC-63, "Intake Door Cable Adjustment"](#) .

Front Blower Motor Circuit

INFOID:000000004307071

SYMPTOM: Front blower motor operation is malfunctioning.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATIONAL CHECK - FRONT BLOWER

1. Turn blower control dial to "1" position. Blower should operate on low speed.
2. Turn the blower control dial to "2" position, and continue checking blower speed until all speeds are checked.

Can the symptom be duplicated?

- YES >> GO TO 3.

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

NO >> GO TO 2.

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to [MTC-30, "Operational Check"](#).

Can a symptom be duplicated?

YES >> Refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

4. CHECK FRONT BLOWER MOTOR CIRCUIT

Check front blower motor circuit. Refer to "DIAGNOSTIC PROCEDURE FOR FRONT BLOWER MOTOR".

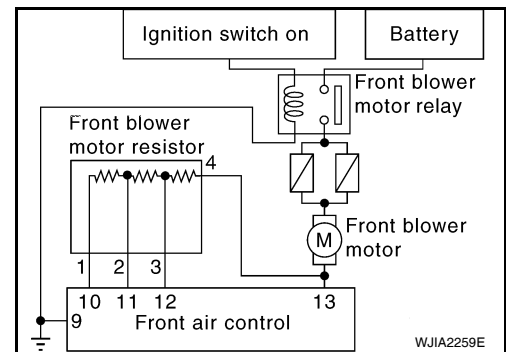
OK or NG

OK >> If the symptom still exists, perform a complete operational check. Refer to [MTC-30, "Operational Check"](#). If other symptoms exist, refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

NG >> Repair as necessary.

DIAGNOSTIC PROCEDURE FOR FRONT BLOWER MOTOR

SYMPTOM: Blower motor operation is malfunctioning.



1. CHECK FRONT BLOWER MOTOR OPERATION

1. Turn ignition switch ON.
2. Check front blower motor operation at each fan speed.

OK or NG

OK >> Inspection End.

NG >> • Front blower motor does not operate at any speed, GO TO 2.
• Front blower motor does not operate at one or more of the four speeds, GO TO 10.

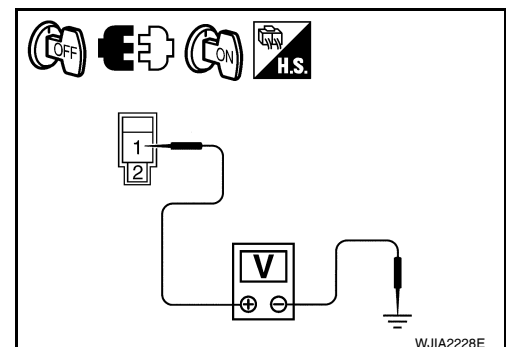
2. CHECK POWER SUPPLY FOR FRONT BLOWER MOTOR

1. Turn ignition switch OFF.
2. Disconnect front blower motor connector.
3. Turn ignition switch ON.
4. Check voltage between front blower motor harness connector M62 terminal 1 and ground.

Terminals		Voltage (Approx.)
(+)	(-)	
Connector	Terminal	Ground
Front blower motor: M62	1	
		Battery voltage

OK or NG

OK >> GO TO 6.



TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

- NG >> Check power supply circuit and 15A fuses [Nos. 15 and 17, located in the fuse block (J/B)]. Refer to [PG-3, "Schematic"](#).
- If fuses are OK, reinstall fuses and GO TO 3.
 - If fuses are NG, replace fuse and check harness for short circuit. Repair or replace if necessary.

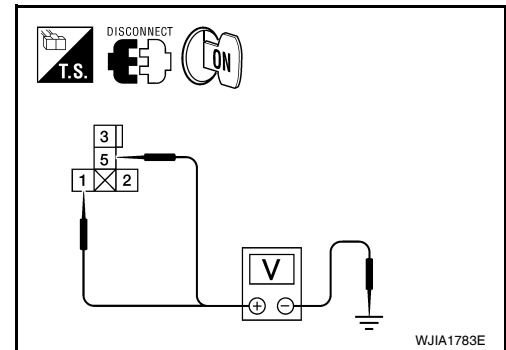
3. CHECK BLOWER MOTOR RELAY POWER SUPPLY CIRCUITS

1. Turn ignition switch OFF.
2. Disconnect blower motor relay connector.
3. Turn ignition switch ON.
4. Check voltage between blower motor relay harness connector J-1 terminal 1, 5 and ground.

1 - Ground **Battery voltage should exist.**
5 - Ground **Battery voltage should exist.**

OK or NG

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



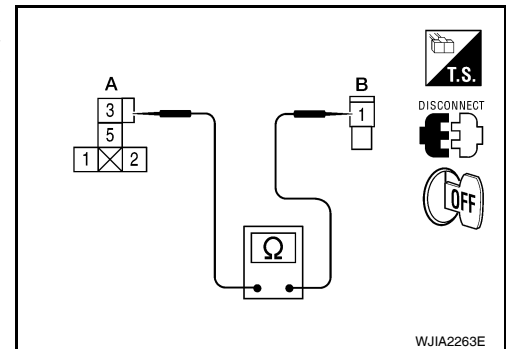
4. CHECK BLOWER MOTOR RELAY (SWITCH SIDE) CIRCUIT FOR OPEN

1. Turn ignition switch OFF.
2. Check continuity between blower motor relay harness connector J-1 (A) terminal 3 and front blower motor harness connector M62 (B) terminal 1.

Continuity should exist.

OK or NG

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



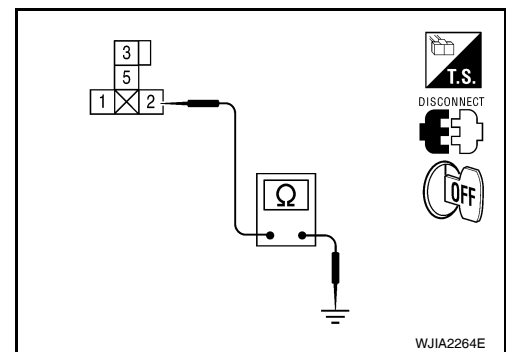
5. CHECK BLOWER MOTOR RELAY GROUND CIRCUIT

Check continuity between blower motor relay harness connector J-1 terminal 2 and ground.

Continuity should exist.

OK or NG

- OK >> Replace blower motor relay.
NG >> Repair harness or connector.



6. CHECK FRONT BLOWER MOTOR

Check continuity between front blower motor terminals 1 and 2.

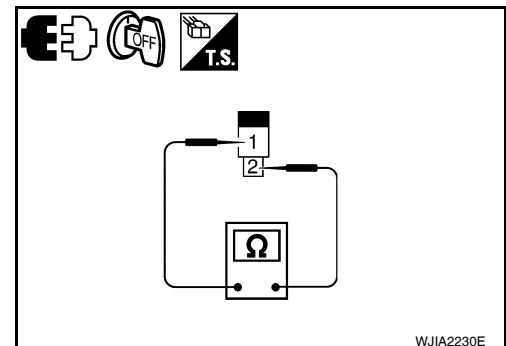
NOTE:

Ensure that there are no foreign particles inside the A/C unit assembly for a smooth rotation of the front blower motor.

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

OK or NG

- OK >> GO TO 7.
NG >> Replace front blower motor. Refer to [MTC-62, "Removal and Installation"](#).



7. CHECK CIRCUIT CONTINUITY BETWEEN FRONT BLOWER MOTOR AND FRONT AIR CONTROL

TROUBLE DIAGNOSIS

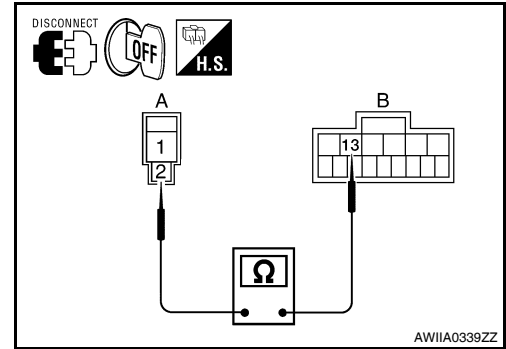
< SERVICE INFORMATION >

1. Disconnect front air control connector.
2. Check continuity between front blower motor harness connector M62 (A) terminal 2 and front air control harness connector M33 (B) terminal 13.

2 - 13 : Continuity should exist.

OK or NG

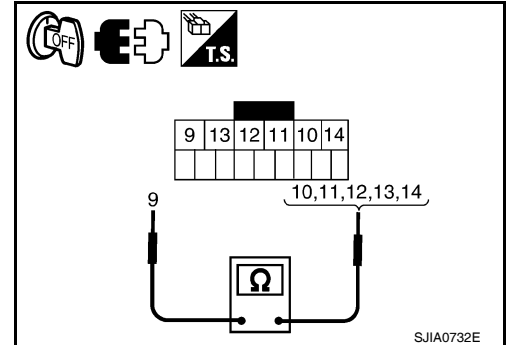
- OK >> GO TO 8.
 NG >> Repair harness or connector.



8. CHECK FAN SWITCH

Check continuity between front air control terminal 9 and 10, 11, 12, 13, 14.

Terminals	Condition	Continuity
9	14	Blower control dial: OFF
	10	Blower control dial: 1-speed
	11	Blower control dial: 2-speed
	12	Blower control dial: 3-speed
	13	Blower control dial: 4-speed
		Yes



OK or NG

- OK >> GO TO 9.
 NG >> Replace front air control. Refer to [MTC-58. "Removal and Installation"](#).

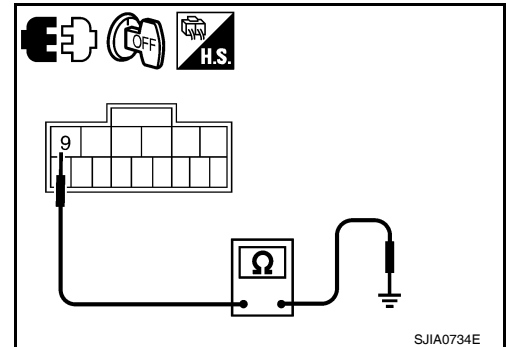
9. CHECK FAN SWITCH GROUND CIRCUIT

Check continuity between front air control harness connector M33 terminal 9 and ground.

Continuity should exist.

OK or NG

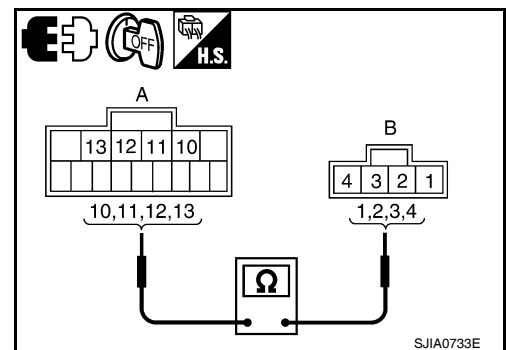
- OK >> Inspection End.
 NG >> Repair harness or connector.



10. CHECK CIRCUIT CONTINUITY BETWEEN FRONT AIR CONTROL AND FRONT BLOWER MOTOR RESISTOR

1. Turn ignition switch OFF.
2. Disconnect front blower motor resistor and front air control connectors.
3. Check continuity between front air control harness connector M33 (A) terminals and front blower motor resistor harness connector M6 (B) terminals.

A		B		Continuity
Connector	Terminal	Connector	Terminal	
Front air control: M33	10	Front blower motor resistor: M6	1	Yes
	11		2	
	12		3	
	13		4	



OK or NG

TROUBLE DIAGNOSIS

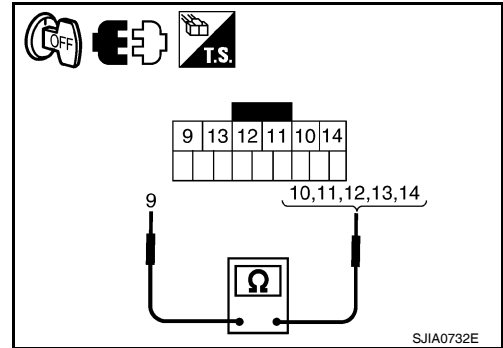
< SERVICE INFORMATION >

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

11. CHECK FAN SWITCH

Check continuity between front air control terminal 9 and 10, 11, 12, 13, 14.

Terminals	Condition	Continuity
9	14 Fan control dial: OFF	Yes
	10 Fan control dial: 1-speed	
	11 Fan control dial: 2-speed	
	12 Fan control dial: 3-speed	
	13 Fan control dial: 4-speed	



OK or NG

- OK >> Replace the front blower motor resistor. Refer to [MTC-66, "Removal and Installation"](#).
NG >> Replace front air control. Refer to [MTC-58, "Removal and Installation"](#).

Magnet Clutch Circuit (If Equipped)

INFOID:000000004307072

SYMPTOM: Magnet clutch does not engage.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATIONAL CHECK - MAGNET CLUTCH

1. Turn ignition switch ON.
2. Turn blower control dial to the desired (1 to 4 speed) position.
3. Press the A/C switch. A/C indicator will turn on.
4. Confirm that the compressor clutch engages (sound or visual inspection).

Can the symptom be duplicated?

- YES >> GO TO 3.
NO >> GO TO 2.

2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check for any symptoms. Refer to [MTC-30, "Operational Check"](#).

Does another symptom exist?

- YES >> Refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

4. CHECK COMPRESSOR BELT TENSION

Check compressor belt tension. Refer to [EM-14, "Checking"](#) (HR16DE) or [EM-136, "Checking Drive Belts"](#) (MR18DE).

OK or NG

- OK >> GO TO 5.
NG >> Adjust or replace A/C compressor belt. Refer to [EM-15, "Removal and Installation"](#) (HR16DE) or [EM-136, "Removal and Installation"](#) (MR18DE).

5. CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to [MTC-45, "Insufficient Cooling"](#).

OK or NG

- OK >> GO TO 6.
NG >> Perform trouble diagnosis for unusual pressure. Refer to [MTC-45, "Insufficient Cooling"](#).

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

6. CHECK MAGNET CLUTCH CIRCUIT

Perform diagnostic procedure for the magnetic clutch. Refer to "DIAGNOSTIC PROCEDURE FOR MAGNET CLUTCH".

OK or NG

OK >> If the symptom still exists, perform a complete operational check. Refer to [MTC-30. "Operational Check"](#). If other symptoms exist, refer to [MTC-22. "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

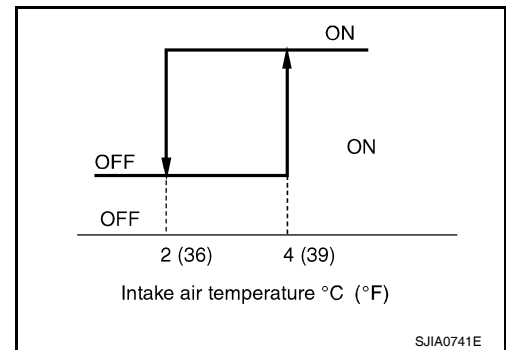
NG >> Repair as necessary.

SYSTEM DESCRIPTION

Thermo control amp. controls A/C compressor operation by intake air temperature and signal from ECM. The defrost A/C switch controls A/C compressor operation by the BCM when the mode switch is turned to the ■ (DEF) position.

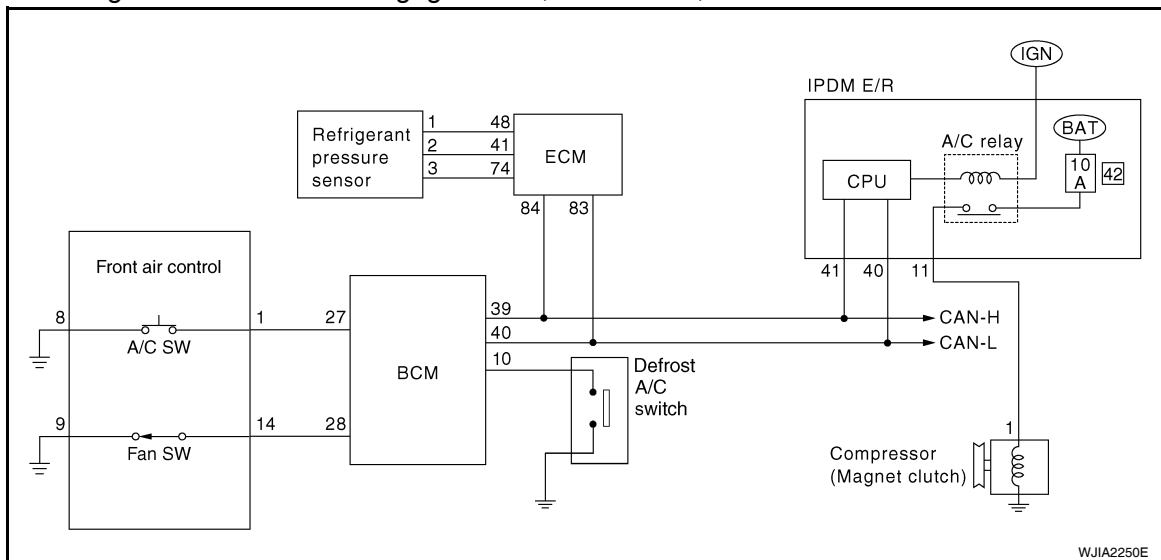
Low Temperature Protection Control

When intake air temperatures are higher than 4°C (39°F), the compressor turns ON. The compressor turns OFF when intake air temperatures are lower than 2°C (36°F).



DIAGNOSTIC PROCEDURE FOR MAGNET CLUTCH

SYMPTOM: Magnet clutch does not engage in A/C, defrost/foot, or defrost mode.



1. PERFORM AUTO ACTIVE TEST

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

Does the magnet clutch operate?

YES >> GO TO 5.

NO >> Check 10A fuse (No. 42, located in the IPDM E/R). Refer to [PG-23. "IPDM E/R Terminal Arrangement - Type B"](#).

- If fuse is OK, GO TO 2.

- If fuse is NG, replace fuse and check harness for short circuit. Repair or replace if necessary.

2. CHECK POWER SUPPLY FOR IPDM E/R

Check power supply to 10A fuse (No. 42 located in the IPDM E/R).

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

:Battery voltage should exist

OK or NG

OK >> GO TO 3.

NG >> Check harness for open circuit. Repair or replace if necessary.

3.CHECK POWER SUPPLY FOR A/C COMPRESSOR

1. Disconnect A/C compressor connector.
2. Start the engine.
3. Turn blower control dial and A/C switch ON.
4. Check voltage between A/C compressor harness connector F3 terminal 1 and ground.

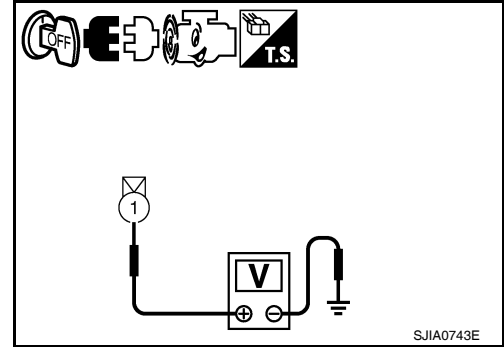
1 - Ground

:Battery voltage

OK or NG

OK >> Replace magnet clutch. Refer to [MTC-78, "Removal and Installation of Compressor - HR16DE"](#) or [MTC-80, "Removal and Installation of Compressor - MR18DE"](#).

NG >> GO TO 4.



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

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between A/C compressor harness connector F3 (A) terminal 1 and IPDM E/R harness connector E43 (B) terminal 11.

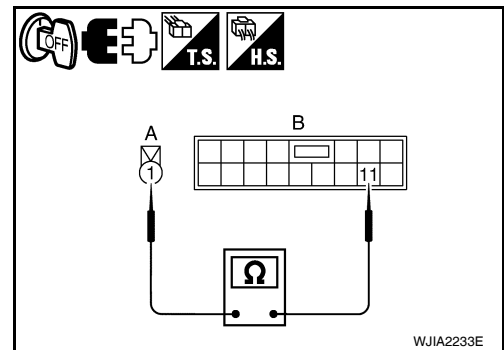
1 - 11

:Continuity should exist

OK or NG

OK >> Replace IPDM E/R. Refer to [PG-27, "Removal and Installation of IPDM E/R"](#).

NG >> Repair harness or connector.



5.CHECK DEFROST A/C SWITCH

1. Start the engine.
2. Turn the mode control dial to  (DEF) position.

Does the magnet clutch operate

OK >> GO TO 6.

NG >> GO TO 23.

6.CHECK BCM INPUT (COMPRESSOR ON) SIGNAL

1. Turn ignition switch OFF.
2. Check compressor ON/OFF signal. Refer to [MTC-22, "CONSULT-II Function \(BCM\)"](#).

A/C SW ON

: AIR COND SW ON

A/C SW OFF

: AIR COND SW OFF

OK or NG

OK >> GO TO 8.

NG >> GO TO 7.

7.CHECK CIRCUIT CONTINUITY BETWEEN FRONT AIR CONTROL AND BCM

TROUBLE DIAGNOSIS

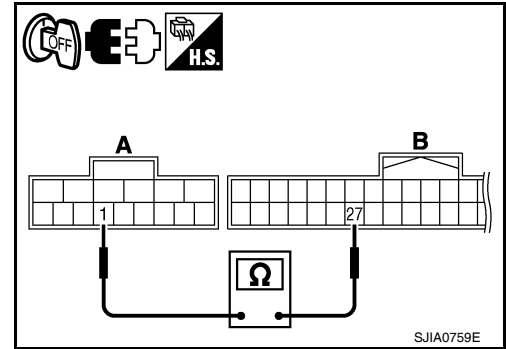
< SERVICE INFORMATION >

1. Turn ignition switch OFF.
2. Disconnect front air control and BCM connector.
3. Check continuity between front air control harness connector M33 (A) terminal 1 and BCM harness connector M18 (B) terminal 27.

1 - 27 : Continuity should exist

OK or NG

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



8. CHECK REFRIGERANT PRESSURE SENSOR

1. Reconnect front air control connector and BCM connector.
2. Check refrigerant pressure sensor. Refer to [EC-1007, "Diagnosis Procedure"](#) (MR type 1), [EC-1529, "Diagnosis Procedure"](#) (MR type 2) or [EC-458, "Diagnosis Procedure"](#) (HR16DE).

OK or NG

- OK >> • WITH CONSULT-III
GO TO 9.
- WITHOUT CONSULT-III
GO TO 10.
- NG >> Replace as necessary.

9. CHECK BCM INPUT (FAN ON) SIGNAL

Check FAN ON/OFF signal. Refer to [MTC-22, "CONSULT-II Function \(BCM\)"](#).

FAN CONTROL DIAL ON : FAN ON SIG ON
FAN CONTROL DIAL OFF : FAN ON SIG OFF

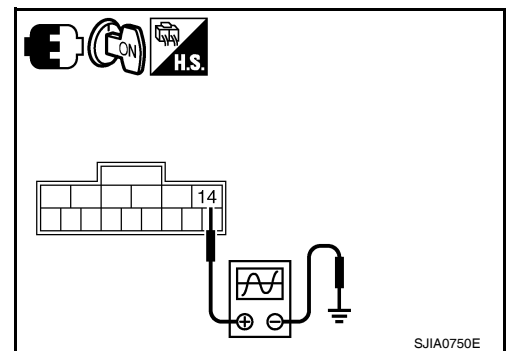
OK or NG

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

10. CHECK BCM INPUT (FAN ON) SIGNAL

1. Turn ignition switch ON.
2. Turn blower control dial to "1" position.
3. Confirm fan on signal between front air control harness connector M33 terminal 14 and ground using oscilloscope.

Terminals		(-)	Voltage (Approx.)
(+) Connector Terminal			
Front air control: M33	14	Ground	<p style="font-size: x-small; text-align: right;">ZJIA0583J</p>



OK or NG

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

11. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND FRONT AIR CONTROL

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

1. Turn ignition switch OFF.
2. Disconnect front air control connector and BCM connector.
3. Check continuity between BCM harness connector M18 (A) terminal 28 and front air control harness connector M33 (B) terminal 14.

A		B		Continuity
Connector	Terminal	Connector	Terminal	
BCM: M18	28	Front air control: M33	14	Yes

OK or NG

OK >> GO TO 12.

NG >> Repair harness or connector.

12. CHECK FAN SWITCH CIRCUIT

1. Turn blower control dial to the OFF position.
2. Check continuity between front air control terminals 9 and 14.

9 - 14 :Continuity should exist

OK or NG

OK >> GO TO 13.

NG >> Replace front air control. Refer to [MTC-56. "Disassembly and Assembly"](#).

13. CHECK FRONT AIR CONTROL GROUND CIRCUIT

Check continuity between front air control harness connector M33 terminal 9 and ground.

9 - Ground :Continuity should exist

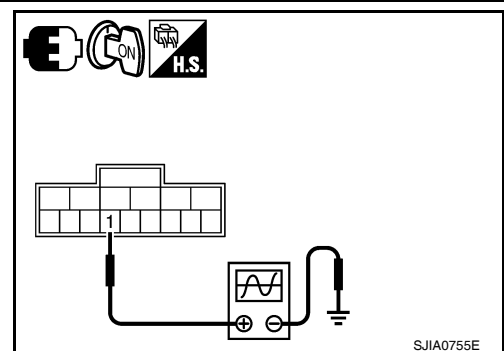
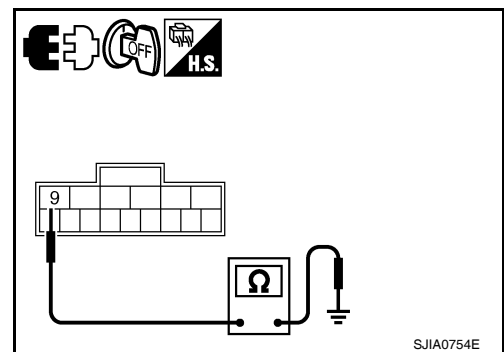
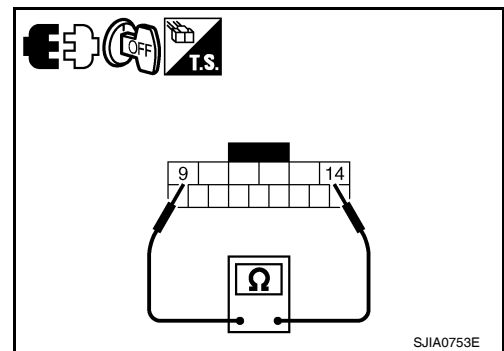
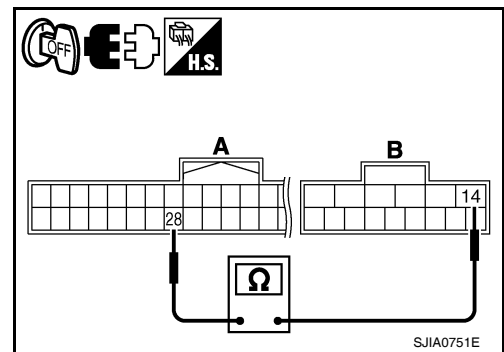
OK or NG

OK >> GO TO 14.

NG >> Repair harness or connector.

14. CHECK BCM INPUT (COMPRESSOR ON) SIGNAL

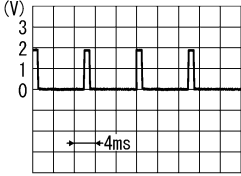
1. Reconnect BCM connector and front air control connectors.
2. Turn ignition switch ON.
3. Turn blower control dial clockwise to position "1".
4. Confirm compressor on signal between front air control harness connector M33 terminal 1 and ground using oscilloscope.



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TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Terminals		(-)	Voltage (Approx.)
(+) Connector			
Connector	Terminal		
Front air control: M33	1	Ground	 <p style="text-align: right; font-size: small;">ZJIA0584J</p>

OK or NG

- OK >> GO TO 15.
 NG >> GO TO 17.

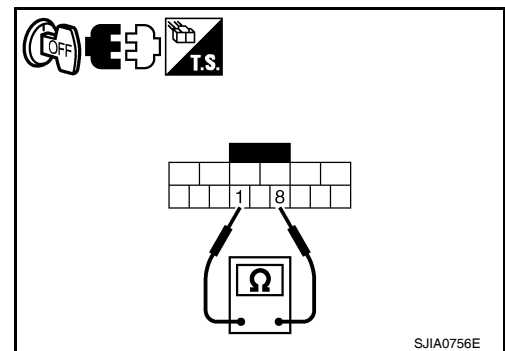
15. CHECK A/C SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect front air control connector.
3. While pressing the A/C switch, check continuity between front air control terminals 1 and 8.

1 - 8 :Continuity should exist

OK or NG

- OK >> GO TO 16.
 NG >> Replace front air control. Refer to [MTC-56, "Disassembly and Assembly"](#).



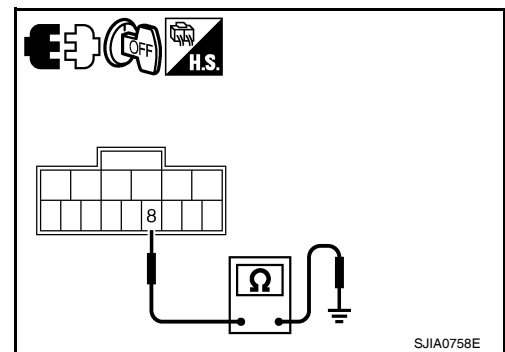
16. CHECK FRONT AIR CONTROL GROUND CIRCUIT

Check continuity between front air control harness connector M33 terminal 8 and ground.

8 - Ground :Continuity should exist

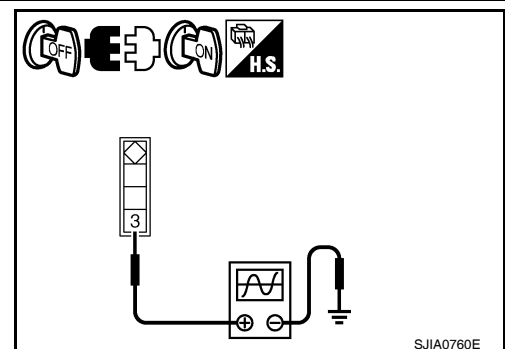
OK or NG

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



17. CHECK POWER SUPPLY FOR THERMO CONTROL AMP.

1. Turn ignition switch OFF.
2. Disconnect thermo control amp. connector.
3. Turn ignition switch ON.
4. Confirm thermo amp signal between thermo control amp. harness connector M42 terminal 3 and ground using oscilloscope.



TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Terminals		(-)	Voltage (Approx.)
(+) Connector Terminal			
Thermo control amp.: M42	3	Ground	<p style="text-align: right; font-size: small;">ZJIA0719J</p>

OK or NG

- OK >> • GO TO 18 (with CVT).
 • GO TO 19 (without CVT).
 NG >> GO TO 21.

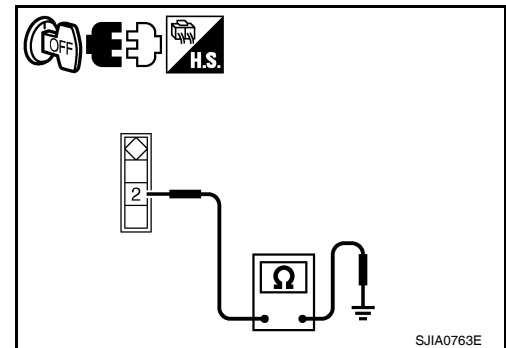
18. CHECK THERMO CONTROL AMP. GROUND CIRCUIT

- Turn ignition switch OFF.
- Check continuity between thermo control amp. harness connector M42 terminal 2 and ground.

2 - Ground :Continuity should exist

OK or NG

- OK >> Repair thermo control amp. jumper as necessary.
 NG >> Repair harness or connector.



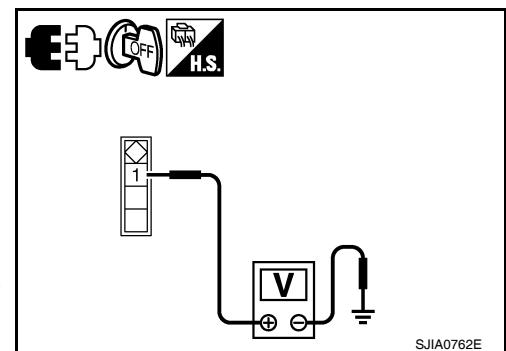
19. CHECK POWER SUPPLY FOR THERMO CONTROL AMP.

Check voltage between thermo control amp. harness connector M42 terminal 1 and ground.

1 - Ground :Battery voltage

OK or NG

- OK >> GO TO 20.
 NG >> Check power supply circuit and 10A fuse [No. 16, located in the fuse block (JB)]. Refer to [PG-72](#).
 • If fuse is OK, check harness for open circuit. Repair or replace if necessary.
 • If fuse is NG, replace fuse and check harness for short circuit. Repair or replace if necessary.



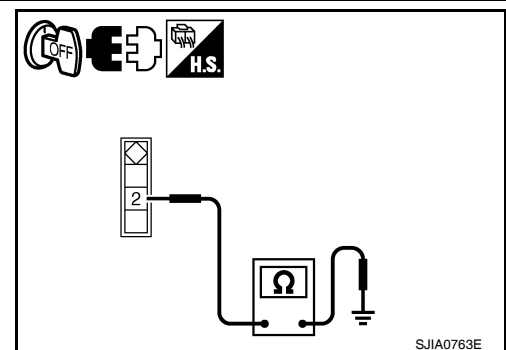
20. CHECK THERMO CONTROL AMP. GROUND CIRCUIT

- Turn ignition switch OFF.
- Check continuity between thermo control amp. harness connector M42 terminal 2 and ground.

2 - Ground :Continuity should exist

OK or NG

- OK >> Replace thermo control amp. Refer to [MTC-57](#), "[Removal and Installation](#)".
 NG >> Repair harness or connector.



21. CHECK CIRCUIT CONTINUITY BETWEEN THERMO CONTROL AMP. AND BCM

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TROUBLE DIAGNOSIS

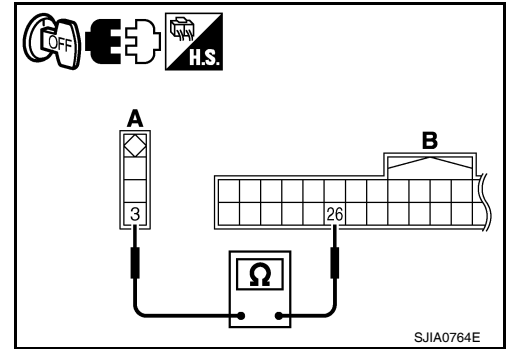
< SERVICE INFORMATION >

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity between thermo control amp. harness connector M42 (A) terminal 3 and BCM harness connector M18 (B) terminal 26.

3 - 26 :Continuity should exist

OK or NG

- OK >> GO TO 22.
NG >> Repair harness or connector.



22. CHECK CAN COMMUNICATION

Check CAN communication. Refer to [LAN-17, "Trouble Diagnosis Flow Chart"](#).

- BCM – ECM
- ECM – IPDM E/R

OK or NG

- OK >> Replace BCM. Refer to [BCS-18, "Removal and Installation of BCM"](#).
NG >> Repair or replace malfunctioning part(s).

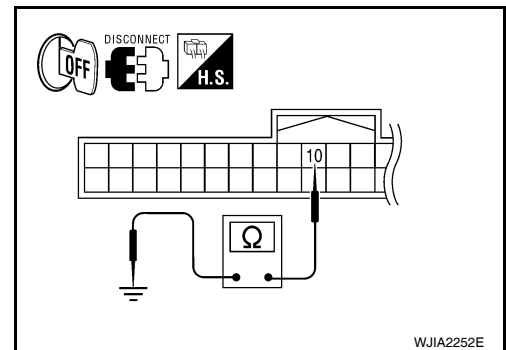
23. CHECK DEFROST A/C SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Press the defrost A/C switch.
NOTE:
The defrost A/C switch is located on back side of the front air control.
4. Check continuity between BCM harness connector M18 terminal 10 and ground.

10 - Ground :Continuity should exist

OK or NG

- OK >> Replace BCM. Refer to [BCS-18, "Removal and Installation of BCM"](#).
NG >> GO TO 24.



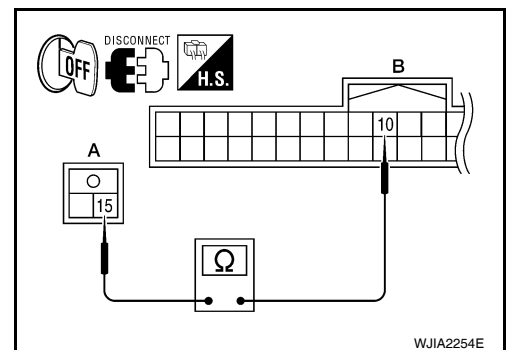
24. CHECK CIRCUIT CONTINUITY BETWEEN DEFROST A/C SWITCH AND BCM

1. Disconnect defrost A/C switch connector.
2. Check continuity between BCM harness connector M18 (B) terminal 10 and defrost A/C switch harness connector M41 (A) terminal 15.

10 - 15 :Continuity should exist

OK or NG

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



25. CHECK CIRCUIT CONTINUITY BETWEEN DEFROST A/C SWITCH AND GROUND

TROUBLE DIAGNOSIS

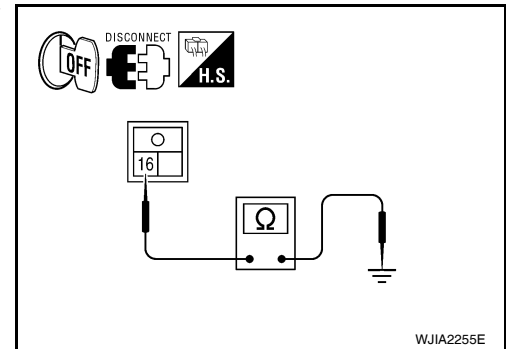
< SERVICE INFORMATION >

Check continuity between A/C defrost switch harness connector M41 terminal 16 and ground.

16 - Ground :Continuity should exist

OK or NG

- OK >> Replace defrost A/C switch.
- NG >> Repair harness or connector.



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Insufficient Cooling

SYMPTOM: Insufficient cooling

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATIONAL CHECK - TEMPERATURE DECREASE

1. Turn temperature control dial counterclockwise to maximum cold position.
2. Check for cold air at discharge air outlets.

Can the symptom be duplicated?

- YES >> GO TO 3.
- NO >> GO TO 2.

2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check for any symptoms. Refer to [MTC-30, "Operational Check"](#).

Does another symptom exist?

- YES >> Refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).
- NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

4. CHECK COMPRESSOR DRIVE BELT TENSION

Check compressor belt tension. Refer to [EM-14, "Checking"](#) (HR16DE) or [EM-136, "Checking Drive Belts"](#) (MR18DE).

OK or NG

- OK >> GO TO 5.
- NG >> Adjust or replace compressor belt. Refer to [EM-15, "Removal and Installation"](#) (HR16DE) or [EM-136, "Removal and Installation"](#) (MR18DE).

5. CHECK AIR MIX DOOR CABLE

Check and verify air mix door cable operation. Refer to [MTC-64, "Air Mix Door Cable Adjustment"](#).

Does air mix door operate correctly?

- YES >> GO TO 6.
- NO >> Repair or replace as necessary.

6. CHECK COOLING FAN MOTOR OPERATION

Check and verify cooling fan motor for smooth operation. Refer to [EC-887, "Overall Function Check"](#) (MR TYPE 1), [EC-1409, "Overall Function Check"](#) (MR TYPE 2) or [EC-368, "Component Function Check"](#) (HR16DE).

Does cooling fan motor operate correctly?

- YES >> GO TO 7.
- NO >> Check cooling fan motor. Refer to [EC-890, "Diagnosis Procedure"](#) (MR TYPE 1), [EC-1412, "Diagnosis Procedure"](#) (MR TYPE 2) or [EC-368, "Component Function Check"](#) (HR16DE).

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TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

7.CHECK FOR EVAPORATOR FREEZE UP

Start engine and run A/C. Check for evaporator freeze up.

Does evaporator freeze up?

YES >> Perform diagnostic work flow. Refer to "DIAGNOSTIC WORK FLOW".

NO >> GO TO 8.

8.CHECK REFRIGERANT PRESSURE

Check refrigerant pressure with manifold gauge connected. Refer to "PERFORMANCE CHART".

OK or NG

OK >> GO TO 9.

NG >> Perform diagnostic work flow. Refer to "DIAGNOSTIC WORK FLOW".

9.CHECK AIR DUCTS

Check ducts for air leaks.

OK or NG

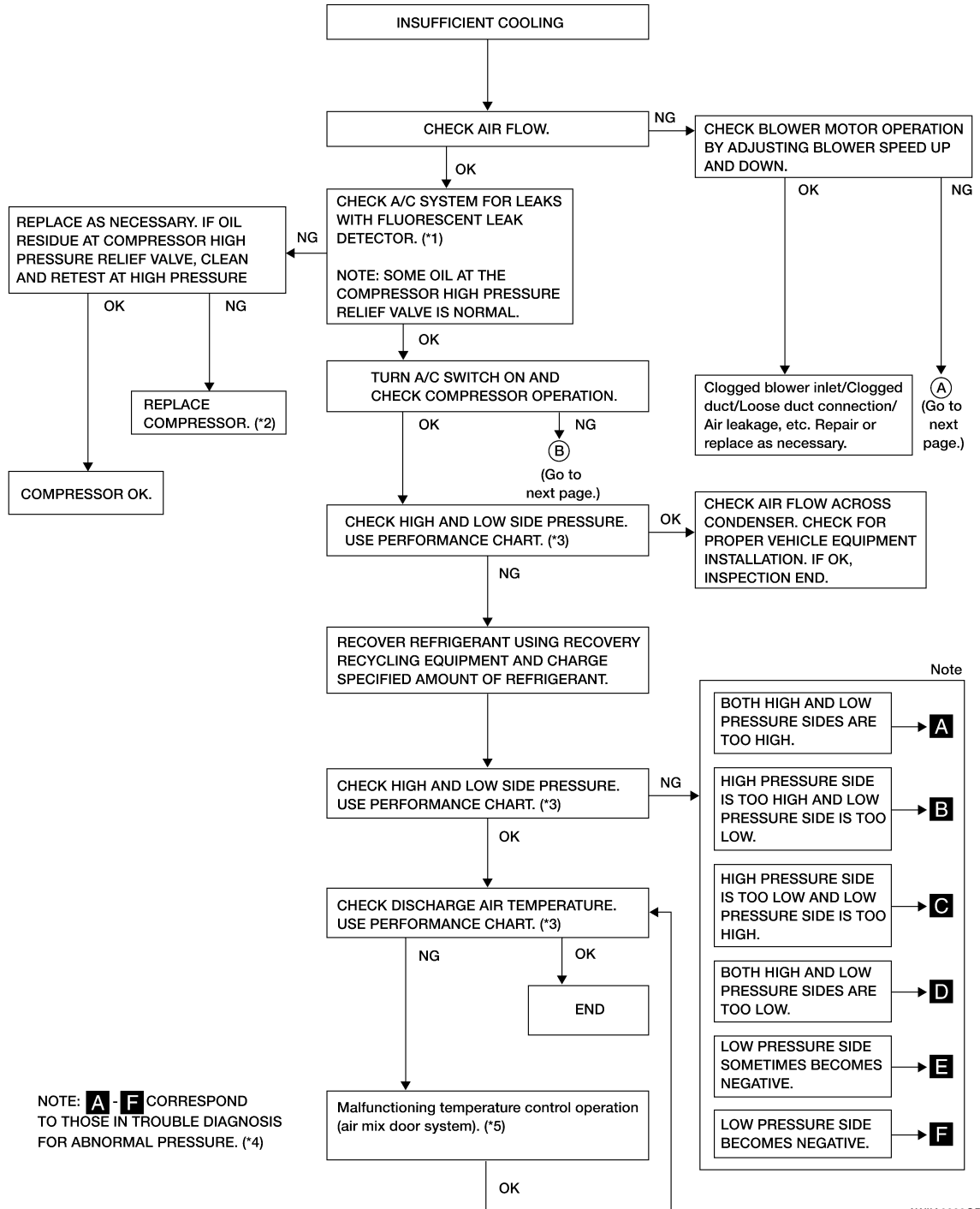
OK >> If the symptom still exists, perform a complete operational check. Refer to [MTC-30, "Operational Check"](#). If other symptoms exist, refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

NG >> Repair air leaks.

DIAGNOSTIC WORK FLOW

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >



NOTE: **A - F** CORRESPOND TO THOSE IN TROUBLE DIAGNOSIS FOR ABNORMAL PRESSURE. (*4)

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*1 [MTC-87. "Checking System for Leaks Using the Fluorescent Leak Detector"](#)

*4 "TROUBLE DIAGNOSIS FOR ABNORMAL PRESSURE"

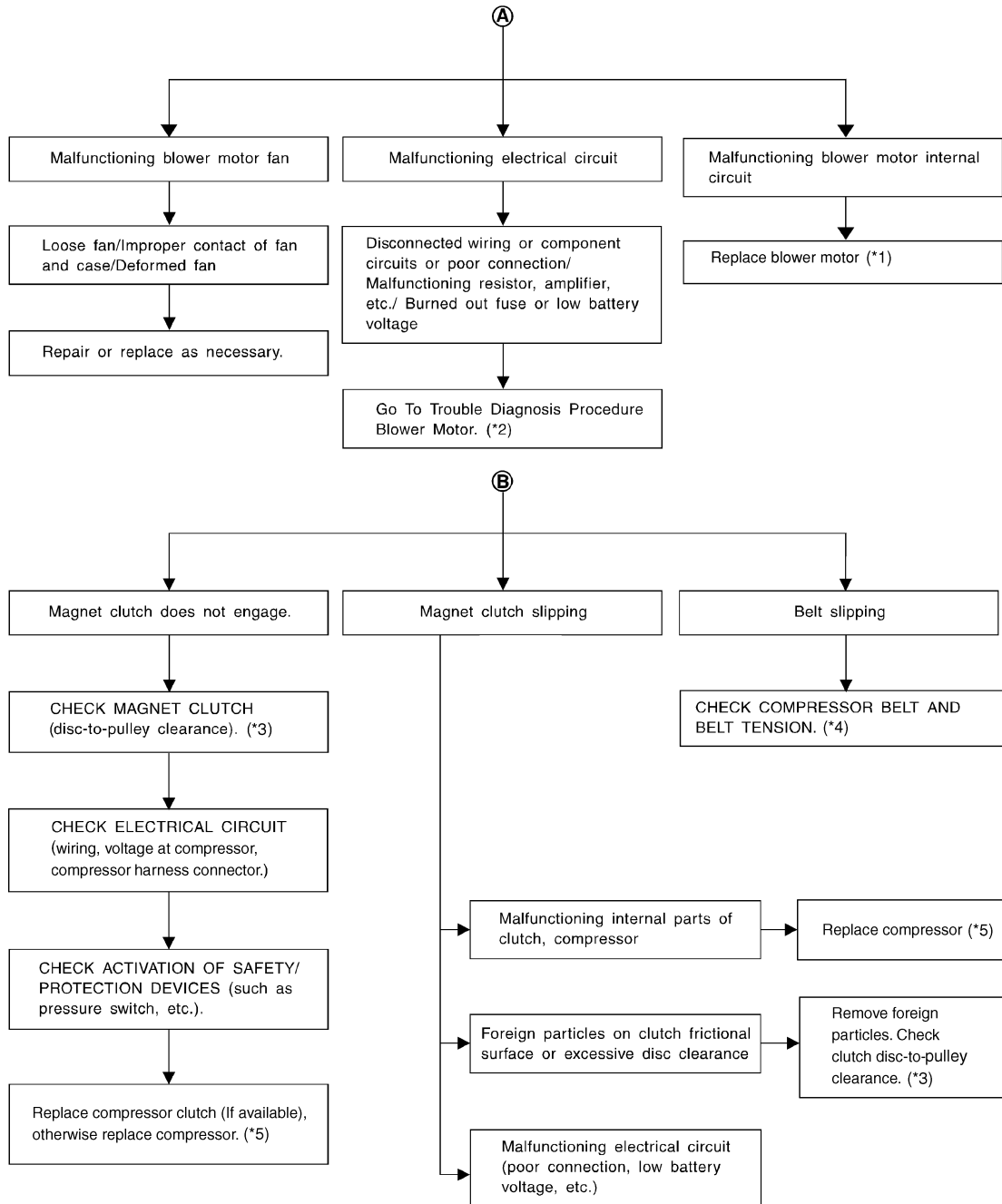
*2 [MTC-78. "Removal and Installation of Compressor - HR16DE"](#) or [MTC-80. "Removal and Installation of Compressor - MR18DE"](#)

*5 [MTC-32. "Air Mix Door"](#)

*3 "PERFORMANCE CHART"

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >



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- *1 [MTC-62, "Removal and Installation"](#) *2 [MTC-33, "Front Blower Motor Circuit"](#) *3 [MTC-78, "Removal and Installation of Compressor - HR16DE"](#) or [MTC-80, "Removal and Installation of Compressor - MR18DE"](#)
- *4 [EM-14, "Checking"](#) (HR16DE) [EM-136, "Checking Drive Belts"](#) (MR18DE) *5 [MTC-78, "Removal and Installation of Compressor - HR16DE"](#) or [MTC-80, "Removal and Installation of Compressor - MR18DE"](#)

PERFORMANCE CHART

Test Condition

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Testing must be performed as follows:

Vehicle condition	Indoors or in the shade (in a well-ventilated place)
Doors	Closed
Door window	Open
Hood	Open
TEMP.	Max. COLD
Mode control dial	■ (Ventilation) set
Intake door lever	■ (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)	7.2 - 9.1 (45 - 48)
	25 (77)	11.4 - 13.8 (53 - 57)
	30 (86)	15.5 - 18.4 (60 - 65)
	35 (95)	20.3 - 23.7 (69 - 75)
60 - 70	20 (68)	9.1 - 10.9 (48 - 52)
	25 (77)	13.8 - 16.2 (57 - 61)
	30 (86)	18.4 - 21.3 (65 - 70)
	35 (95)	23.7 - 27.1 (75 - 81)

Ambient Air Temperature-to-operating Pressure Table

Ambient air		High-pressure (Discharge side) kPa (bar, kg/cm ² , psi)	Low-pressure (Suction side) kPa (bar, kg/cm ² , psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	20 (68)	843 - 1,036 *1 (11.08 - 13.63, 8.6 - 10.6, 122 - 150)	159.0 - 194.0 (1.59 - 1.94, 1.62 - 1.98, 23.1 - 28.1)
	25 (77)	1,094 - 1,338 *1 (10.94 - 13.38, 11.2 - 13.6, 159 - 194)	196.3 - 240.0 (1.96 - 2.40, 2.00 - 2.45, 28.5 - 34.8)
	30 (86)	1,298 - 1,590 *1 (12.98 - 15.90, 13.2 - 16.2, 188 - 231)	248.0 - 302.7 (2.48 - 3.03, 2.53 - 3.09, 36.0 - 43.9)
	35 (95)	1,383 - 1,688 *2 (13.83 - 16.88, 14.1 - 17.2, 201 - 245)	308.8 - 377.4 (3.09 - 3.77, 3.15 - 3.85, 44.8 - 54.7)
	40 (104)	1,628 - 1,988 *2 (16.28 - 19.88, 16.6 - 20.3, 236 - 288)	377.4 - 461.2 (3.77 - 4.61, 3.85 - 4.70, 54.7 - 66.8)

*1: With blower control dial in the "1" position

*2: With blower control dial in the "4" position.

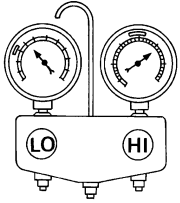
TROUBLE DIAGNOSIS FOR ABNORMAL PRESSURE

Whenever system's high and/or low side pressure(s) is/are abnormal, 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).

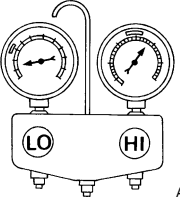
TROUBLE DIAGNOSIS

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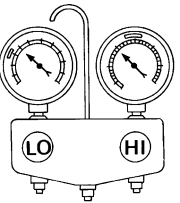
Both High- and Low-pressure Sides are Too High

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Both high- and low-pressure sides are too high.</p>  <p style="text-align: right; font-size: small;">AC359A</p>	Pressure is reduced soon after water is splashed on condenser.	Excessive refrigerant charge in refrigeration cycle.	Reduce refrigerant until specified pressure is obtained.
	Air suction by cooling fan is insufficient.	Insufficient condenser cooling performance. ↓ 1. Condenser fins are clogged. 2. Improper fan rotation of cooling fan.	<ul style="list-style-type: none"> 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 (1.96 bar, 2 kg/cm², 28 psi). It then decreases gradually thereafter. 	Poor heat exchange in condenser (After compressor operation stops, high-pressure decreases too slowly). ↓ Air in refrigeration cycle.	Evacuate repeatedly and recharge system.
	Engine tends to overheat.	Engine cooling systems malfunction.	Check and repair each engine cooling system.
	<ul style="list-style-type: none"> 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. ↓ Improper expansion valve adjustment.	Replace expansion valve.

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

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

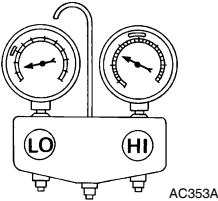
High-pressure Side is Too Low and Low-pressure Side is Too High

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>High-pressure side is too low and low-pressure side is too high.</p>  <p style="text-align: right; font-size: small;">AC356A</p>	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.

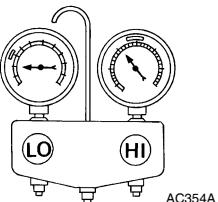
TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Both High- and Low-pressure Sides are Too Low

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
 <p>Both high- and low-pressure sides are too low.</p>	<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 for leaks. Refer to MTC-86. "Checking of 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. Replace expansion valve. 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 not enough or is too low.	Evaporator is frozen.	<ul style="list-style-type: none"> Check thermo control amp. Refer to MTC-37. "Magnet Clutch Circuit (If Equipped)" . Replace compressor. Repair evaporator fins. Replace evaporator. Refer to MTC-33. "Front Blower Motor Circuit" .

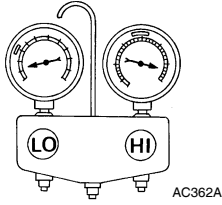
Low-pressure Side Sometimes Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
 <p>Low-pressure side sometimes becomes negative.</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. 	Refrigerant does not discharge cyclically. ↓ Moisture is frozen at expansion valve outlet and inlet. ↓ Water is mixed with refrigerant.	<ul style="list-style-type: none"> Drain water from refrigerant or replace refrigerant. Replace liquid tank.

Low-pressure Side Becomes Negative

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>■ Low-pressure side becomes negative.</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. ↓ 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.

Insufficient Heating

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SYMPTOM: Insufficient heating

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATIONAL CHECK - TEMPERATURE INCREASE

1. Turn temperature control dial clockwise to maximum heat position.
2. Check for hot air at discharge air outlets.

Can the symptom be duplicated?

- YES >> GO TO 3.
NO >> GO TO 2.

2. CHECK FOR ANY SYMPTOMS

Perform a complete operational check for any symptoms. Refer to [MTC-30, "Operational Check"](#).

Does another symptom exist?

- YES >> Refer to [MTC-22, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

4. CHECK COOLANT SYSTEM

1. Check engine coolant level. Refer to [CO-11, "Inspection"](#) (HR16DE) or [CO-35, "Inspection"](#) (MR18DE).
2. Check hoses for leaks or kinks.
3. Check Radiator cap. Refer to [CO-14, "Checking Radiator Cap"](#) HR16DE or [CO-40, "Checking Radiator Cap"](#) (MR18DE).

OK or NG

- OK >> GO TO 5.
NG >> Repair/replace as necessary.

5. CHECK AIR MIX DOOR CABLE

Check air mix door cable operation. Refer to [MTC-64, "Air Mix Door Cable Adjustment"](#).

OK or NG

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

YES >> GO TO 6.

NO >> Adjust or replace air mix door cable. Refer to [MTC-64, "Air Mix Door Cable Adjustment"](#) .

6.CHECK AIR DUCTS

Check ducts for air leaks.

OK or NG

OK >> GO TO 7.

NG >> Repair air leaks.

7.CHECK HEATER HOSE TEMPERATURES

1. Start engine and warm it up to normal operating temperature.
2. Touch both the inlet and outlet heater hoses.

Is the inlet hose hot and the outlet hose warm?

YES >> GO TO 8.

NO >> Both hoses warm: GO TO 9.

8.CHECK ENGINE COOLANT TEMPERATURE SENSOR

Check engine control temperature sensor. Refer to [EC-678, "Component Inspection"](#) (MR TYPE 1), [EC-1196, "Component Inspection"](#) (MR TYPE 2) or [EC-169, "Component Inspection"](#) (HR16DE).

OK or NG

OK >> System OK.

NG >> Repair or replace as necessary. Retest.

9.CHECK HEATER HOSES

Check heater hoses for proper installation.

OK or NG

OK >> GO TO 10.

NG >> Repair /replace as necessary. Retest GO TO 7.

10.BACK FLUSH HEATER CORE

1. Back flush heater core.
2. Drain the water from the system.
3. Refill system with new engine coolant. Refer to [CO-11, "Changing Engine Coolant"](#) (HR16DE) or [CO-35, "Changing Engine Coolant"](#) (MR18DE) .
4. Start engine and warm it up to normal operating temperature.
5. Touch both the inlet and outlet heater hoses.

Is the inlet hose hot and the outlet hose warm?

YES >> System OK.

NO >> Replace heater core and refill engine coolant. Refer to [MTC-67, "Removal and Installation"](#) .

Noise

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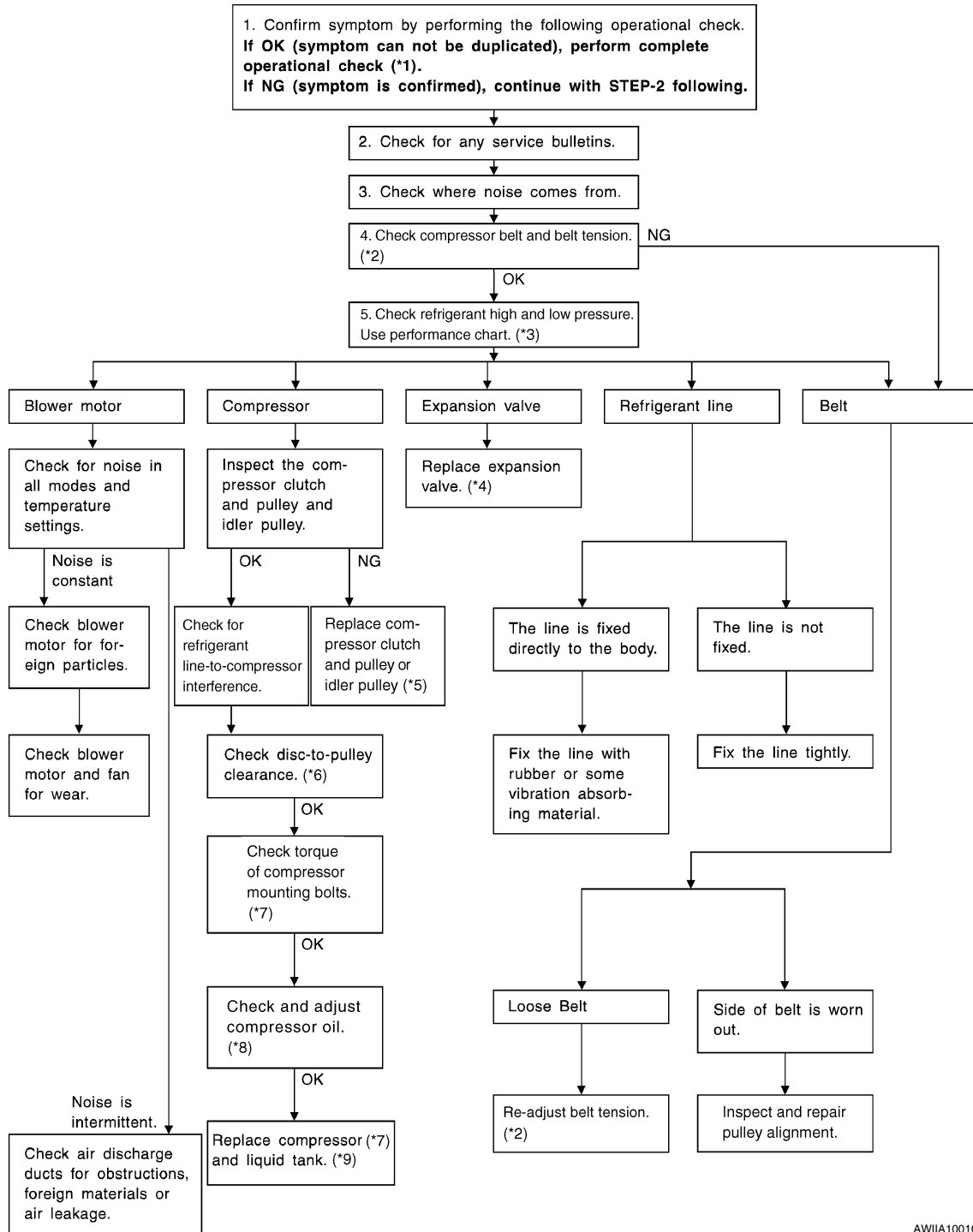
SYMPTOM: Noise

INSPECTION FLOW

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*1. [MTC-30, "Operational Check"](#)

*2. [EM-14, "Checking"](#) (HR16DE) or [EM-136, "Checking Drive Belts"](#) (MR18DE)

*3. [MTC-45, "Insufficient Cooling"](#)

*4. [MTC-86, "Removal and Installation of Expansion Valve"](#)

*5. [MTC-78, "Removal and Installation of Compressor - HR16DE"](#) or [MTC-80, "Removal and Installation of Compressor - MR18DE"](#)

*6. [MTC-78, "Removal and Installation of Compressor - HR16DE"](#) or [MTC-80, "Removal and Installation of Compressor - MR18DE"](#)

*7. [MTC-78, "Removal and Installation of Compressor - HR16DE"](#) or [MTC-80, "Removal and Installation of Compressor - MR18DE"](#)

*8. [MTC-17, "Maintenance of Oil Quantity in Compressor"](#)

*9. [MTC-84, "Removal and Installation of Liquid Tank"](#)

CONTROLLER

< SERVICE INFORMATION >

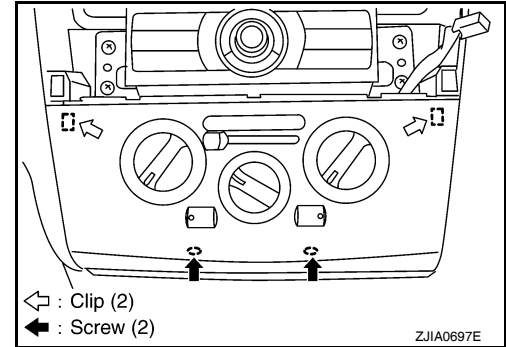
CONTROLLER

Removal and Installation

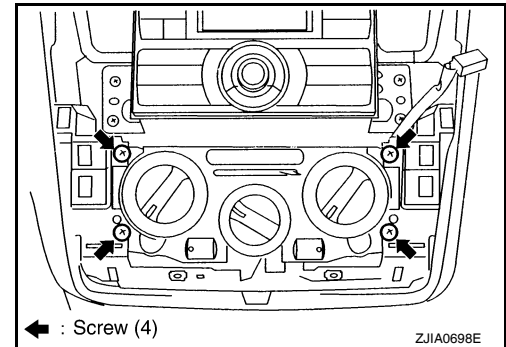
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REMOVAL

1. Remove cluster lid C and instrument finisher D. Refer to [IP-11, "Component Parts"](#) .
2. Remove intake door lever knob. Refer to [MTC-56, "Disassembly and Assembly"](#) .
3. Remove mounting screws and clips, and then remove controller finisher.



4. Remove mounting screws, and then pull out controller.



5. Remove instrument panel and pad. Refer to [IP-11, "Component Parts"](#) .
6. Remove air mix door cable, mode door cable and intake door cable from A/C unit assembly.
7. Disconnect connector, and then remove controller.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

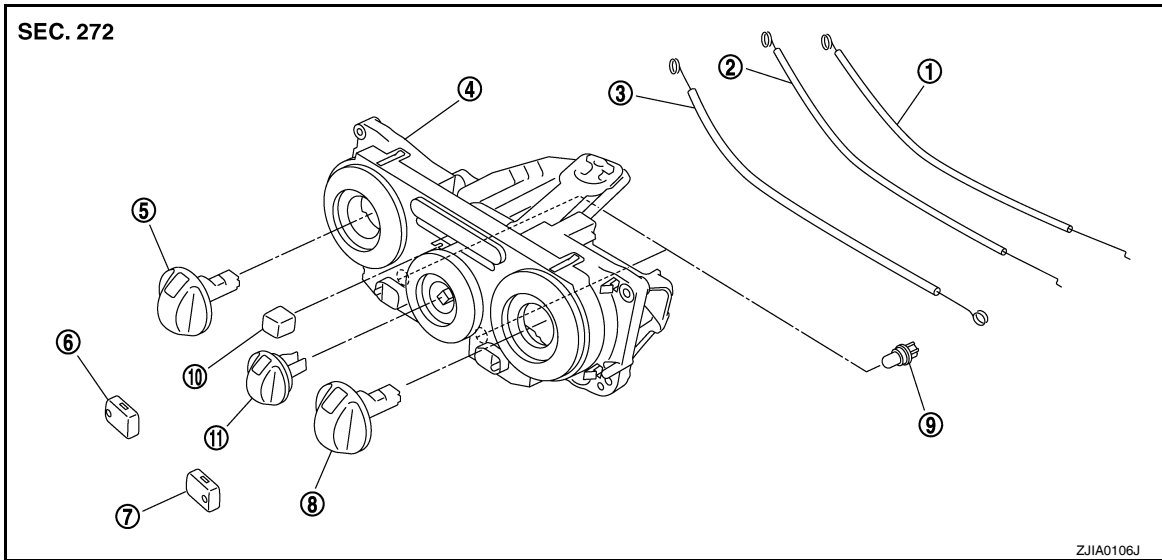
Adjust the door cables during installation. Refer to [MTC-63, "Intake Door Cable Adjustment"](#) , [MTC-65, "Mode Door Cable Adjustment"](#) and [MTC-64, "Air Mix Door Cable Adjustment"](#) .

CONTROLLER

< SERVICE INFORMATION >

Disassembly and Assembly

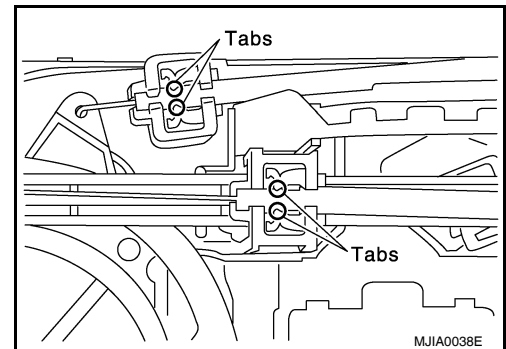
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|----------------------------|-----------------------------|----------------------|
| 1. Air mix door cable | 2. Intake door cable | 3. Mode door cable |
| 4. A/C controller assembly | 5. Mode control dial | 6. Rear DEF button |
| 7. A/C button | 8. Temperature control dial | 9. Illumination bulb |
| 10. Intake door lever knob | 11. Fan control dial | |

CAUTION:

Install inner cable of each door cable to the corresponding lever, as shown in the figure. Press outer cable until it hooks on the tabs and becomes secure.



THERMO CONTROL AMPLIFIER

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THERMO CONTROL AMPLIFIER

Removal and Installation

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NOTE:

Only MR18DE - TYPE 2 systems are equipped with a thermo control amplifier.

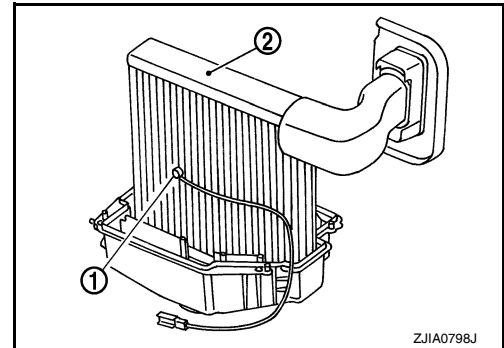
REMOVAL

1. Remove evaporator. Refer to [MTC-85, "Removal and Installation of Evaporator"](#) .

CAUTION:

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

2. Mark the mounting position of the thermo control amp. and then remove thermo control amp. (1) from evaporator (2).



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings for A/C piping with new ones, and apply compressor oil when installing.
- Install the thermo control amp. at the mark made during removal of the thermo control amp.
- When recharging refrigerant, check for leaks.

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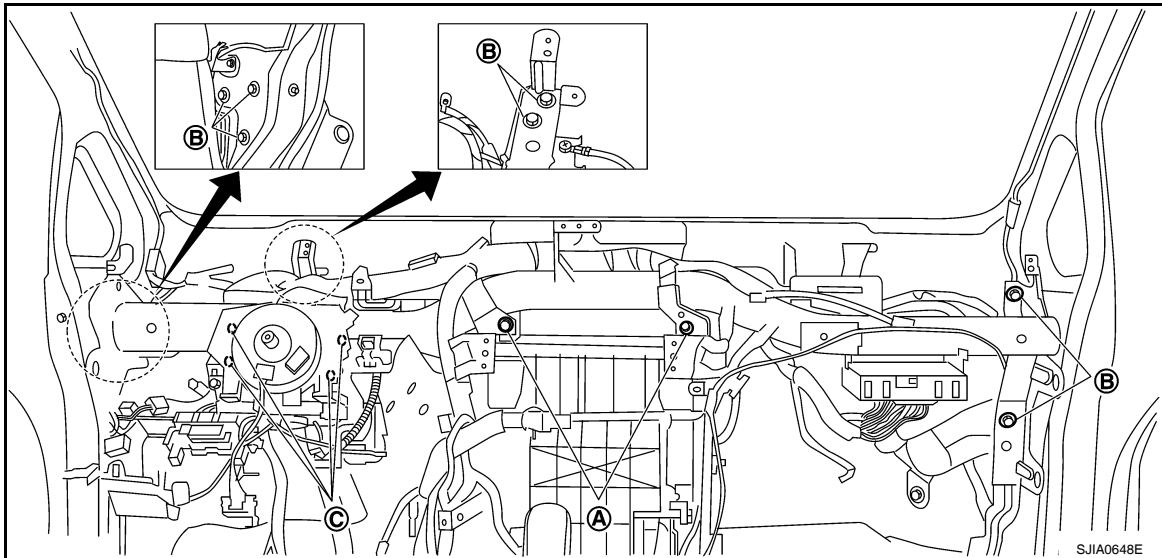
A/C UNIT ASSEMBLY

< SERVICE INFORMATION >

A/C UNIT ASSEMBLY

Removal and Installation

INFOID:000000004307079



A. A/C unit assembly bolts

B. Steering member bolts

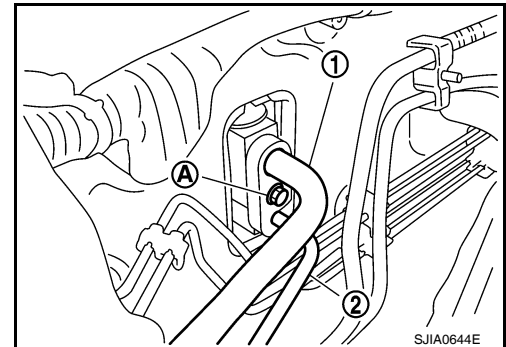
C. Steering column nuts

REMOVAL

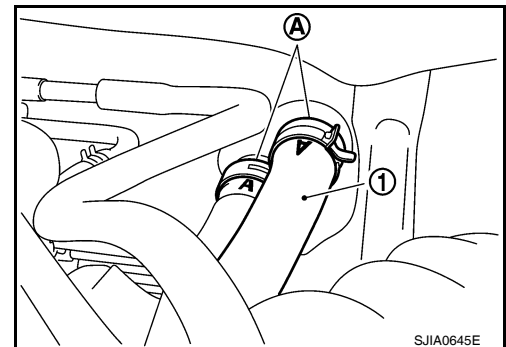
1. Use a recovery/recycling equipment (for HFC-134a) to discharge refrigerant.
2. Drain coolant from cooling system. Refer to [CO-35, "Changing Engine Coolant"](#).
3. Remove cowl top cover. Refer to [EI-22, "Removal and Installation"](#).
4. Remove upper clip and position the lower dash insulator aside.
5. Remove bolt (A), and then disconnect low-pressure flexible hose (1) and high-pressure pipe (2) from evaporator.

CAUTION:

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



6. Remove clamps (A), and then disconnect heater hoses (1) from heater core.

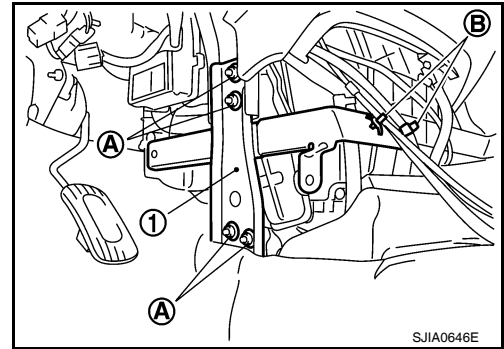


7. Remove console box assembly. Refer to [IP-11, "Component Parts"](#).

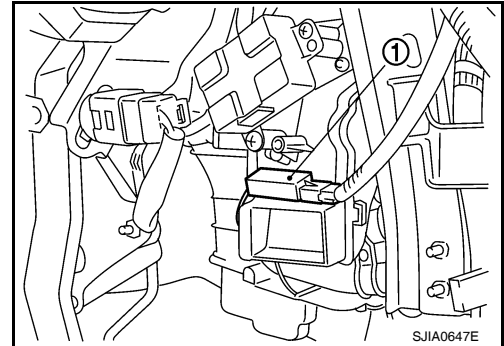
A/C UNIT ASSEMBLY

< SERVICE INFORMATION >

8. Remove instrument stay nuts (A) and harness clamps (B), and then remove instrument stay (1).



9. Disconnect thermo control amp. connector (1) for MR18DE - TYPE 2 systems as shown. Disconnect the thermo control amp. short connector for MR18DE - TYPE 1 and HR16DE systems.



10. Remove instrument panel and pad. Refer to [IP-11, "Component Parts"](#).
11. Remove side ventilator ducts. Refer to [MTC-69, "Removal and Installation"](#).
12. Remove center ventilator ducts. Refer to [MTC-69, "Removal and Installation"](#).
13. Remove side kicking plates. Refer to [EI-39, "Component"](#).
14. Disconnect the fuel filler door cable and the rear hatch door cable.
15. Remove A/C unit assembly bolts, steering member bolts, steering column nuts and harness clips.
16. Remove steering member, and then remove A/C unit assembly.

INSTALLATION

Installation is in the reverse order of removal.

- When filling radiator with coolant, refer to [CO-35, "Changing Engine Coolant"](#).
- Recharge the refrigerant.

A/C unit assembly bolt	: 6.9 N·m (0.7 kg-m, 61 in-lb)
Steering member bolt	: 12 N·m (1.25 kg-m, 9 ft-lb)
Steering column nut	: Refer to PS-9, "Removal and Installation".

CAUTION:

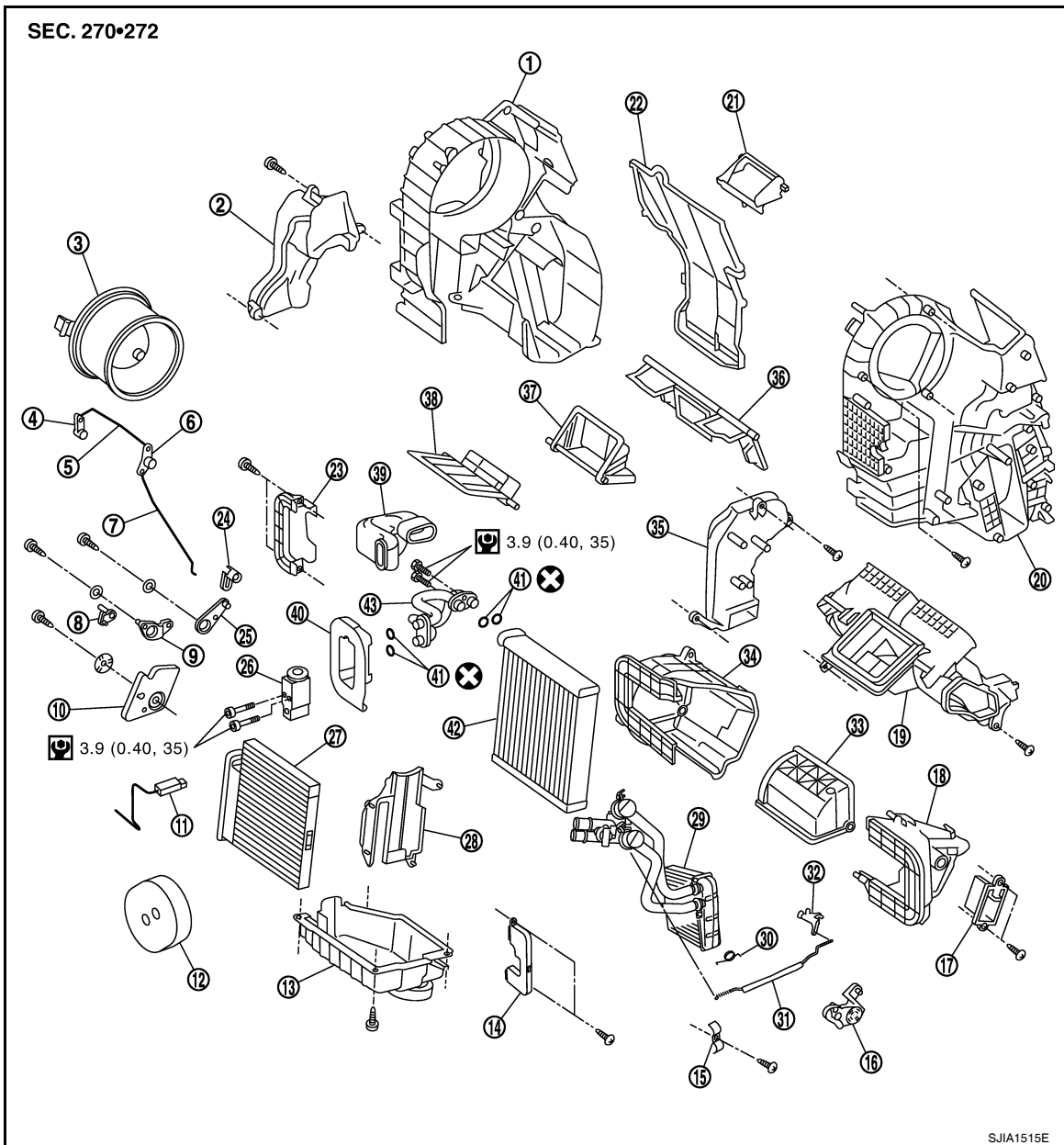
- Replace O-rings for A/C piping with new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks.

A/C UNIT ASSEMBLY

< SERVICE INFORMATION >

Disassembly and Assembly

INFOID:000000004307080



- | | | |
|--|--|------------------------------------|
| 1. Blower case (right) | 2. Foot duct (right) | 3. Blower motor |
| 4. Sub ventilator-defroster door lever | 5. Sub ventilator-defroster door rod | 6. Ventilator-defroster door lever |
| 7. Ventilator-defroster door rod | 8. Intake door lever | 9. Ventilator-defroster door link |
| 10. Main link | 11. Thermo control amp. (MR18DE - TYPE1) | 12. Heater pipe packing |
| 13. Lower blower case | 14. Heater pipe cover | 15. Heater pipe clip |
| 16. Intake door link | 17. Blower fan resistor | 18. Intake case (left) |
| 19. Center defroster duct | 20. Blower case (left) | 21. Cover |
| 22. Cover | 23. Expansion valve cover | 24. Foot door lever |
| 25. Foot door link | 26. Expansion valve | 27. Air conditioner filter |
| 28. Evaporator cover | 29. Heater core | 30. Spring |
| 31. Water valve rod | 32. Air mix door lever | 33. Intake door |
| 34. Intake case (right) | 35. Foot duct (left) | 36. Ventilator-defroster door |
| 37. Foot door | 38. Air mix door | 39. Seal |

MTC-60

A/C UNIT ASSEMBLY

< SERVICE INFORMATION >

40. Expansion valve grommet

41. O-ring

42. Evaporator

43. Cooler pipe assembly

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BLOWER MOTOR

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BLOWER MOTOR

Removal and Installation

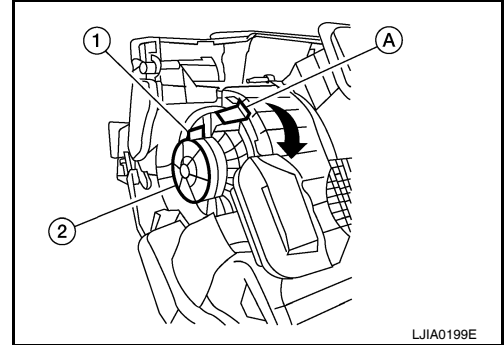
INFOID:000000004307081

REMOVAL

1. Remove instrument panel and pad. Refer to [IP-11, "Component Parts"](#).
2. Remove side ventilator duct (right). Refer to [MTC-69, "Removal and Installation"](#).
3. Disconnect blower motor connector (1).
4. Push the flange holding hook (A) toward the blower motor (2), then rotate the blower motor (2) clockwise and remove it from the A/C unit assembly.

CAUTION:

When blower fan and blower motor are assembled, the balance is adjusted, do not disassemble to replace the individual parts.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Rotate the blower motor until the blower motor flange holding hook locks securely into the A/C unit assembly.

INTAKE DOOR

< SERVICE INFORMATION >

INTAKE DOOR

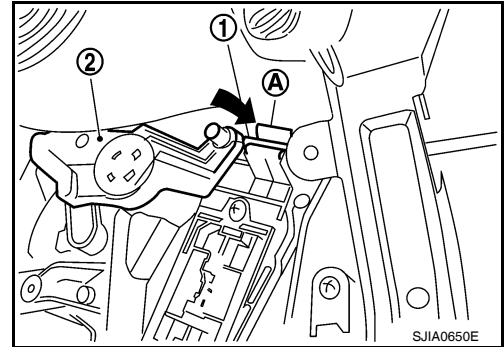
Intake Door Cable Adjustment

INFOID:000000004307082

1. Remove instrument lower finisher. Refer to [IP-11](#).
2. Remove outer cable of intake door cable (1) from clamp (A).
3. Set intake door lever to REC position.
4. Push intake door link (2) in the direction shown by the arrow, and then carefully pull outer cable to controller side, and install clamp (A).
5. Operate intake door lever to insure that inner cable moves smoothly.

CAUTION:

When clamping the outer cable, do not move the inner cable.



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AIR MIX DOOR

< SERVICE INFORMATION >

AIR MIX DOOR

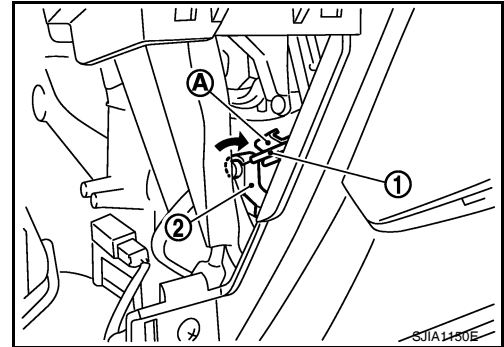
Air Mix Door Cable Adjustment

INFOID:000000004307083

1. Remove steering member. Refer to [MTC-58](#).
2. Remove outer cable of air mix door cable (1) from clamp (A).
3. Set temperature control dial to full cold position.
4. Push air mix door lever (2) in the direction shown by arrow, and then carefully pull outer cable toward controller side, and install clamp (A).
5. Operate temperature control dial to insure that inner cable moves smoothly.

CAUTION:

When clamping the outer cable, do not move the inner cable.



MODE DOOR

< SERVICE INFORMATION >

MODE DOOR

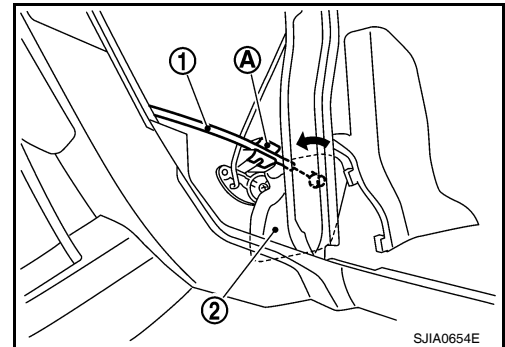
Mode Door Cable Adjustment

INFOID:000000004307084

1. Remove glove box assembly and instrument lower cover (RH). Refer to [IP-11](#).
2. Remove outer cable of mode door cable (1) from clamp (A).
3. Set mode control dial to VENT position.
4. Push main link (2) in the direction shown by the arrow, and then carefully pull outer cable to controller side, and install clamp (A).
5. Operate mode control dial to insure that inner cable moves smoothly.

CAUTION:

When clamping the outer cable, do not move the inner cable.



6. Turn mode control dial to each position.
7. Confirm that discharge air comes out according to the air distribution table. Refer to [MTC-20, "Discharge Air Flow"](#).

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BLOWER FAN RESISTOR

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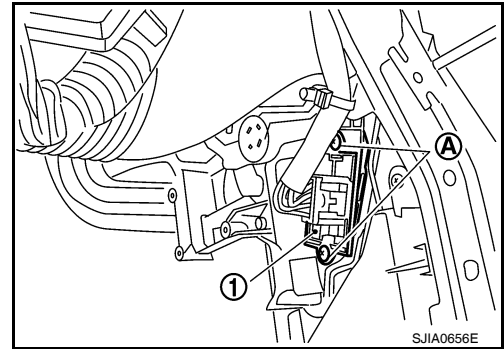
BLOWER FAN RESISTOR

Removal and Installation

INFOID:000000004307085

REMOVAL

1. Remove the instrument lower finisher. Refer to [IP-11](#).
2. Remove the console side cover. Refer to [IP-11](#).
3. Remove the brake pedal assembly. Refer to [BR-6](#).
4. Disconnect the blower fan resistor connector.
5. Remove the blower fan resistor screws (A), then remove the blower fan resistor (1).



INSTALLATION

Installation is in the reverse order of removal.

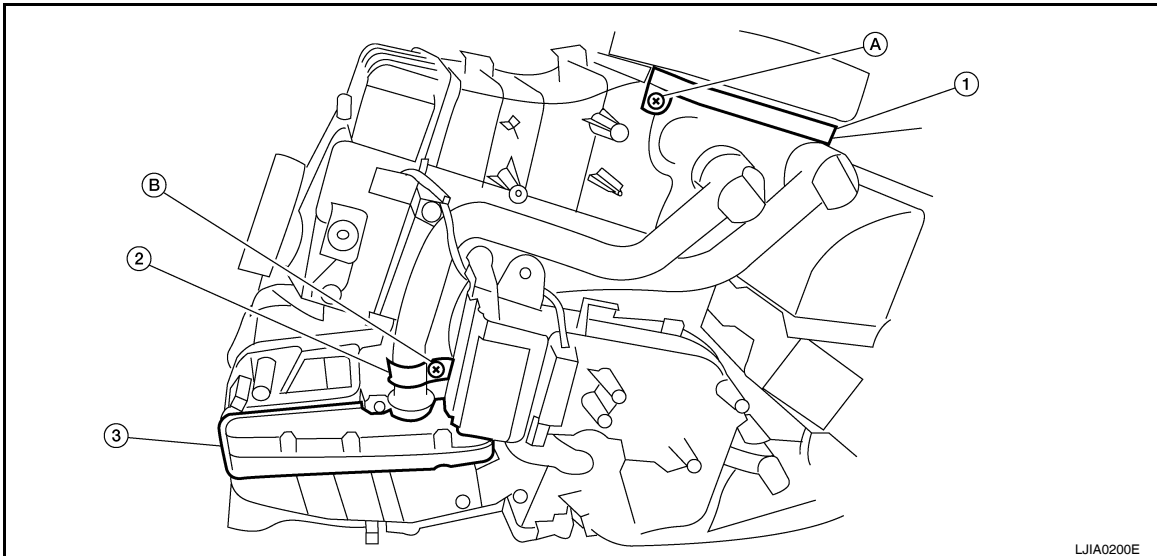
HEATER CORE

< SERVICE INFORMATION >

HEATER CORE

Removal and Installation

INFOID:00000004307086



- | | | |
|----------------------------|---------------------------|----------------|
| 1. Heater pipe cover | 2. Heater pipe clip | 3. Heater core |
| A. Heater pipe cover screw | B. Heater pipe clip screw | |

REMOVAL

1. Remove the A/C unit assembly. Refer to [MTC-58. "Removal and Installation"](#).
2. Remove the foot duct (left). Refer to [MTC-69. "Removal and Installation"](#).
3. Remove the heater pipe cover screw, then remove the heater pipe cover.
4. Remove the heater pipe clip screw, then remove the heater pipe clip.
5. Slide the heater core out of the A/C unit assembly.

INSTALLATION

Installation is in the reverse order of removal.

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AIR CONDITIONER FILTER

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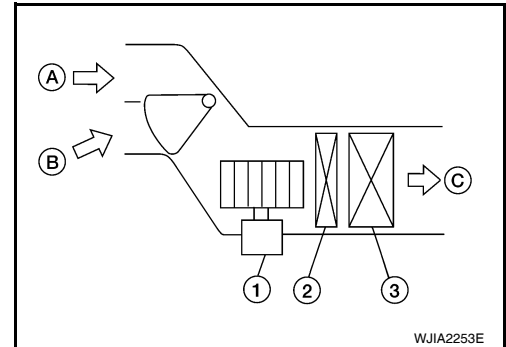
AIR CONDITIONER FILTER

Removal and Installation

INFOID:000000004307087

FUNCTION

The fresh air (A) and the recirculated air (B) drawn inside the passenger compartment by the blower fan (1) is kept clean (C) on either mode by the air conditioner filter (2), located before the evaporator (3), in the A/C unit assembly.



REPLACEMENT TIMING

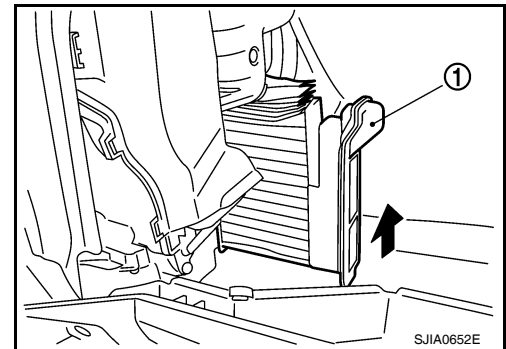
Replace the air conditioner filter according to the maintenance schedules. Refer to [MA-9](#).

NOTE:

The air conditioner filter caution label is located inside the glove box door.

REPLACEMENT PROCEDURES

1. Remove the glove box assembly. Refer to [IP-11](#).
2. Compress the air conditioner filter (1) downward while sliding it to the RH side of the vehicle to release the upper pawl.
3. Move the bottom of air conditioner filter (1) upward as shown to release the bottom tab, then remove it.



4. Replace the air conditioner filter with new one and install the new filter in the A/C unit assembly.

CAUTION:

Make sure that the air conditioner filter lower tab is fully seated, and that the air conditioner upper pawl is locked into place securing the new filter into the A/C unit assembly.

5. Install the glove box assembly. Refer to [IP-11](#).

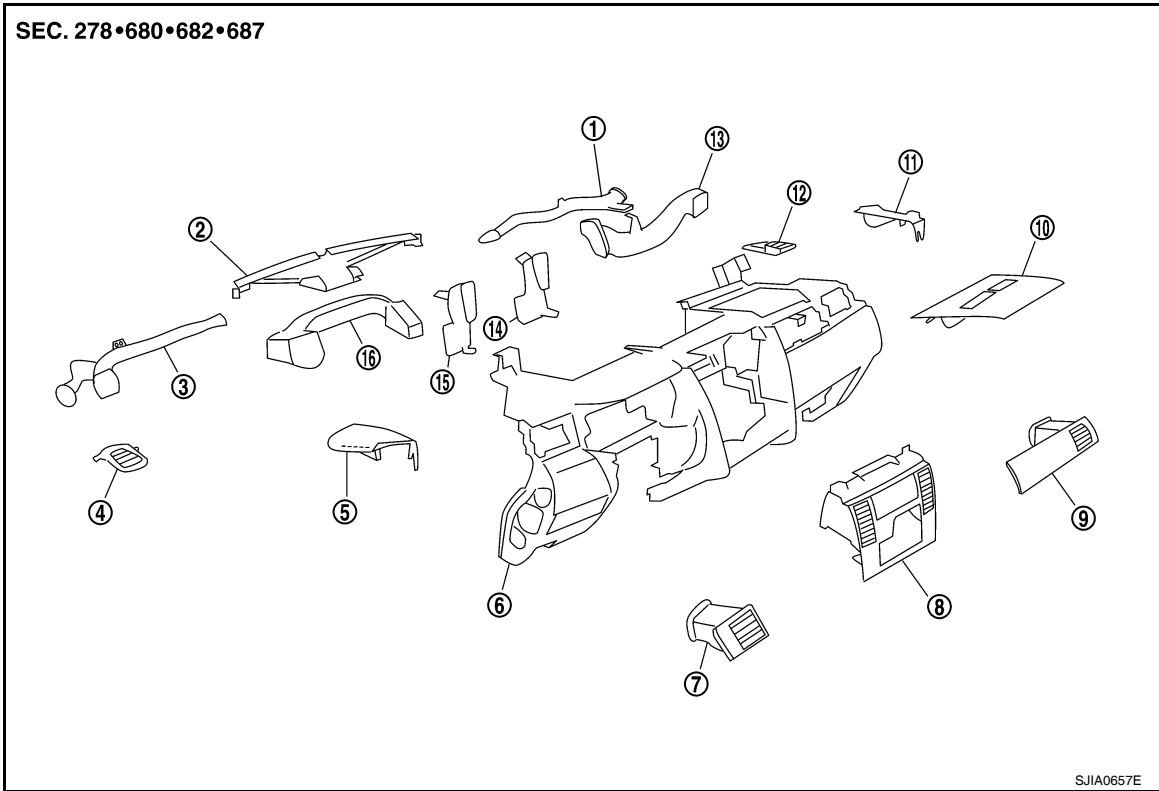
DUCTS AND GRILLES

< SERVICE INFORMATION >

DUCTS AND GRILLES

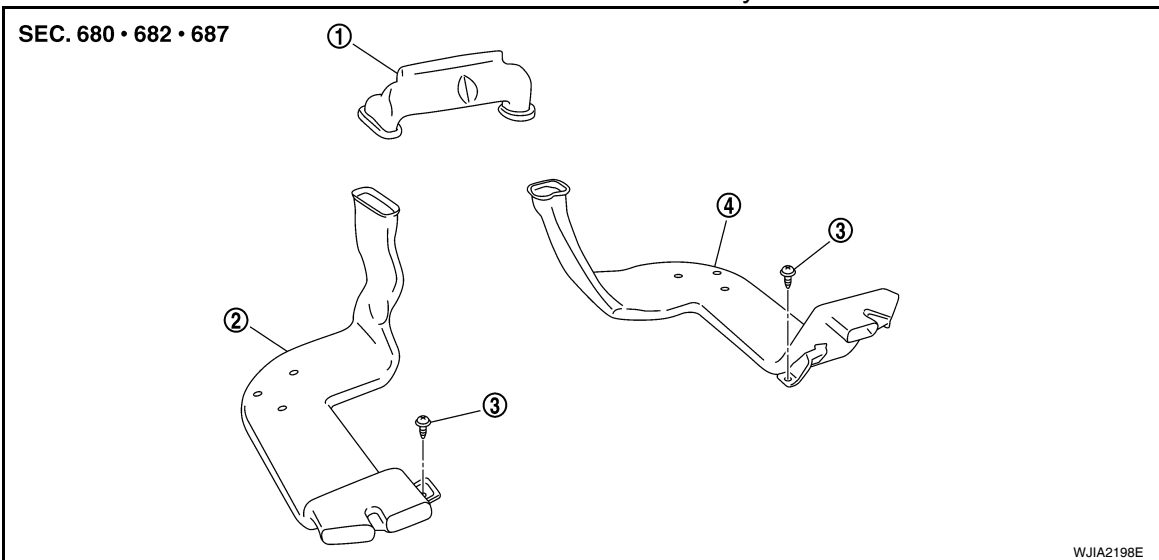
Removal and Installation

INFOID:000000004307088



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| 1. Side defroster duct (right) | 2. Defroster nozzle | 3. Side defroster duct (left) |
| 4. Side defroster grille (left) | 5. Instrument side panel (left) | 6. Instrument panel and pad |
| 7. Side ventilator assembly (left) | 8. Cluster lid C | 9. Side ventilator assembly (right) |
| 10. Instrument finisher E | 11. Instrument side panel (right) | 12. Side defroster grille (right) |
| 13. Side ventilator duct (right) | 14. Center ventilator duct (right) | 15. Center ventilator duct (left) |
| 16. Side ventilator duct (left) | | |

Floor Ducts - Canada Only



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DUCTS AND GRILLES

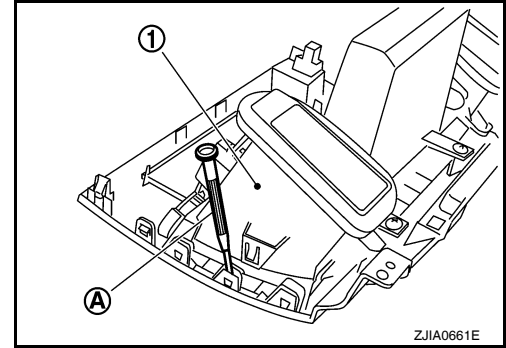
< SERVICE INFORMATION >

1. Front floor duct
2. Rear floor duct (left)
3. Clip
4. Rear floor duct (right)

CENTER VENTILATOR GRILLES

Removal

1. Remove cluster lid C. Refer to [IP-11](#).
2. Remove center ventilator grills (1) from cluster lid C using suitable tool (A).



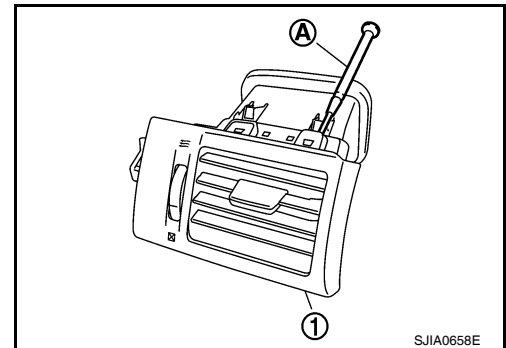
Installation

Installation is in the reverse order of removal.

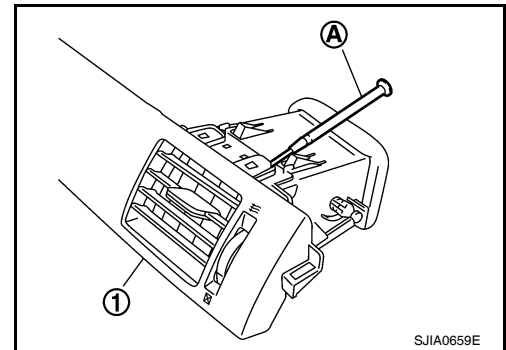
SIDE VENTILATOR GRILLES (LH/RH)

Removal

1. Remove side ventilator assembly (LH). Refer to [IP-11](#).
2. Remove side ventilator grille (LH) (1) using suitable tool (A).



3. Remove side ventilator assembly (RH). Refer to [IP-11](#).
4. Remove the side ventilator grille (RH) screw.
5. Remove side ventilator grille (RH) (1) using suitable tool (A).



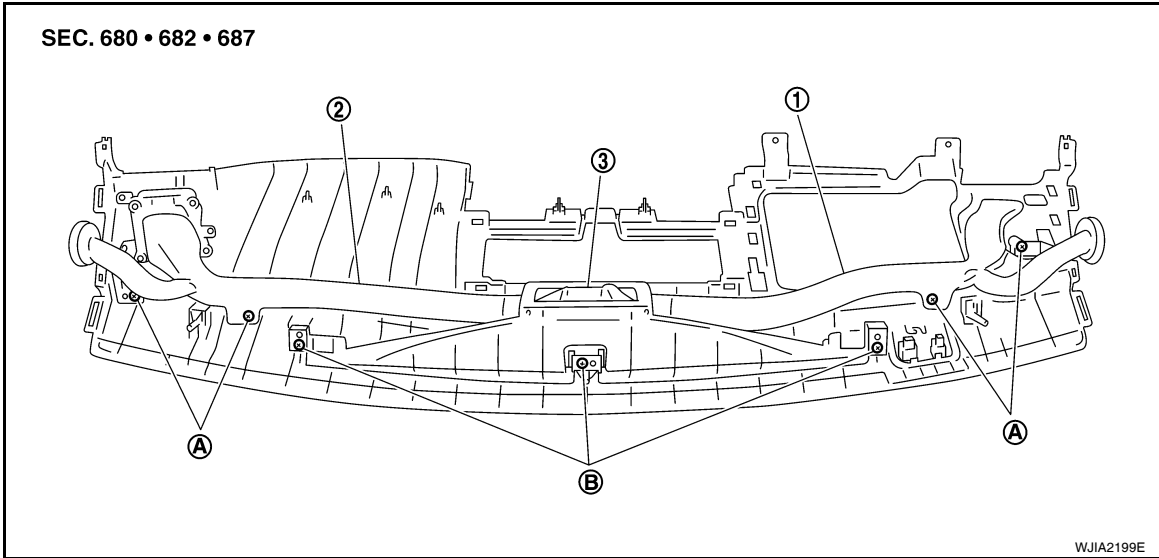
Installation

Installation is in the reverse order of removal.

DEFROSTER NOZZLE AND SIDE DEFROSTER DUCTS (LH/RH)

DUCTS AND GRILLES

< SERVICE INFORMATION >



- 1. Side defroster duct (RH)
- 2. Side defroster duct (LH)
- 3. Defroster nozzle
- A. Side defroster duct screw
- B. Defroster nozzle screw

Removal

1. Remove instrument upper finisher. Refer to [IP-11](#).
2. Remove screws and then remove side defroster duct (RH) and side defroster duct (LH).
3. Remove screws, and then remove defroster nozzle.

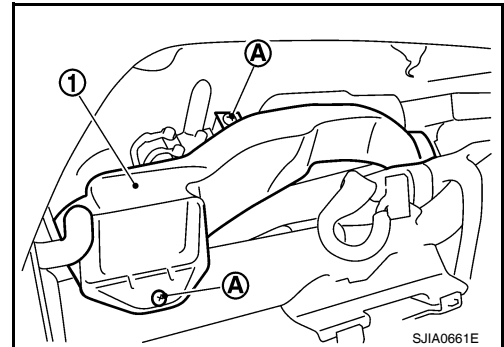
Installation

Installation is in the reverse order of removal.

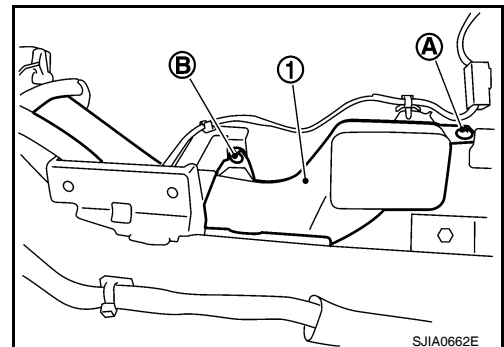
SIDE VENTILATOR DUCTS

Removal

1. Remove instrument panel and pad. Refer to [IP-11](#).
2. Remove screws (A), and then remove side ventilator duct (left) (1).



3. Remove screw (A) and clip (B), and then remove side ventilator duct (right) (1).



Installation

Installation is in the reverse order of removal.

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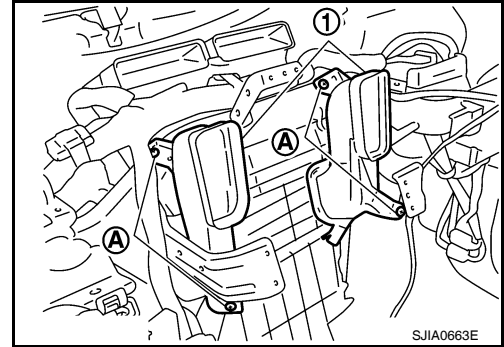
DUCTS AND GRILLES

< SERVICE INFORMATION >

CENTER VENTILATOR DUCTS

Removal

1. Remove instrument panel & pad. Refer to [IP-11](#).
2. Remove screws (A), and then remove center ventilator ducts (1).



Installation

Installation is in the reverse order of removal.

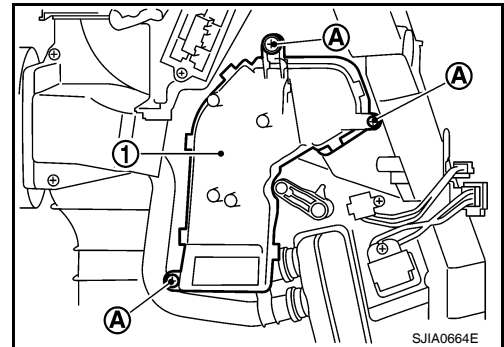
SIDE FOOT DUCTS

NOTE:

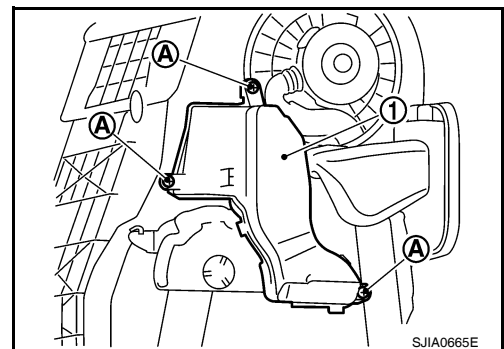
The side foot ducts are part of the A/C unit assembly case.

Removal

1. Remove A/C unit assembly. Refer to [MTC-58](#).
2. Remove screws (A), and then remove side foot duct (LH) (1).



3. Remove screws (A), and then remove side foot duct (RH) (1).



Installation

Installation is in the reverse order of removal.

FLOOR DUCTS

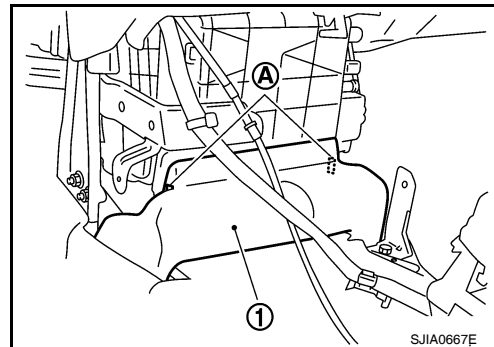
Removal

1. Remove front seats and center console assembly. Refer to [SE-11](#) and [IP-11](#).

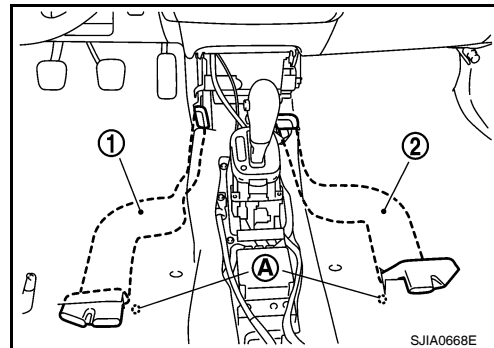
DUCTS AND GRILLES

< SERVICE INFORMATION >

2. Disengage pawls (A), and then remove front floor duct (1).



3. Peel back floor trim to a point where floor duct is visible.
4. Remove clips (A), and then remove rear floor duct (left) (1) and rear floor duct (right) (2).



Installation

Installation is in the reverse order of removal.

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REFRIGERANT LINES

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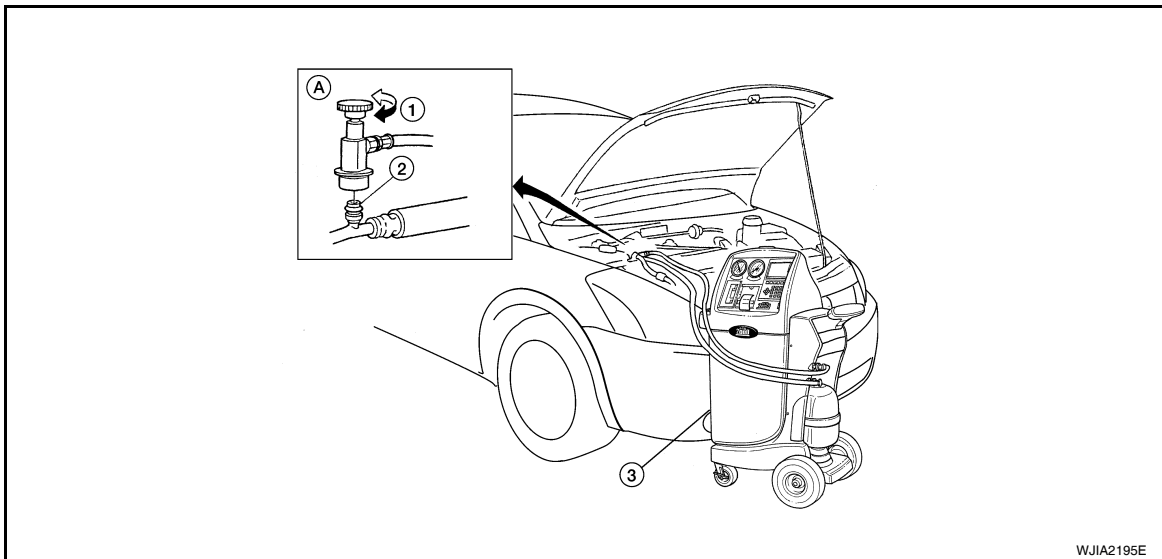
REFRIGERANT LINES

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

INFOID:000000004307089

SETTING OF SERVICE TOOLS AND EQUIPMENT

Discharging Refrigerant

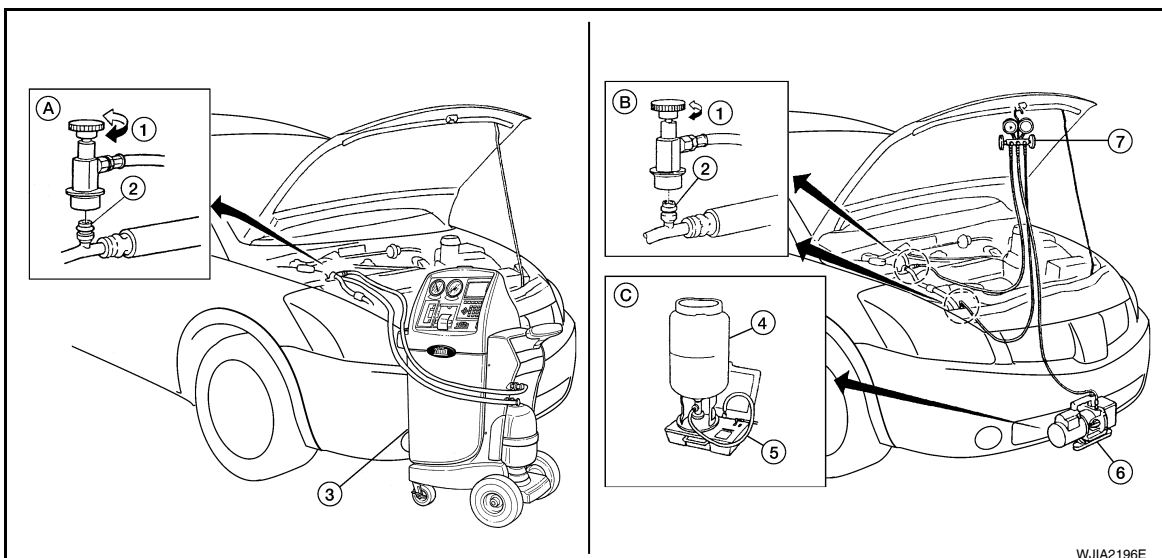


- 1. Shut-off valve
- 2. A/C service valve
- 3. Recovery/recycling equipment
- A. Preferred (best) method

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

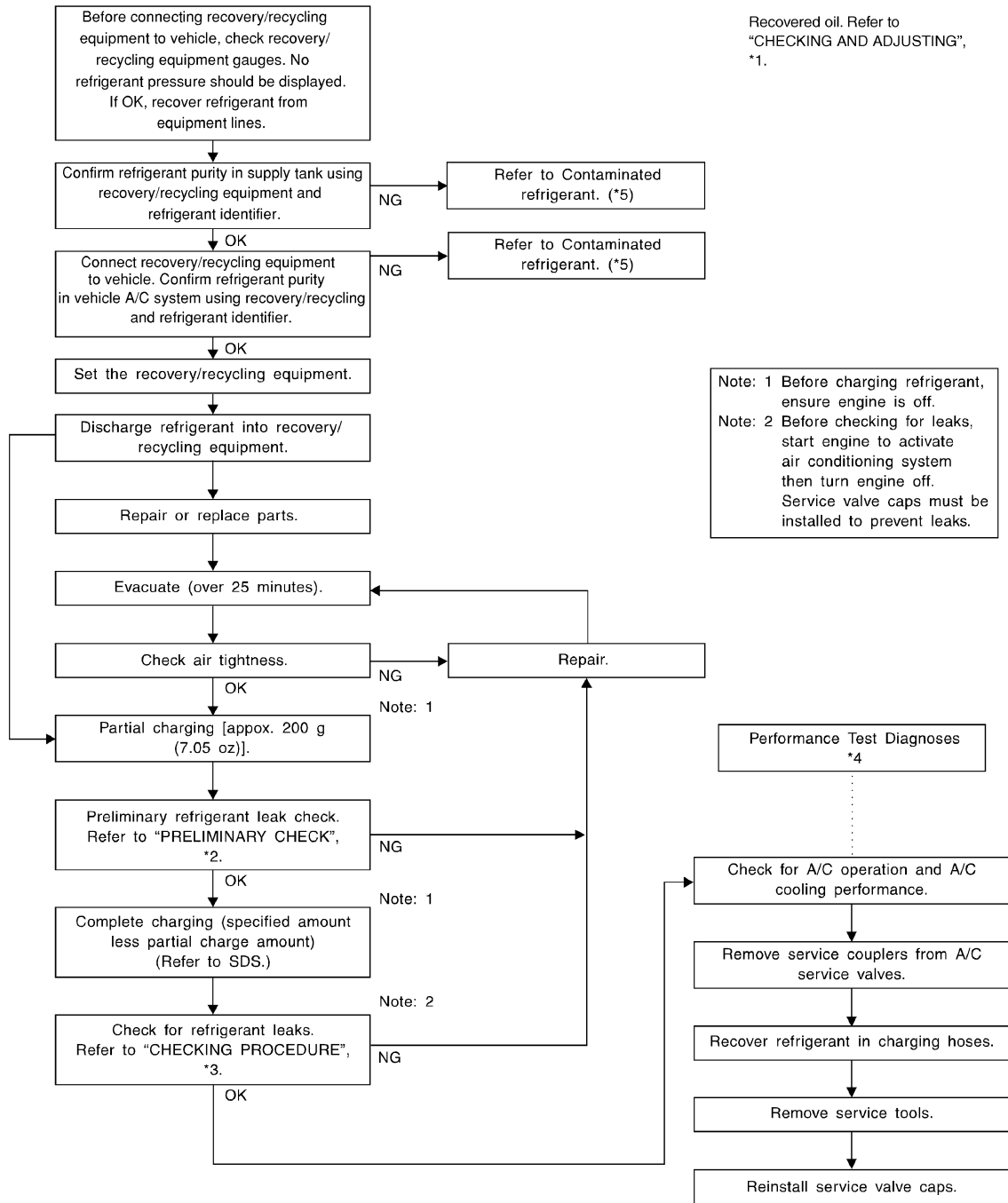


- 1. Shut-off valve
- 2. A/C service valve
- 3. Recovery/recycling equipment
- 4. Refrigerant container (HFC-134a)
- 5. Weight scale (J-39650)
- 6. Evacuating vacuum pump (J-39699)

REFRIGERANT LINES

< SERVICE INFORMATION >

7. Manifold gauge set (J-39183) A. Preferred (best) method B. Alternative method
 C. For charging



*1 [MTC-17, "Maintenance of Oil Quantity in Compressor"](#)

*2 [MTC-86, "Checking of Refrigerant Leaks"](#)

*3 [MTC-87, "Electronic Refrigerant Leak Detector"](#)

*4 [MTC-45, "Insufficient Cooling"](#)

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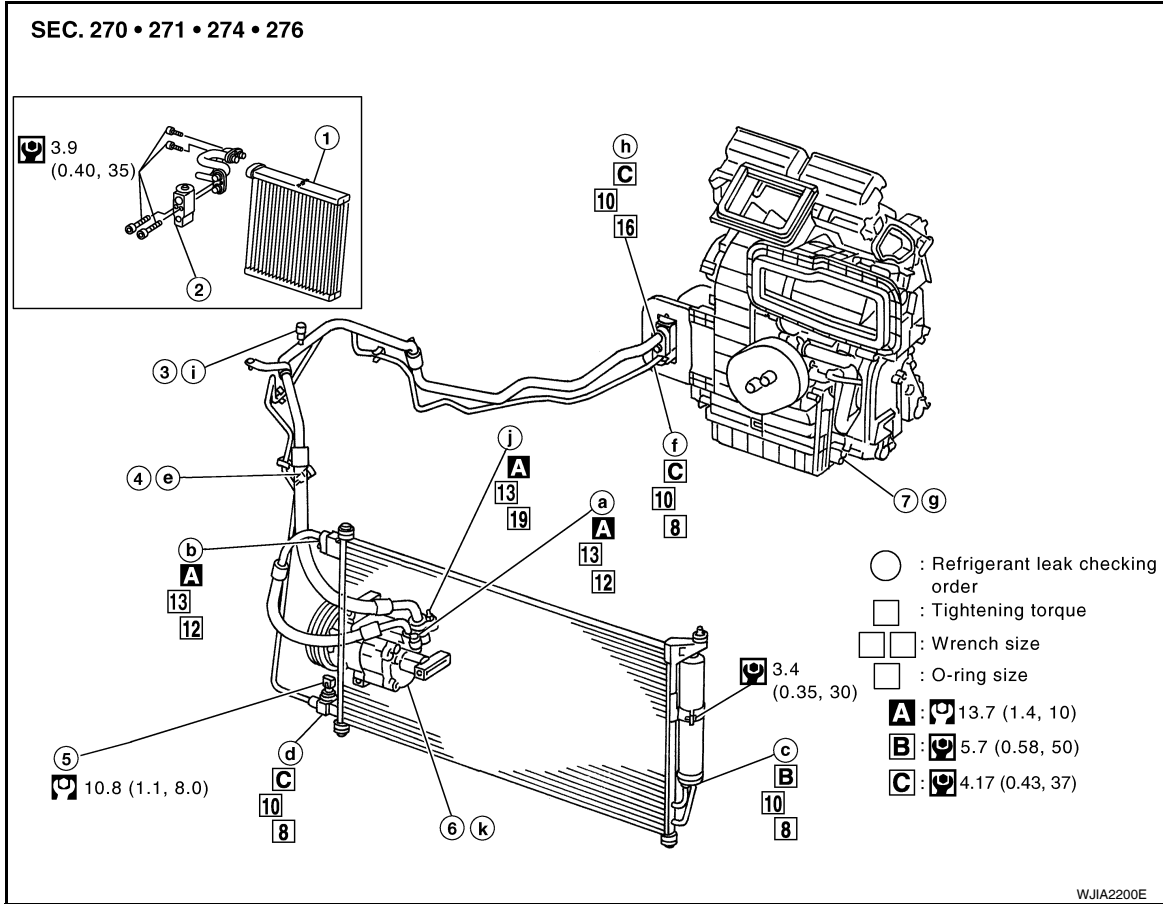
REFRIGERANT LINES

< SERVICE INFORMATION >

Component

INFOID:000000004307090

MR18DE - Type 1 and HR16DE

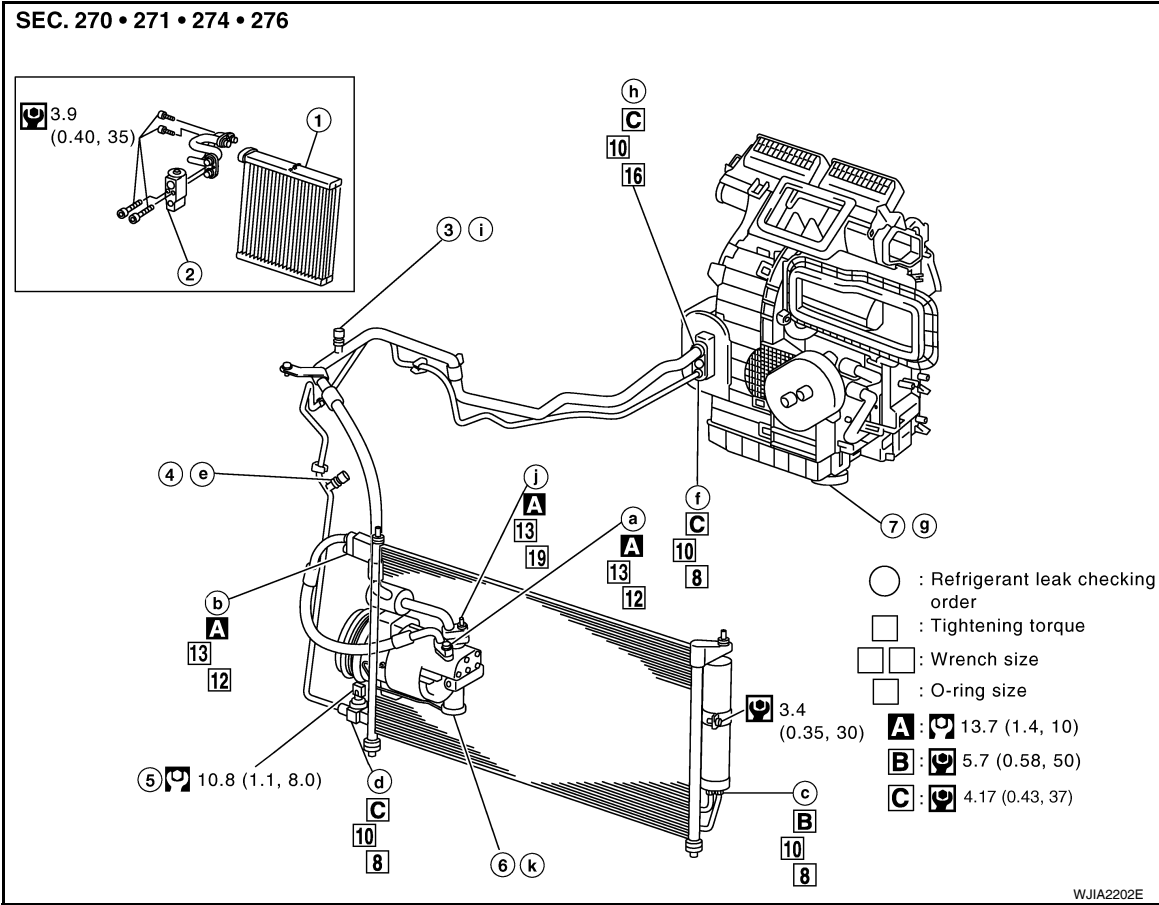


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| 1. Evaporator | 2. Expansion valve | 3. Low-pressure service valve |
| 4. High-pressure service valve | 5. Refrigerant pressure sensor | 6. Shaft seal |
| 7. Drain hose | | |

REFRIGERANT LINES

< SERVICE INFORMATION >

MR18DE - Type 2



- | | | |
|--------------------------------|--------------------------------|-------------------------------|
| 1. Evaporator | 2. Expansion valve | 3. Low-pressure service valve |
| 4. High-pressure service valve | 5. Refrigerant pressure sensor | 6. Shaft seal |
| 7. Drain hose | | |

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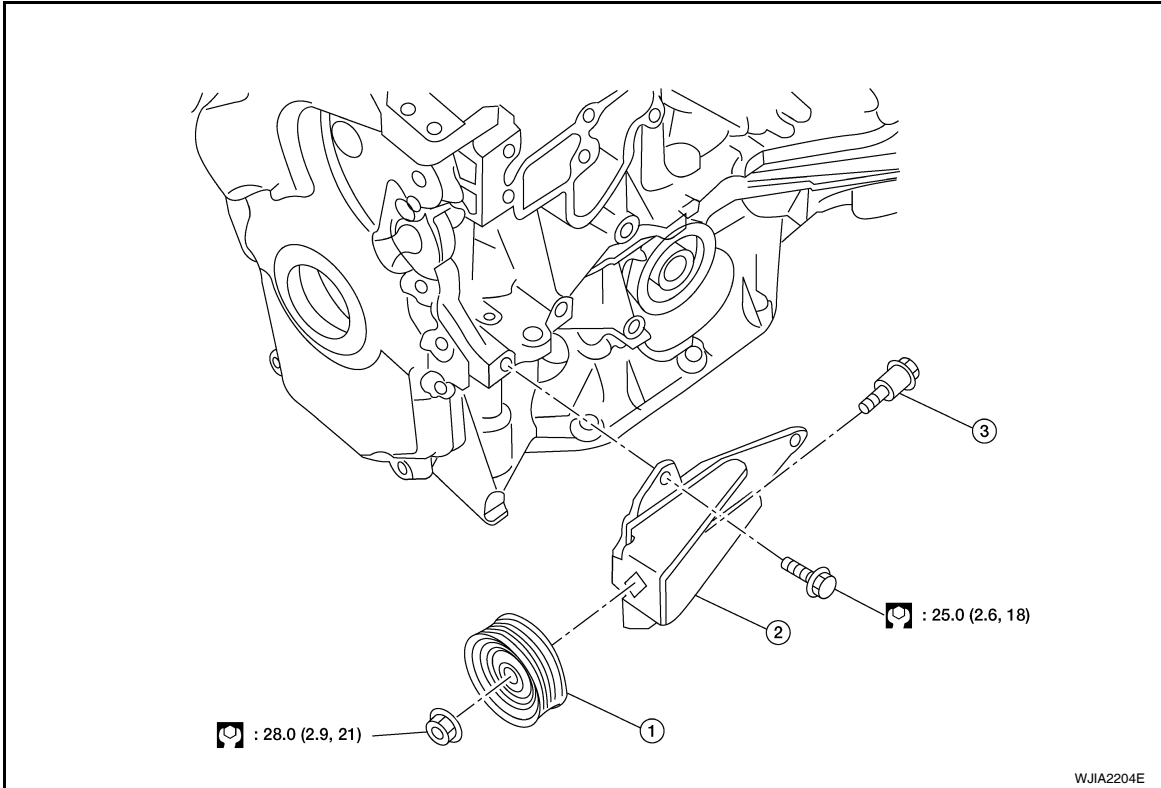
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REFRIGERANT LINES

< SERVICE INFORMATION >

Idler Pulley - Without A/C



1. Idler pulley

2. Bracket

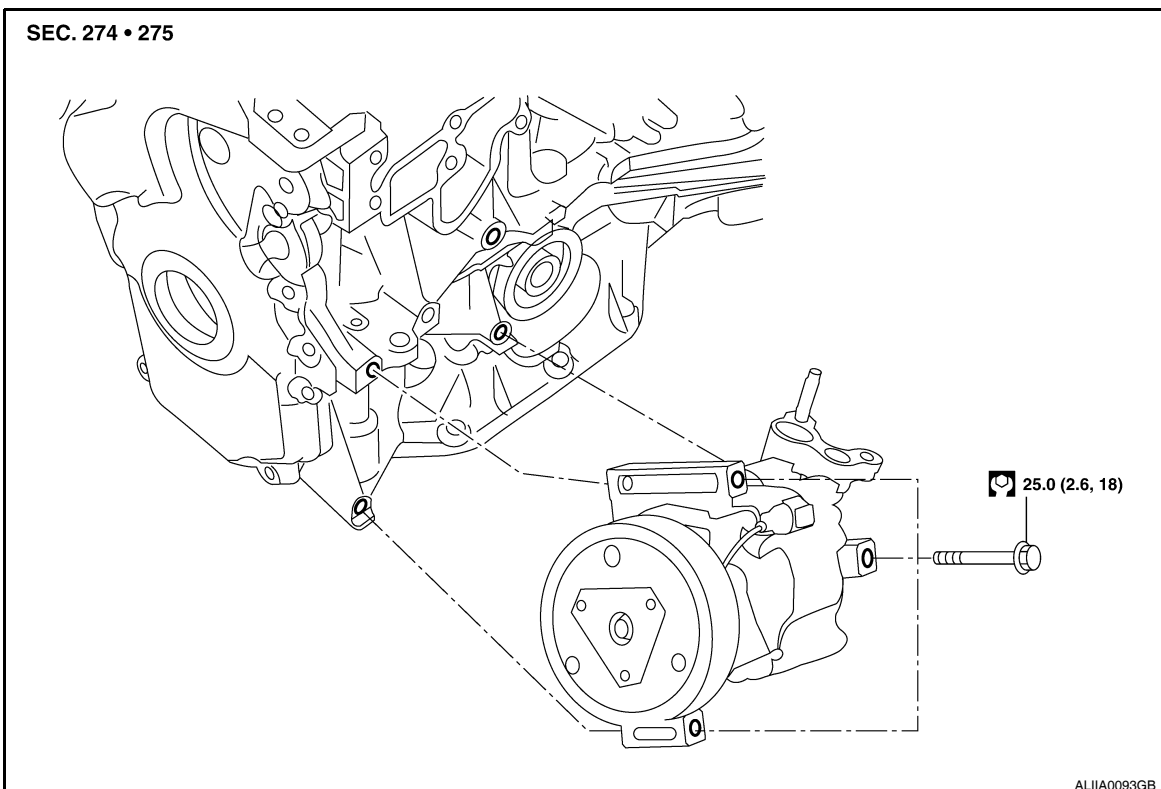
3. Shaft

Refer to [MTC-5. "Precaution for Refrigerant Connection"](#).

Removal and Installation of Compressor - HR16DE

INFOID:000000004800722

HR16DE



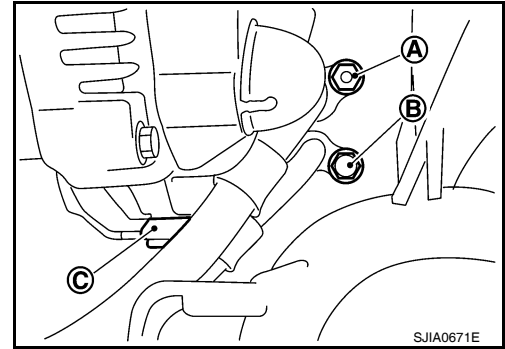
REMOVAL

MTC-78

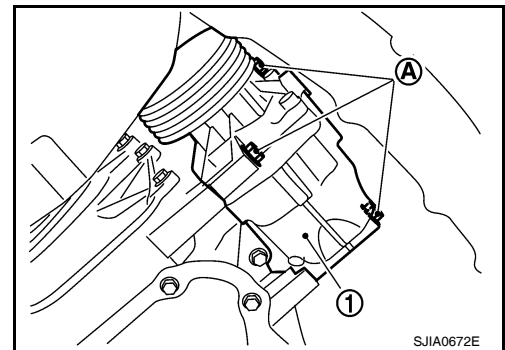
REFRIGERANT LINES

< SERVICE INFORMATION >

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [MTC-74. "HFC-134a \(R-134a\) Service Procedure"](#).
2. Disconnect the low-pressure flexible hose nut (A) and high-pressure flexible hose bolt (B) and remove the hoses from compressor.
CAUTION:
Cap or wrap the joint of compressor, low-pressure flexible hose and high-pressure flexible hose with suitable material such as vinyl tape to avoid the entry of air.
3. Disconnect the compressor harness connector (C)



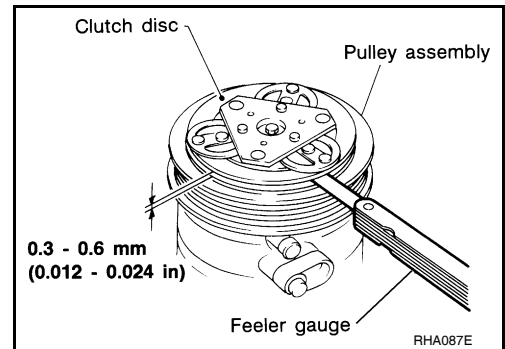
4. Remove the engine undercover, using power tools.
5. Remove the A/C drive belt. Refer to [EM-15. "Removal and Installation"](#).
6. Remove the bolts (A) from the compressor (1), using power tools.
7. Remove the compressor (1) downward from the engine compartment.



INSPECTION FOR CLUTCH DISC TO PULLEY CLEARANCE

1. Check the clearance around the entire periphery of the clutch disc and pulley using a suitable tool as shown.

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



2. If specified clearance is not obtained, replace compressor.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

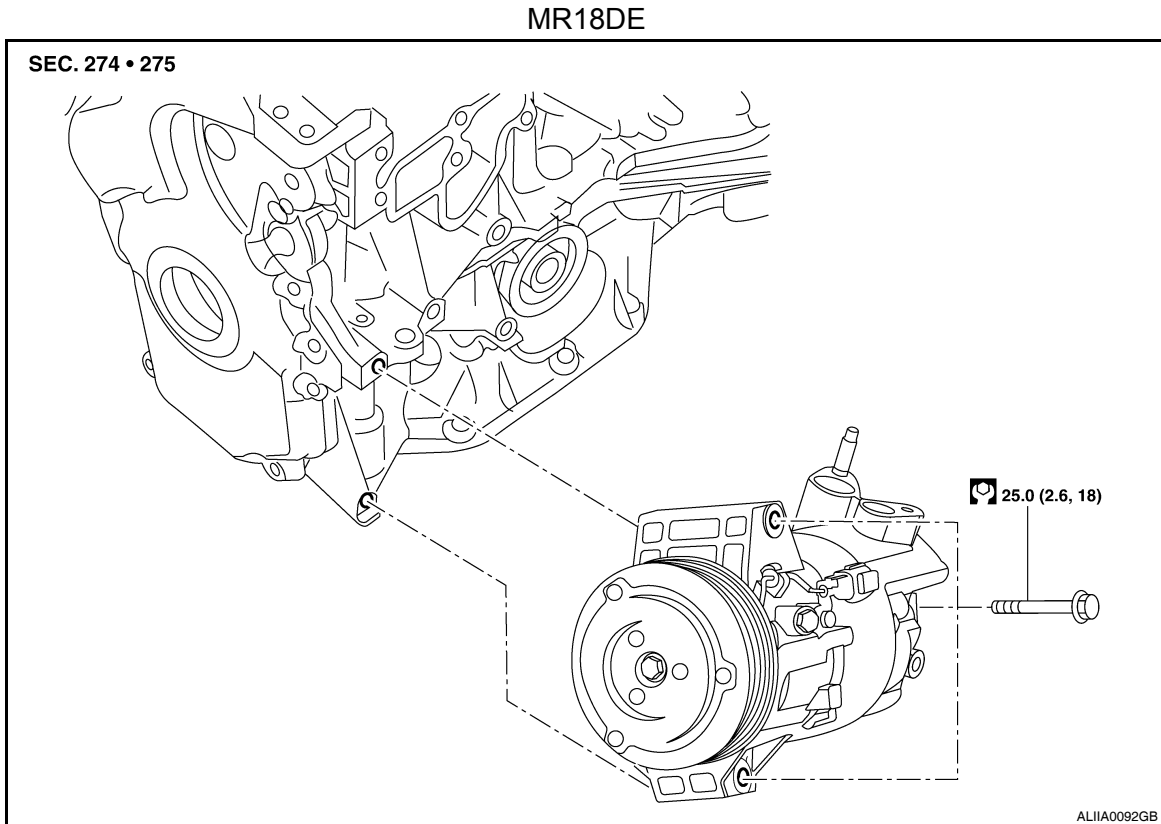
- Replace O-rings of low-pressure flexible hose and high-pressure flexible hose with new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks. Refer to [MTC-86. "Checking of Refrigerant Leaks"](#).

REFRIGERANT LINES

< SERVICE INFORMATION >

Removal and Installation of Compressor - MR18DE

INFOID:000000004800721

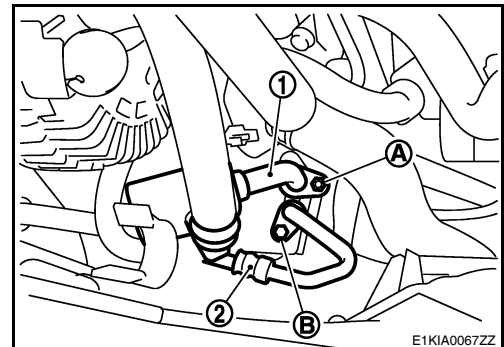


REMOVAL

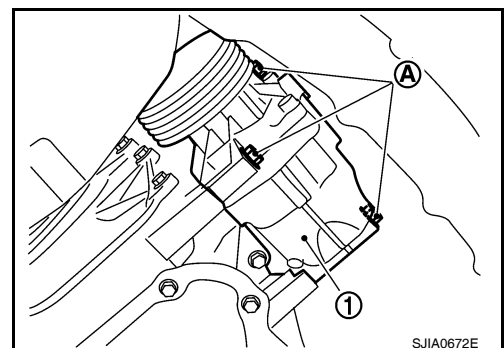
1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [MTC-74. "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the nut (A) for the low-pressure flexible hose (1) and the bolt (B) for the high-pressure flexible hose (2) and remove the hoses from the compressor.

CAUTION:

Cap or wrap the joint of compressor, low-pressure flexible hose and high-pressure flexible hose with suitable material such as vinyl tape to avoid the entry of air.



3. Remove the engine undercover, using power tools.
4. Remove A/C compressor belt. Refer to [EM-136. "Removal and Installation"](#).
5. Disconnect compressor connector.
6. Remove bolts (A) from compressor (1), using power tools.
7. Remove compressor (1) downward from the engine compartment.



REFRIGERANT LINES

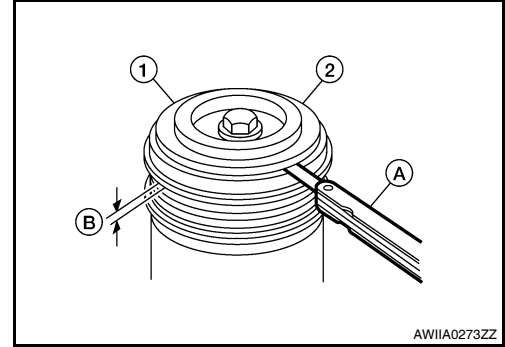
< SERVICE INFORMATION >

INSPECTION FOR CLUTCH DISC TO PULLEY CLEARANCE

1. Check the clearance (B) around the entire periphery of the clutch disc (1) and pulley (2) using a suitable tool (A) as shown.

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

2. If specified clearance (B) is not obtained, replace compressor.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

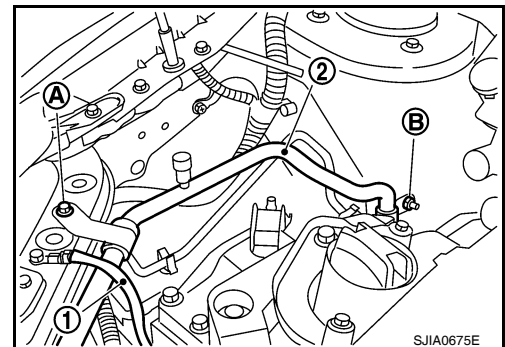
- Replace O-rings of low-pressure flexible hose and high-pressure flexible hose with a new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks. Refer to [MTC-86, "Checking of Refrigerant Leaks"](#).

Removal and Installation of Low-Pressure Flexible Hose

INFOID:000000004307092

REMOVAL

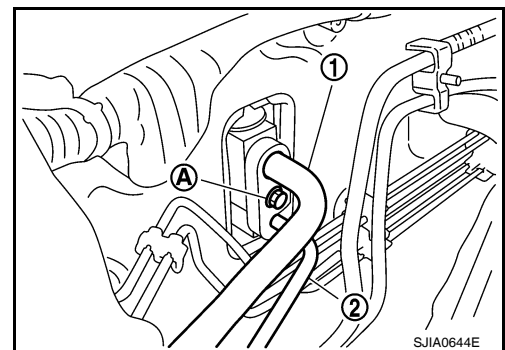
1. Use the recovery/recycling equipment to evacuate the refrigerant.
2. Remove engine cover (MR18DE only).
3. Remove cowl top cover. Refer to [EI-22, "Removal and Installation"](#).
4. Remove lower dash insulator.
5. Remove ground wire harness (1).
6. Remove bolt (A) and nut (B) from low-pressure flexible hose (2) bracket.



7. Remove bolt (A), and then disconnect low-pressure flexible hose (1) and high-pressure pipe (2).

CAUTION:

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



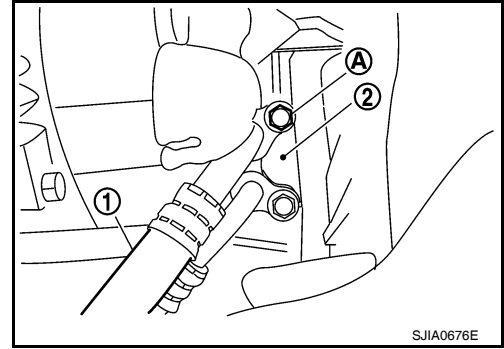
REFRIGERANT LINES

< SERVICE INFORMATION >

8. Remove nut (A), and then remove low-pressure flexible hose (1) from compressor (2).

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.

CAUTION:

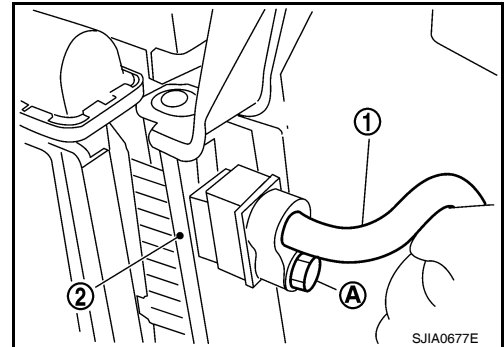
- Replace O-rings for A/C piping with new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks.

Removal and Installation of High-Pressure Flexible Hose

INFOID:000000004307093

REMOVAL

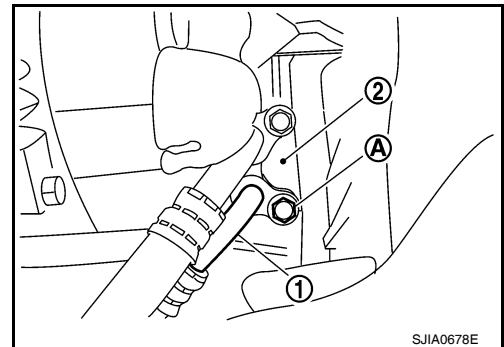
1. Use the recovery/recycling equipment to evacuate the refrigerant.
2. Remove high-pressure flexible hose (1) bolt (A) from condenser (2).



3. Remove bolt (A), and then remove high-pressure flexible hose (1) from compressor (2).

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.

CAUTION:

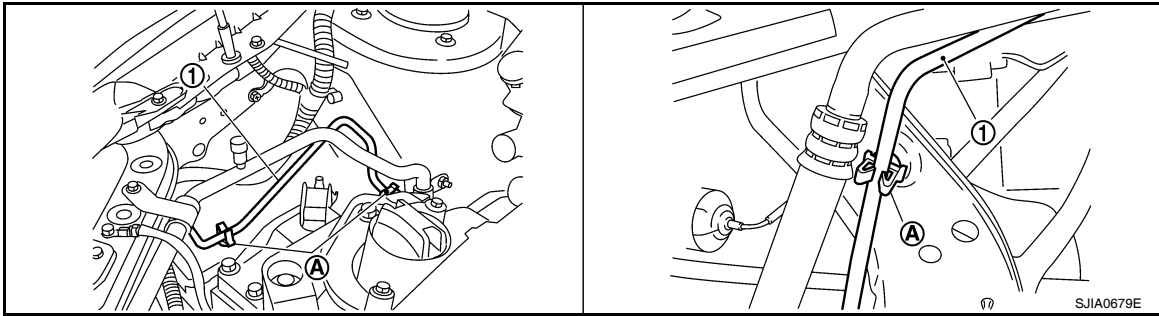
- Replace O-rings of high-pressure flexible hose with a new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks.

REFRIGERANT LINES

< SERVICE INFORMATION >

Removal and Installation of High-Pressure Pipe

INFOID:000000004307094



1. High-pressure pipe

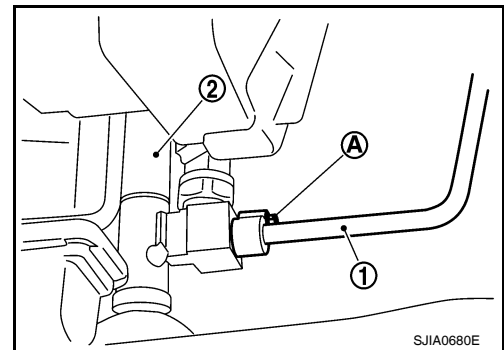
A. High-pressure pipe clips

REMOVAL

1. Remove low-pressure flexible hose. Refer to [MTC-81, "Removal and Installation of Low-Pressure Flexible Hose"](#).
2. Remove high-pressure pipe from the clips.
3. Remove high-pressure pipe bolt (A), and then remove high-pressure pipe (1) from condenser (2).

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.

CAUTION:

- Replace O-rings of high-pressure pipe with a new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks.

Removal and Installation of Refrigerant Pressure Sensor

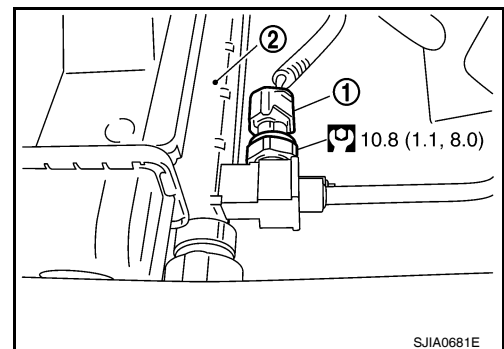
INFOID:000000004307095

REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant.
2. Disconnect connector, and then remove refrigerant pressure sensor (1) from condenser (2).

CAUTION:

When working, be careful not to damage the condenser fins.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings of refrigerant pressure sensor with a new one, and apply compressor oil when installing.

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REFRIGERANT LINES

< SERVICE INFORMATION >

- When recharging refrigerant, check for leaks.

Removal and Installation of Condenser

INFOID:000000004307096

REMOVAL

1. Remove the three upper headlamp bolts to reposition the headlamps out of the way.
2. Remove the radiator core support upper. Refer to [BL-19. "Removal and Installation"](#).
3. Remove high-pressure flexible hose and high-pressure pipe from condenser. Refer to [MTC-82. "Removal and Installation of High-Pressure Flexible Hose"](#) and [MTC-83. "Removal and Installation of 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.

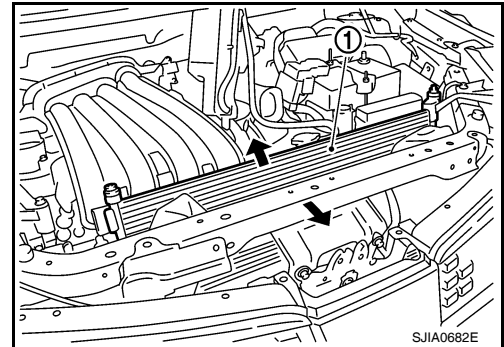
4. Disconnect refrigerant pressure sensor connector.
5. Tilt radiator toward rear of vehicle, and then remove condenser (1) from between radiator and radiator core support upper.

CAUTION:

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

NOTE:

MR18DE shown, HR16DE similar.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings for A/C piping with new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks.

Removal and Installation of Liquid Tank

INFOID:000000004307097

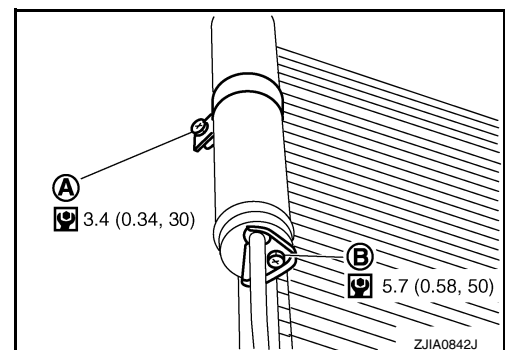
REMOVAL

1. Remove the condenser. Refer to [MTC-84. "Removal and Installation of Condenser"](#).
2. Clean liquid tank and its surrounding area, and remove dirt and rust from liquid tank.

CAUTION:

Be sure to clean carefully.

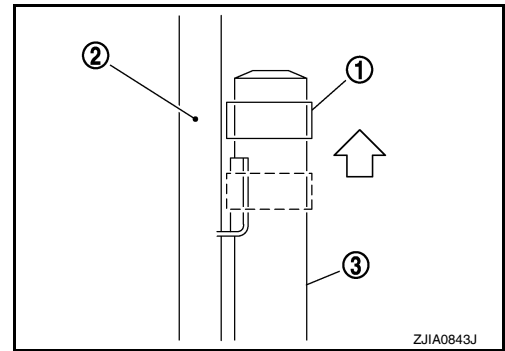
3. Remove bolts (A) and (B) from liquid tank.



REFRIGERANT LINES

< SERVICE INFORMATION >

4. Remove liquid tank bracket (1) from protruding part of condenser (2).
5. Slide liquid tank (3) upward, and then remove liquid tank (3).

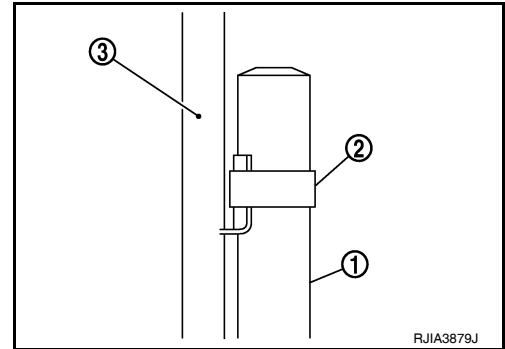


INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Make sure liquid tank bracket (2) is securely installed at protrusion of condenser (3). [Make sure liquid tank bracket (2) does not move to a position below center of liquid tank (1).]
- Replace O-rings for A/C piping with new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks. Refer to [MTC-86, "Checking of Refrigerant Leaks"](#).



Removal and Installation of Evaporator

INFOID:000000004307098

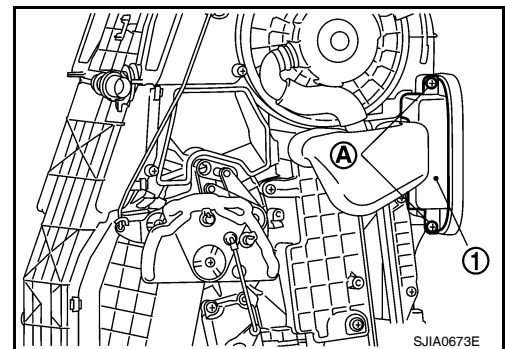
REMOVAL

1. Remove A/C unit assembly. Refer to [MTC-58, "Removal and Installation"](#).

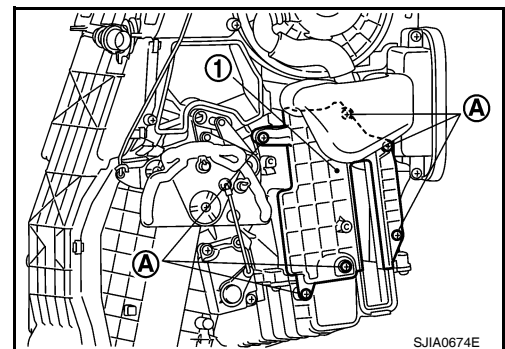
CAUTION:

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

2. Remove air conditioner filter. Refer to [MTC-68, "Removal and Installation"](#).
3. Remove foot duct (right). Refer to [MTC-69, "Removal and Installation"](#).
4. Remove screws (A), and then remove expansion valve cover (1).



5. Remove screws (A), and then remove evaporator cover (1).



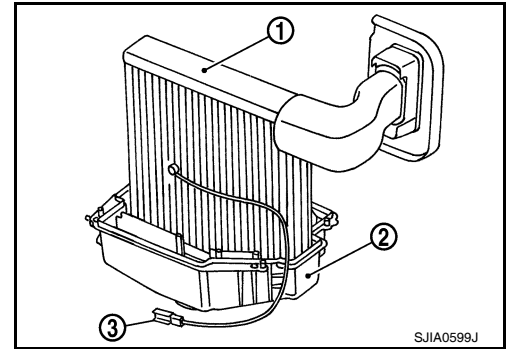
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REFRIGERANT LINES

< SERVICE INFORMATION >

6. Remove evaporator (1) with lower blower case (2) from A/C unit assembly.
7. Mark the position of the thermo control amp. if reusing the evaporator and then remove thermo control amp. (3) from evaporator (1), if equipped (MR18DE - TYPE 2 systems).
8. Remove evaporator (1) from lower blower case (2).



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings for A/C piping with new ones, and apply compressor oil when installing.
- If reusing the evaporator, install the thermo control amp. at the position marked when removing the thermo control amp., if equipped (MR18DE - TYPE 2 systems).
- When recharging refrigerant, check for leaks.

Removal and Installation of Expansion Valve

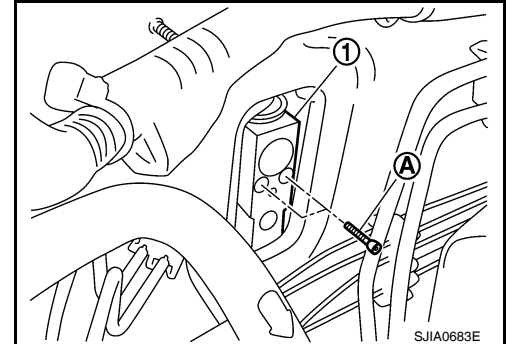
INFOID:000000004307099

REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant.
2. Remove cowl top cover. Refer to [EI-22, "Removal and Installation"](#).
3. Remove lower dash insulator.
4. Disconnect low-pressure flexible hose and high-pressure pipe from evaporator. Refer to [MTC-58, "Removal and Installation"](#).
5. Remove expansion valve bolts (A), and then remove expansion valve (1).

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.

CAUTION:

- Replace O-rings of evaporator with new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks.

Checking of Refrigerant Leaks

INFOID:000000004307100

Perform a visual inspection of all refrigeration parts, fittings, hoses and components for signs of A/C oil leakage, damage and corrosion. 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 or fluorescent dye leak detector.

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

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

When searching for refrigerant leaks using an electronic leak detector, move the probe along the suspected leak area at 25 to 50 mm (1 to 2 in) per second and no further than 1/4 inch from the component.

CAUTION:

REFRIGERANT LINES

< SERVICE INFORMATION >

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

Checking System for Leaks Using the Fluorescent Leak Detector

INFOID:000000004307101

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

NOTE:

Other gases in the work area or substances on the A/C components, for example, anti-freeze, windshield washer fluid, solvents and 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 detector to contact with any substance. This can also cause false readings and may damage the detector.

Dye Injection

INFOID:000000004307102

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

1. Check A/C system static (at rest) pressure. Pressure must be at least 345 kPa (3.45 bar, 3.52 kg/cm², 50 psi).
2. Pour one bottle (1/4 ounce / 7.4 cc) of the A/C refrigerant dye into the injector tool J-41459.
3. Connect the injector tool to the A/C low-pressure side service fitting.
4. Start engine and switch A/C ON.
5. When the A/C operating (compressor running), inject one bottle (1/4 ounce / 7.4 cc) of fluorescent dye through the low-pressure service valve using dye injector tool J-41459 (refer to the manufacture's operating instructions).
6. With the engine still running, disconnect the injector tool from the service fitting.

CAUTION:

Be careful the A/C system or replacing a component, pour the dye directly into the open system connection and proceed with the service procedures.

7. Operate the A/C system for a minimum of 20 minutes to mix the dye with the system oil. Depending on the leak size, operating conditions and location of the leak, it may take from minutes to days for the dye to penetrate a leak and become visible.

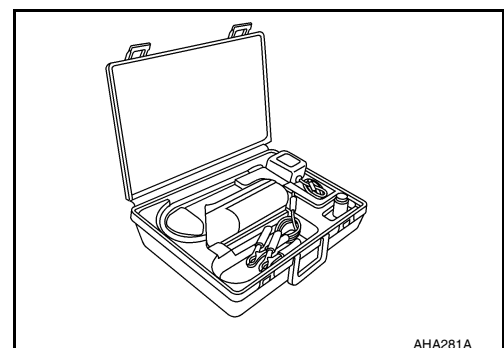
Electronic Refrigerant Leak Detector

INFOID:000000004307103

PRECAUTIONS FOR HANDLING LEAK DETECTOR

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

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



AHA281A

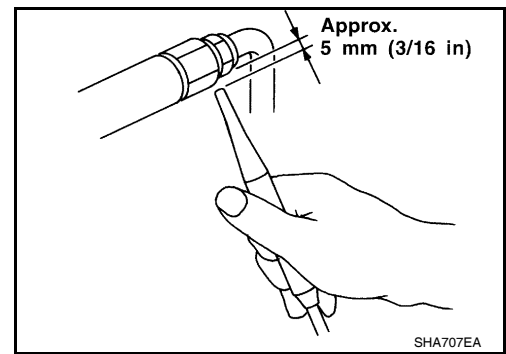
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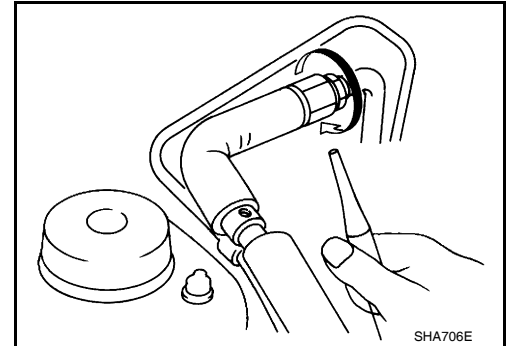
REFRIGERANT LINES

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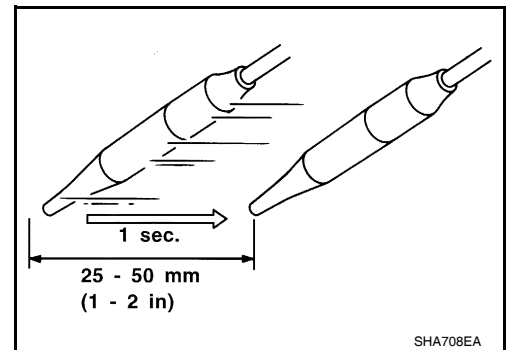
1. Position probe approximately 5 mm (3/16 in) away from point to be checked.



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



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



CHECKING PROCEDURE

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

1. Turn engine OFF.
2. Connect a suitable A/C manifold gauge set to the A/C service ports.
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.45 bar, 3.52 kg/cm², 50 psi) above 16°C. If less than specification, recover/evacuate and recharge the system with the specified amount of refrigerant.

NOTE:

At temperatures below 16°C, leaks may not be detected since the system may not reach 345 kPa (3.45 bar, 3.52 kg/cm², 50 psi).

4. Perform the leak test from the high-pressure side (compressor discharge a to evaporator inlet f) to the low-pressure side (evaporator drain hose g to shaft seal k). Refer to [MTC-76. "Component"](#). Perform a leak check for the following areas carefully. Clean the component to be checked and move the leak detected probe completely around the connection/component.
 - Compressor
Check the fitting of high- and low-pressure flexible hoses, relief valve and shaft seal.
 - Condenser
Check the fitting of high-pressure flexible hose and pipe, refrigerant pressure sensor.
 - Liquid tank
Check the refrigerant connection.
 - Service valves

REFRIGERANT LINES

< SERVICE INFORMATION >

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

NOTE:

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

- Cooling unit (Evaporator)

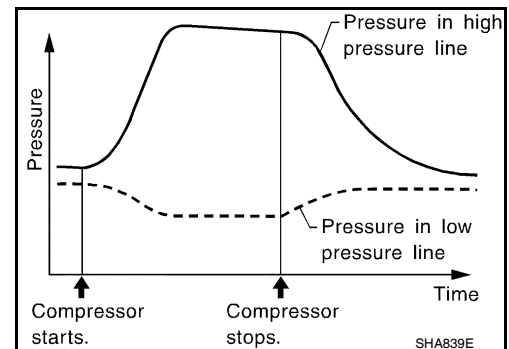
With engine OFF, turn blower fan on "High" for at least 15 seconds to dissipate any refrigerant trace in the cooling unit. Wait a minimum of 10 minutes accumulation time (refer to the manufacturer's recommended procedure for actual wait time) before inserting the leak detector probe into the drain hose.

Keep the probe inserted for at least 10 seconds. Use caution not to contaminate the probe tip with water or dirt that may be in the drain hose.

5. If a leak detector detects a leak, verify at least once by blowing compressed air into area of suspected leak, then repeat check as outlined above.
6. Do not stop when one leak is found. Continue to check for additional leaks at all system components. If no leaks are found, perform steps 7-10.
7. Start engine.
8. Set the heater A/C control as follows;
 - a. A/C switch: ON
 - b. Mode control dial position: VENT (Ventilation)
 - c. Intake door lever position: Recirculation
 - d. Max. cold temperature
 - e. Fan speed: High
9. Run engine at 1,500 rpm for at least 2 minutes.
10. Turn engine off and perform leak check again following steps 4 through 6 above.

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

11. Before connecting recovery/recycling equipment to vehicle, check recovery/recycling equipment gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover refrigerant from equipment lines.
12. Discharge A/C system using approved refrigerant recovery/recycling equipment. Repair the leaking fitting or component if necessary.
13. Evacuate and recharge A/C system and perform the leak test to confirm no refrigerant leaks.
14. Perform A/C performance test to ensure system works properly.



SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

SERVICE DATA AND SPECIFICATIONS (SDS)

Compressor

INFOID:000000004307104

Application		MR18DE - TYPE 1 and HR16DE	MR18DE - TYPE 2
Compressor model		Calsonic Kansei make CR-10	Calsonic Kansei make CSV511
Type		Vane rotary	Variable displacement swash plate
Displacement cm ³ (in ³) / revolution	maximum	96 (5.86)	105 (6.41)
Cylinder bore × stroke mm (in)	maximum	—	34.8 (1.37) × 22.1 (0.87)
Direction of rotation		Clockwise (viewed from drive end)	
Drive belt		Poly-V Ribbed 6-Groove	

Oil

INFOID:000000004307105

Application		MR18DE - TYPE 1 and HR16DE	MR18DE - TYPE 2
Compressor model		Calsonic Kansei make CR-10	Calsonic Kansei make CSV511
Type		NISSAN A/C System Oil Type R	NISSAN A/C System Oil Type S
Capacity m ³ (US fl oz, Imp fl oz)	Total in system	120 (4.1, 4.2)	100 (3.4, 3.5)
	Compressor (service part) charging amount	Refer to MTC-17. "Maintenance of Oil Quantity in Compressor" .	Refer to MTC-17. "Maintenance of Oil Quantity in Compressor" .

Refrigerant

INFOID:000000004307106

Type	HFC-134a (R-134a)
Capacity kg (lb)	0.45 ± 0.05 (0.99 ± 0.11)