

# SECTION **HA**

## HEATER & AIR CONDITIONING SYSTEM

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# PRECAUTIONS

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## PRECAUTION

### 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 SR 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 SR 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

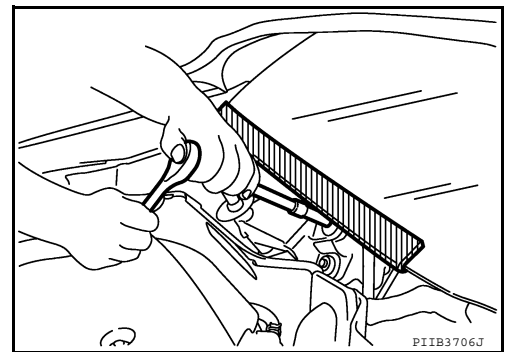
#### **WARNING:**

- 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 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. If the refrigerants are mixed compressor failure is likely to occur. Refer to [HA-22, "Checking of Refrigerant Leaks"](#). To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.
- Use only specified oil for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If oil other than that specified is used, compressor failure is likely to occur.
- The specified HFC-134a (R-134a) oil rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:

# PRECAUTIONS

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- When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.
- When installing refrigerant components to a vehicle, do not remove the caps (unseal) until just before connecting the components. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.
- Only use the specified oil from a sealed container. Immediately reseal containers of oil. Without proper sealing, oil will become moisture saturated and should not be used.
- Avoid breathing A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) from the A/C system using certified service equipment meeting requirements of SAE J2210 [HFC-134a (R-134a) recycling equipment], or J2209 [HFC-134a (R-134a) recycling equipment], If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.
- Do not allow A/C oil to come in contact with styrofoam parts. Damage may result.

## Contaminated Refrigerant

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

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

## General Refrigerant Precaution

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### **WARNING:**

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

## 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.
- A compressor shaft seal should not be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electronic refrigerant leak detector (J-41995).
- Always remove any dye from the leak area after repairs are complete to avoid a misdiagnosis during a future service.

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- Do not allow dye to come into contact with painted body panels or interior components. If dye is spilled, clean immediately with the approved dye cleaner. Fluorescent dye left on a surface for an extended period of time **cannot be removed**.
- Do not spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Do not use more than one refrigerant dye bottle (1/4 ounce / 7.4 cc) per A/C system.
- Leak detection dyes for HFC-134a (R-134a) and HC-12 (R-12) A/C systems are different. Do not use HFC-134a (R-134a) leak detection dye in R-12 A/C systems or HC-12 (R-12) leak detection dye in HFC-134a (R-134a) A/C systems or A/C system damage may result.
- The fluorescent properties of the dye will remain for over three (3) years unless a compressor failure occurs.

## A/C Identification Label

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

## Precaution for Refrigerant Connection

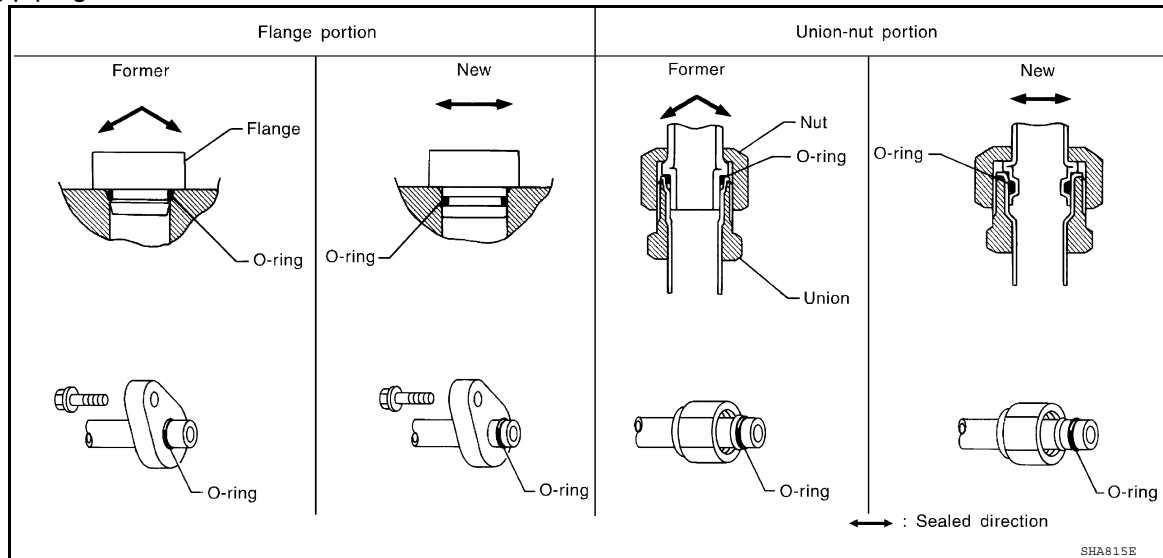
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A new type refrigerant connection has been introduced to all refrigerant lines except the following locations.

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

## FEATURES OF NEW TYPE REFRIGERANT CONNECTION

- The O-ring has been relocated. It has also been provided with a groove for proper installation. This 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.

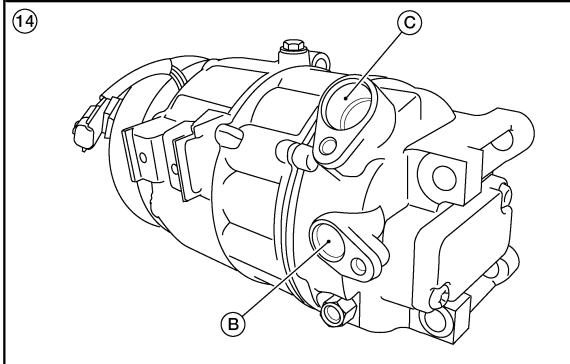
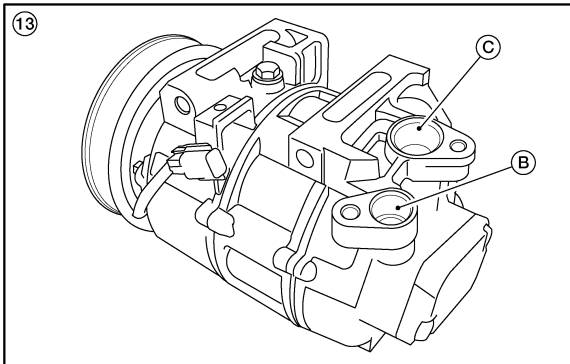
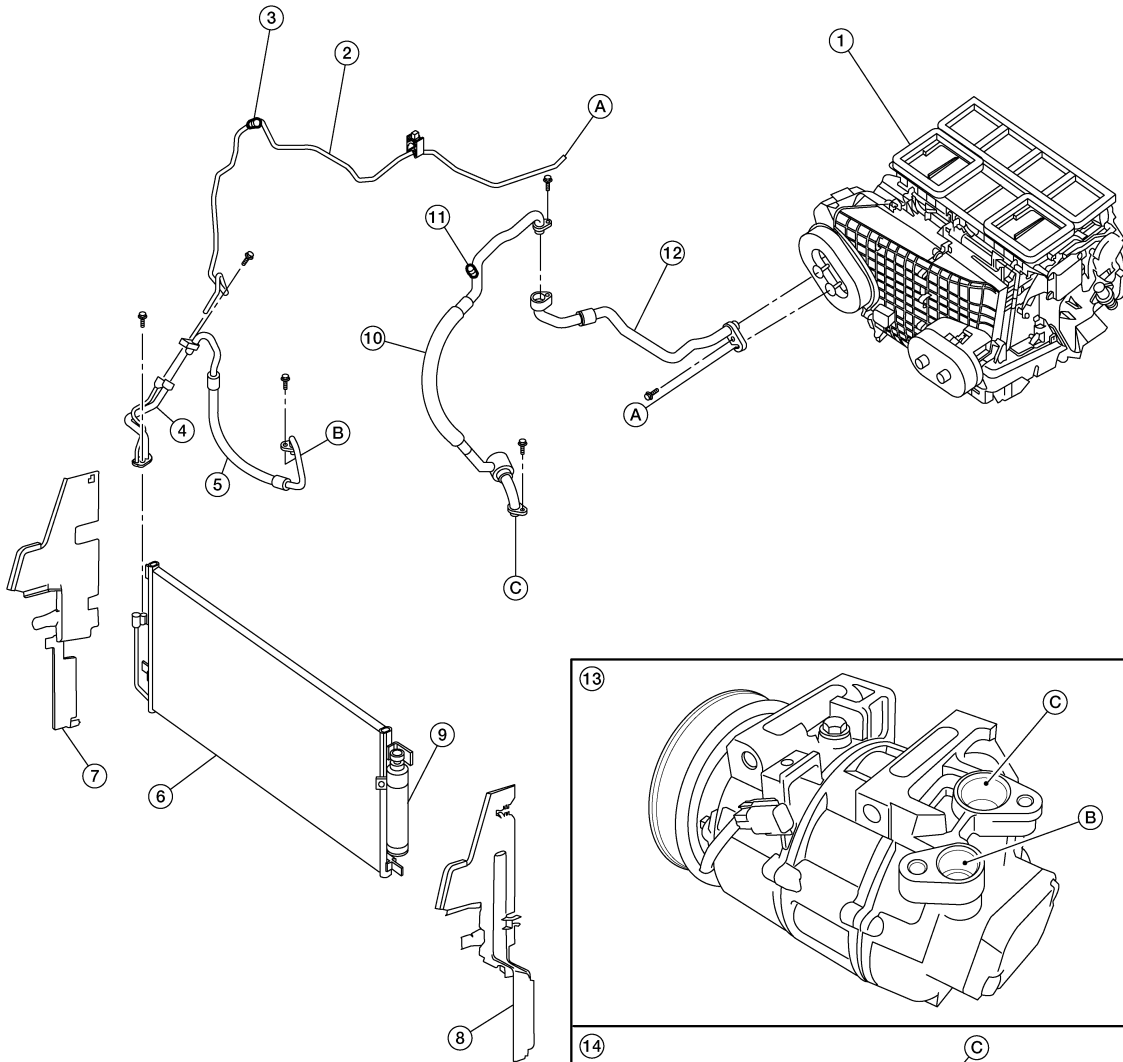


## O-RING AND REFRIGERANT CONNECTION

# PRECAUTIONS

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- |                                     |                                    |                                    |
|-------------------------------------|------------------------------------|------------------------------------|
| 1. Heater and cooling unit assembly | 2. High-pressure pipe              | 3. High-pressure A/C service valve |
| 4. Junction pipe                    | 5. High-pressure flexible hose     | 6. Condenser and liquid tank       |
| 7. Air deflector RH                 | 8. Air deflector LH                | 9. Refrigerant pressure sensor     |
| 10. Low-pressure flexible hose      | 11. Low-pressure A/C service valve | 12. Low-pressure pipe              |

# PRECAUTIONS

## < PRECAUTION >

13. Compressor (QR25DE)

14. Compressor (VQ35DE)

A. High-pressure pipe to heater and cooling unit assembly

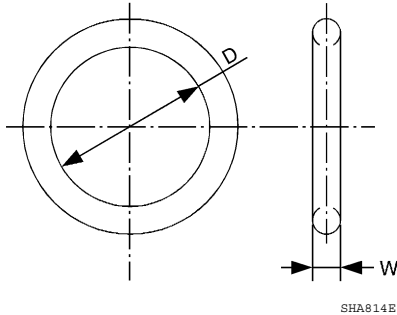
B. high-pressure flexible hose to compressor

C. low-pressure flexible hose to compressor

### CAUTION:

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

#### O-Ring Specifications\*



Connection type	O-ring size	D mm (in)	W mm (in)
New	8	6.8 (0.268)	1.85 (0.0728)
Former	10	9.25 (0.3642)	1.78 (0.0701)
New	12	10.9 (0.429)	2.43 (0.0957)
Former		11.0 (0.433)	2.4 (0.094)
New	16	13.6 (0.535)	2.43 (0.0957)
Former		14.3 (0.563)	2.3 (0.091)
New	19	16.5 (0.650)	2.43 (0.0957)
Former		17.12 (0.6740)	1.78 (0.0701)
New	24	21.8 (0.858)	2.4 (0.094)

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

### WARNING:

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

### CAUTION:

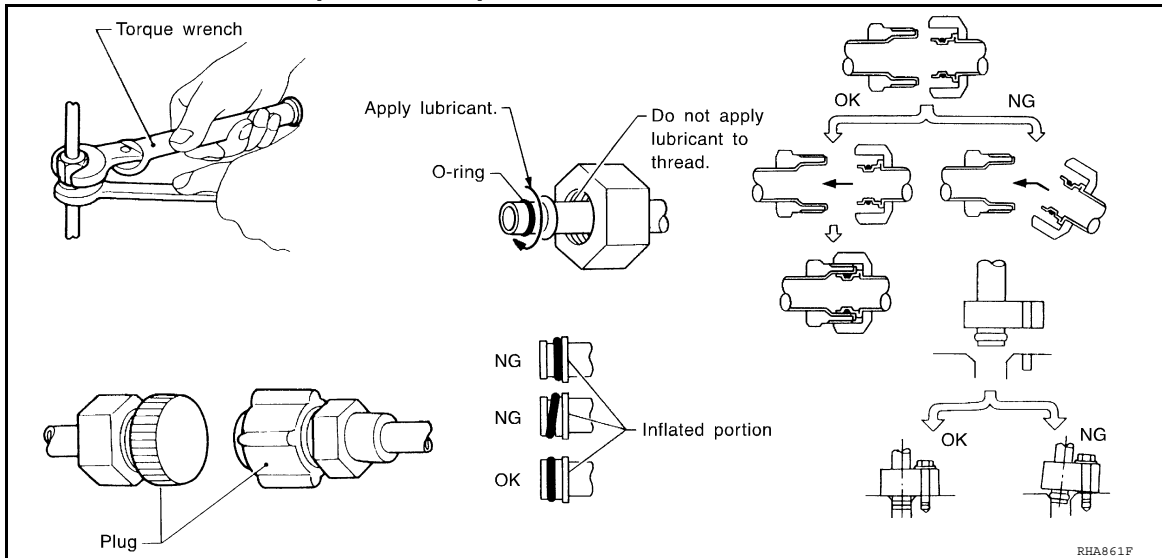
When replacing or cleaning refrigerant cycle components, observe the following.

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

# PRECAUTIONS

## < PRECAUTION >

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



## Precaution for Service of Compressor

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- Plug all openings to prevent moisture and foreign matter from entering.
- When the compressor is removed, store it in the same position as it is when mounted on the car.
- When replacing or repairing compressor, follow "Maintenance of Oil Quantity in Compressor" exactly. Refer to [HA-18. "Maintenance of Oil Quantity in Compressor"](#).
- Keep friction surfaces between clutch and pulley clean. If the surface is contaminated, with oil, wipe it off by using a clean waste cloth moistened with thinner.
- After compressor service operation, turn the compressor shaft by hand more than 5 turns in both directions. This will equally distribute oil inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for 1 hour.
- After replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation. [Gap between clutch disc and pulley is 0.3 - 0.6 mm (0.012 - 0.024 in)]

## Precaution for Service Equipment

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### RECOVERY/RECYCLING EQUIPMENT

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

### ELECTRONIC LEAK DETECTOR

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

### VACUUM PUMP



# PRECAUTIONS

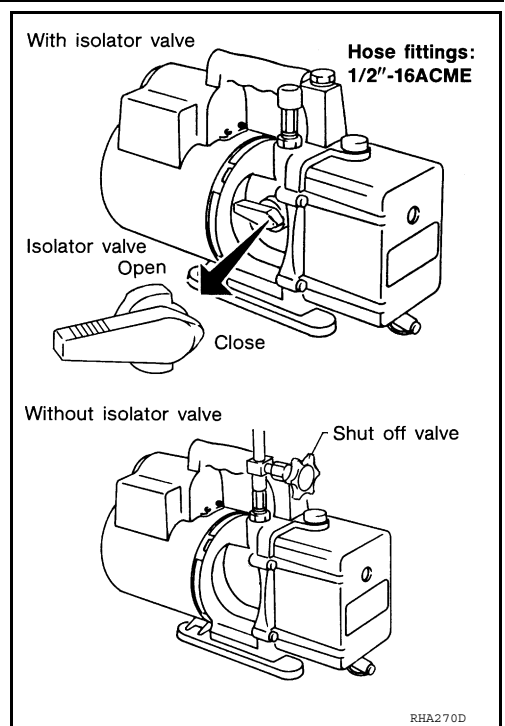
## < PRECAUTION >

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

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

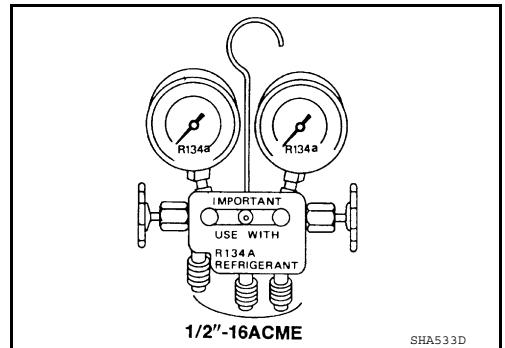
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has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

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



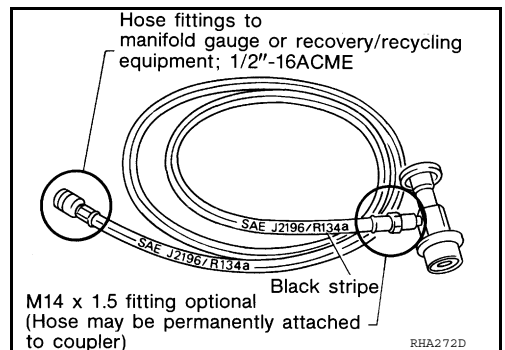
## MANIFOLD GAUGE SET

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



## SERVICE HOSES

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



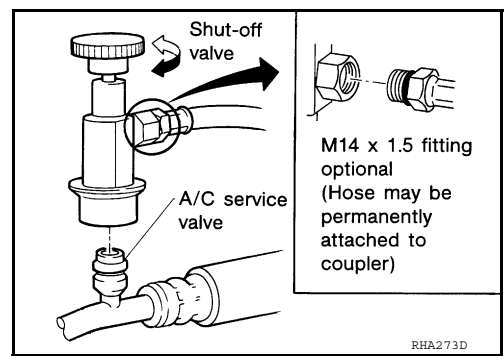
## SERVICE COUPLERS

# PRECAUTIONS

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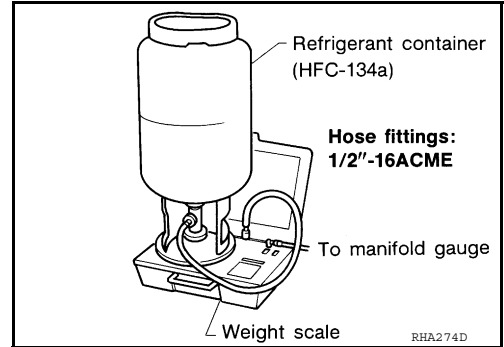
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



## REFRIGERANT WEIGHT SCALE

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



## CHARGING CYLINDER

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

# PREPARATION

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## PREPARATION

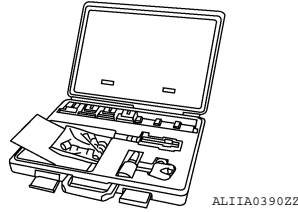
### PREPARATION

#### Special Service Tool

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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here. 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
— (J-41425-NIS) Aluminum tube repair kit	Repairing leaks in A/C tubes

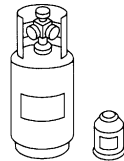


#### HFC-134a (R-134a) Service Tool and Equipment

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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
— ( — ) Refrigerant HFC-134a (R-134a)	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size <ul style="list-style-type: none"> <li>• large container 1/2" -16 ACME</li> </ul>
— ( — ) Genuine NISSAN A/C System Oil Type S	Type: Poly alkaline glycol oil (PAG), type S Application: HFC-134a (R-134a) vane rotary compressors (NISSAN only) Lubricity: 40 m ℓ (1.4 US fl oz, 1.4 Imp fl oz)



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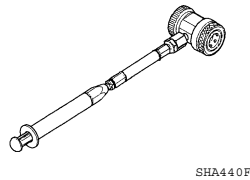
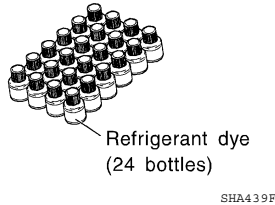
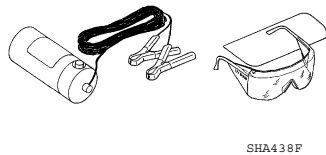
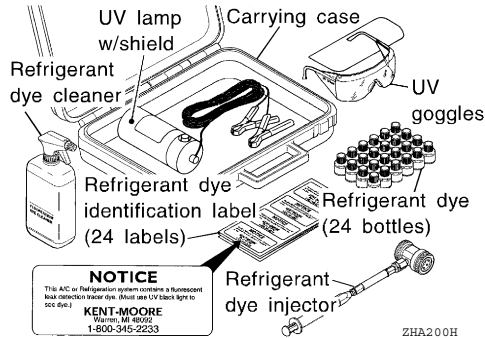
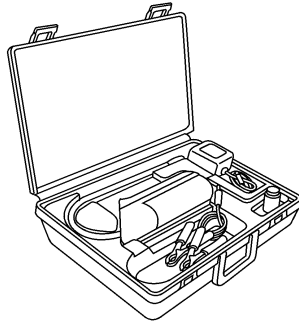
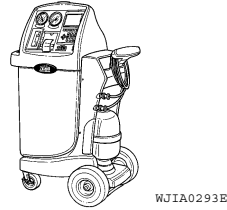


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# PREPARATION

## < PREPARATION >

Tool number (Kent-Moore No.) Tool name	Description
K991J0130 (ACR2005-NI) ACR A/C Service Center	Refrigerant recovery, recycling and re-charging
— (J-41995) Electronic refrigerant leak detector	Power supply: DC 12V (Battery terminal)
— (J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) Refrigerant dye injector (J-41447) qty. 24 HFC-134a (R-134a) refrigerant dye (J-43872) Refrigerant dye cleaner	Power supply: DC 12V (Battery terminal)
— (J-42220) Fluorescent dye leak detector	Power supply: DC 12V (Battery terminal) For checking refrigerant leak when fluorescent dye is installed in A/C system. Includes: UV lamp and UV safety goggles
— (J-41447) HFC-134a (R-134a) Fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)	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.)
— (J-41459) HFC-134a (R-134a) Dye injector Use with J-41447, 1/4 ounce bottle	For injecting 1/4 ounce of fluorescent leak detection dye into A/C system.



# PREPARATION

## < PREPARATION >

Tool number (Kent-Moore No.) Tool name	Description
— (J-43872) Refrigerant dye cleaner	For cleaning dye spills.
— (J-39183-C) Manifold gauge set (with hoses and couplers)	Identification: <ul style="list-style-type: none"> <li>• The gauge face indicates R-134a.</li> <li>• Fitting size: Thread size</li> <li>• 1/2" -16 ACME</li> </ul>
Service hoses <ul style="list-style-type: none"> <li>• (J-39500-72B) High side hose</li> <li>• (J-39500-72R) Low side hose</li> <li>• (J-39500-72Y) Utility hose</li> </ul>	Hose color: <ul style="list-style-type: none"> <li>• Low side hose: Blue with black stripe</li> <li>• High side hose: Red with black stripe</li> <li>• Utility hose: Yellow with black stripe or green with black stripe</li> </ul> Hose fitting to gauge: <ul style="list-style-type: none"> <li>• 1/2" -16 ACME</li> </ul>
Service couplers <ul style="list-style-type: none"> <li>• (J-39500-20A) High side coupler</li> <li>• (J-39500-24A) Low side coupler</li> </ul>	Hose fitting to service hose: <ul style="list-style-type: none"> <li>• M14 x 1.5 fitting is optional or permanently attached.</li> </ul>
— (J-39649) Vacuum pump (Including the isolator valve)	Capacity: <ul style="list-style-type: none"> <li>• Air displacement: 4 CFM</li> <li>• Micron rating: 20 microns</li> <li>• Oil capacity: 482 g (17 oz)</li> </ul> Fitting size: Thread size <ul style="list-style-type: none"> <li>• 1/2" -16 ACME</li> </ul>

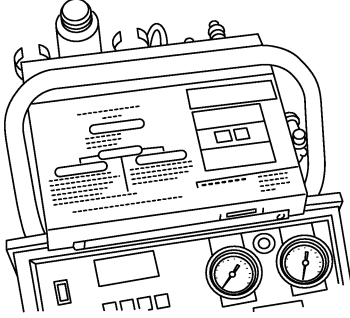

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## Commercial Service Tool

INFOID:000000005433190

# PREPARATION

## < PREPARATION >

Tool number Tool name	Description
<p>J-41810-NI Refrigerant identifier equipment HFC 134a (R-134a)</p>  <p>RJIA0197E</p>	<p>Checking refrigerant purity and system contamination</p>
<p>Power tool</p>  <p>PIIB1407E</p>	<p>Removing bolts, screws and nuts</p>

# REFRIGERATION SYSTEM

< FUNCTION DIAGNOSIS >

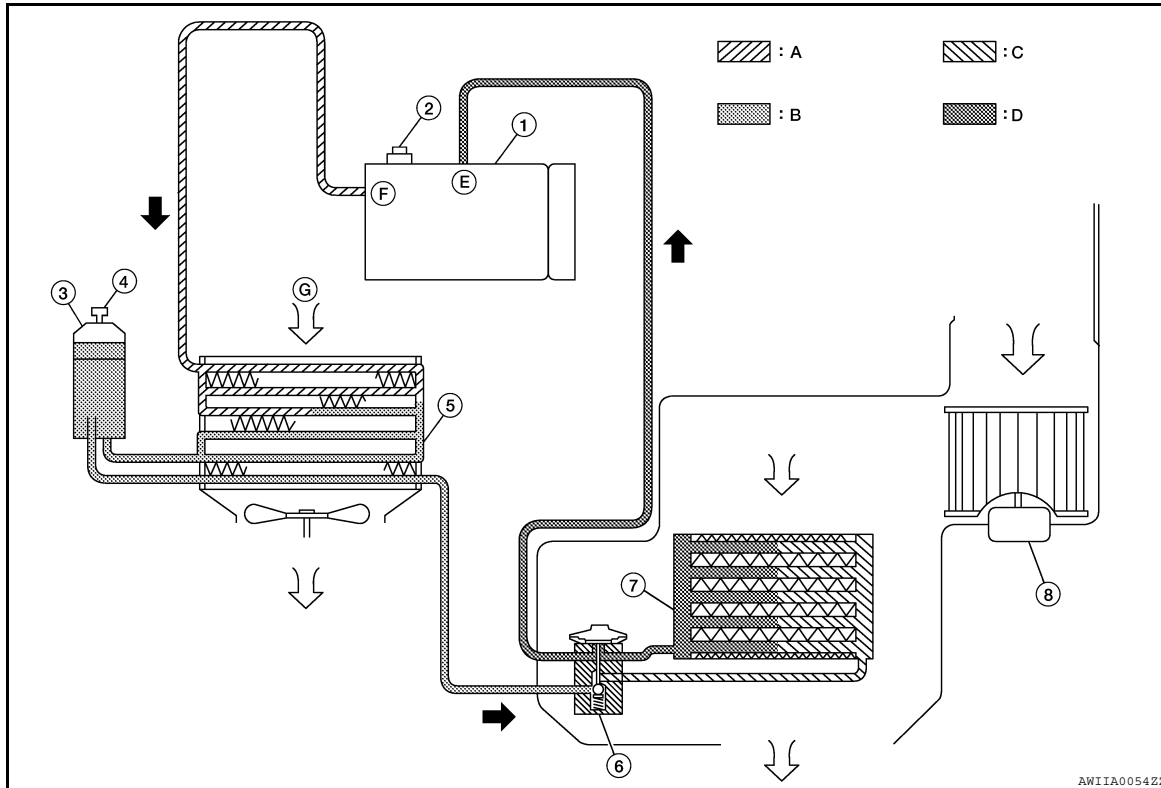
## FUNCTION DIAGNOSIS

### REFRIGERATION SYSTEM

#### Refrigerant Cycle

INFOID:000000005433191

#### Refrigerant flow



- |                                |                          |                      |
|--------------------------------|--------------------------|----------------------|
| 1. Electric compressor         | 2. Pressure relief valve | 3. Liquid tank       |
| 4. Refrigerant pressure sensor | 5. Condenser             | 6. Expansion valve   |
| 7. Evaporator                  | 8. Blower motor          | A. High-pressure gas |
| B. High-pressure liquid        | C. Low-pressure liquid   | D. Low-pressure gas  |
| E. Suction port                | F. Discharge port        | G. Outside air       |

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 coil is controlled by an externally equalized expansion valve, located inside the evaporator case.

#### Refrigerant System Protection

INFOID:000000005433192

##### 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. The ECM then ceases to supply power to the A/C relay which disengages and stops the compressor when pressure on the high pressure side (as detected by refrigerant pressure sensor) is over approximately 2,746 kPa (28 kg/cm<sup>2</sup>, 398 psi), or below approximately 120 kPa (1.22 kg/cm<sup>2</sup>, 17.4 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 abnormal level [more than 3,727 kPa (38 kg/cm<sup>2</sup>, 540 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.

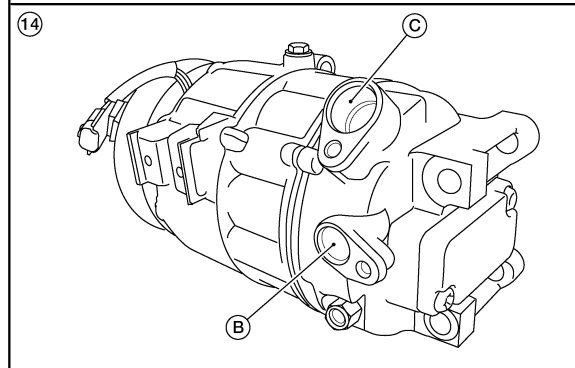
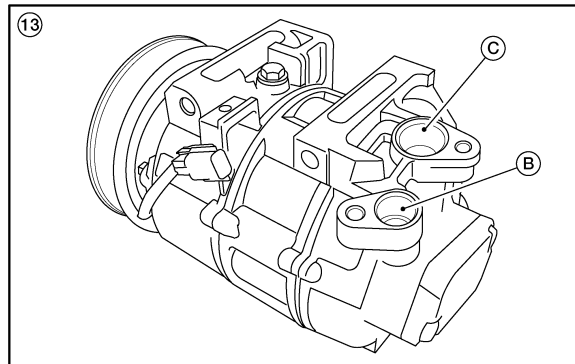
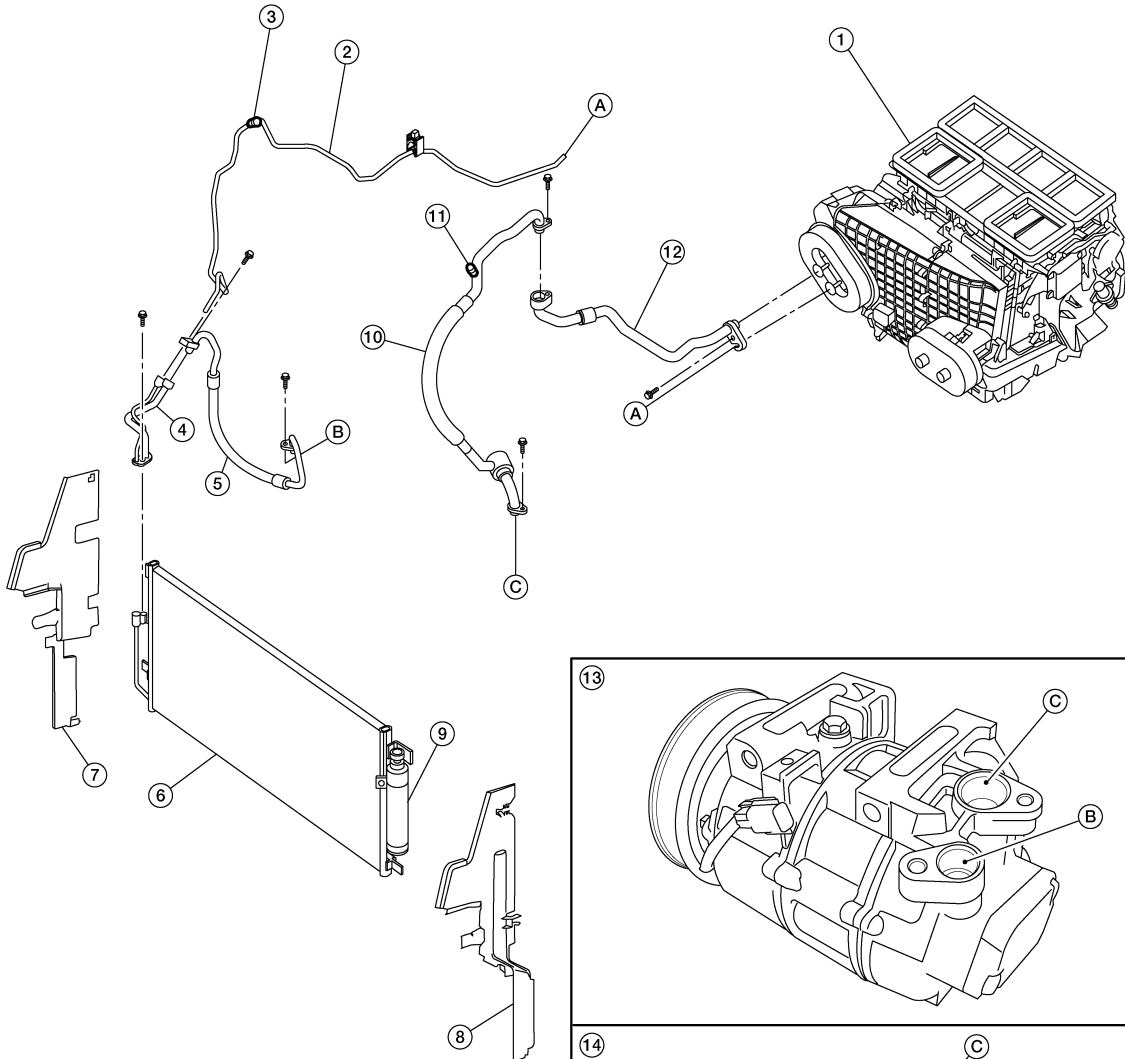
# REFRIGERATION SYSTEM

< FUNCTION DIAGNOSIS >

## Component Part Location

INFOID:000000005433193

SEC. 270 • 272 • 275 • 276 • 278



- |                                     |                                    |                                    |
|-------------------------------------|------------------------------------|------------------------------------|
| 1. Heater and cooling unit assembly | 2. High-pressure pipe              | 3. High-pressure A/C service valve |
| 4. Junction pipe                    | 5. High-pressure flexible hose     | 6. Condenser and liquid tank       |
| 7. Air deflector RH                 | 8. Air deflector LH                | 9. Refrigerant pressure sensor     |
| 10. Low-pressure flexible hose      | 11. Low-pressure A/C service valve | 12. Low-pressure pipe              |



# REFRIGERATION SYSTEM

## < FUNCTION DIAGNOSIS >

---

13. Compressor (QR25DE)

14. Compressor (VQ35DE)

A. High-pressure pipe to heater and cooling unit assembly

B. high-pressure flexible hose to compressor

C. low-pressure flexible hose to compressor

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# OIL

< ON-VEHICLE MAINTENANCE >

## ON-VEHICLE MAINTENANCE

### OIL

#### Maintenance of Oil Quantity in Compressor

INFOID:000000005433194

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

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

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

### OIL

- Oil type: NISSAN A/C System Oil Type S or equivalent


#### CHECKING AND ADJUSTING

##### **CAUTION:**

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

Start the engine and set the following conditions:

##### Test Condition

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

Adjust the oil quantity according to the following table.

#### Oil Adjusting Procedure for Components Replacement Except Compressor

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

Amount of Oil to be Added

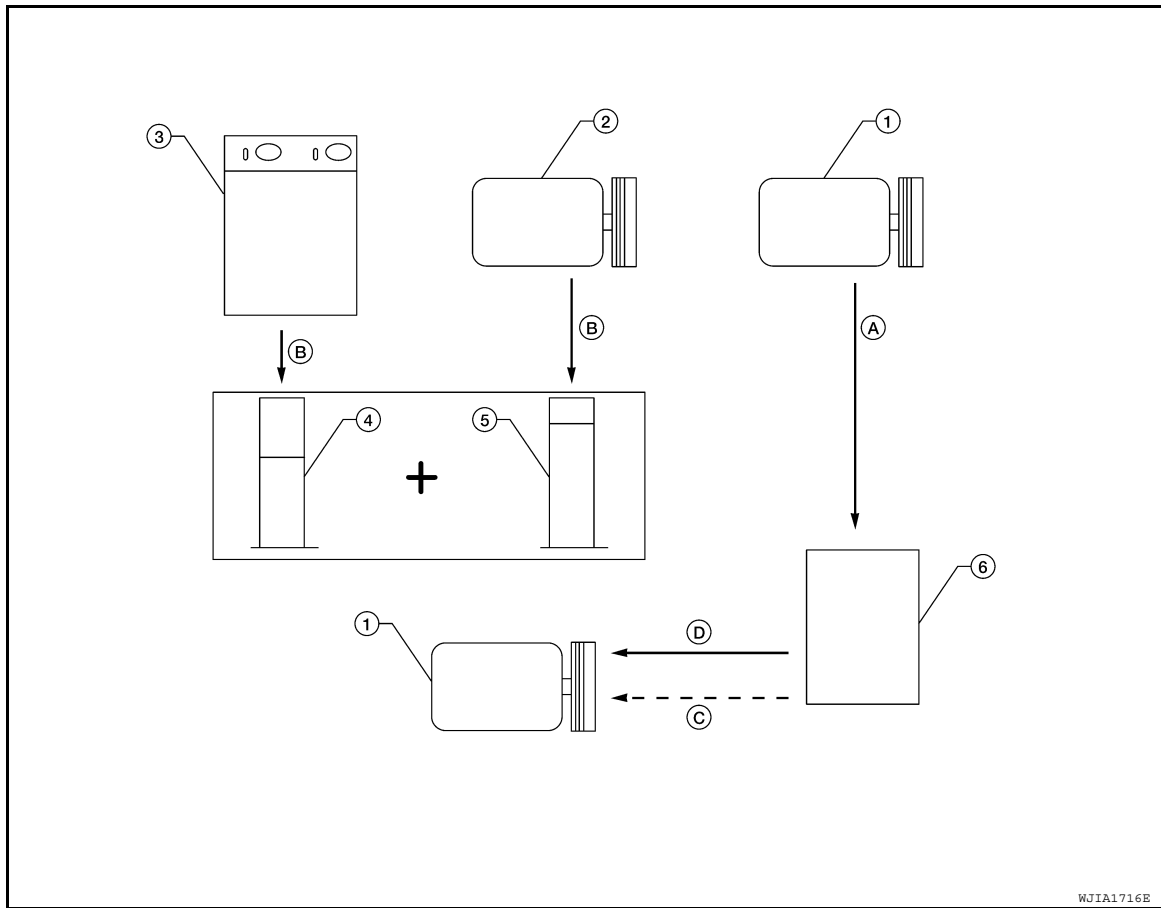
Part replaced	Oil to be added to system	Remarks
	Amount of oil m ℓ (US fl oz, Imp fl oz)	
Evaporator	75 (2.5, 2.6)	—
Condenser	75 (2.5, 2.6)	—
Liquid tank	5 (0.2, 0.2)	Add if compressor is not replaced.
In case of refrigerant leak	30 (1.0, 1.1)	Large leak
	—	Small leak *1

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

#### Oil Adjustment Procedure for Compressor Replacement

# OIL

## < ON-VEHICLE MAINTENANCE >



- |   |                                   |  |
|---|-----------------------------------|--|
| 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 ℓ (0.2 US fl oz, 0.2 Imp fl oz) of new oil when replacing liquid tank |
| D. Install new oil equal to recorded amounts in measuring cups X plus Y |                                   |  |

- Before connecting recovery/recycling equipment to vehicle, check recovery/recycling equipment gauges. No refrigerant pressure should be displayed. If NG, recover refrigerant from equipment lines.
- Connect recovery/recycling equipment to vehicle. Confirm refrigerant purity in supply tank using recovery/recycling equipment and refrigerant identifier. If NG, refer to [HA-4, "Contaminated Refrigerant"](#).
- Confirm refrigerant purity in vehicle A/C system using recovery/recycling equipment and refrigerant identifier. If NG, refer to [HA-4, "Contaminated Refrigerant"](#).
- Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure oil discharged into the recovery/recycling equipment.
- Drain the oil from the "old" (removed) compressor into a graduated container and recover the amount of oil drained.
- Drain the oil from the "new" compressor into a separate, clean container.
- Measure an amount of new oil installed equal to amount drained from "old" compressor. Add this oil to "new" compressor through the suction port opening.
- Measure an amount of new oil equal to the amount recovered during discharging. Add this oil to "new" compressor through the suction port opening.
- If the liquid tank also needs to be replaced, add an additional 5 m ℓ (0.2 US fl oz, 0.2 Imp fl oz) of oil at this time.

**CAUTION:**

## OIL

< ON-VEHICLE MAINTENANCE >

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

# REFRIGERATION SYSTEM

< ON-VEHICLE MAINTENANCE >

## REFRIGERATION SYSTEM

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

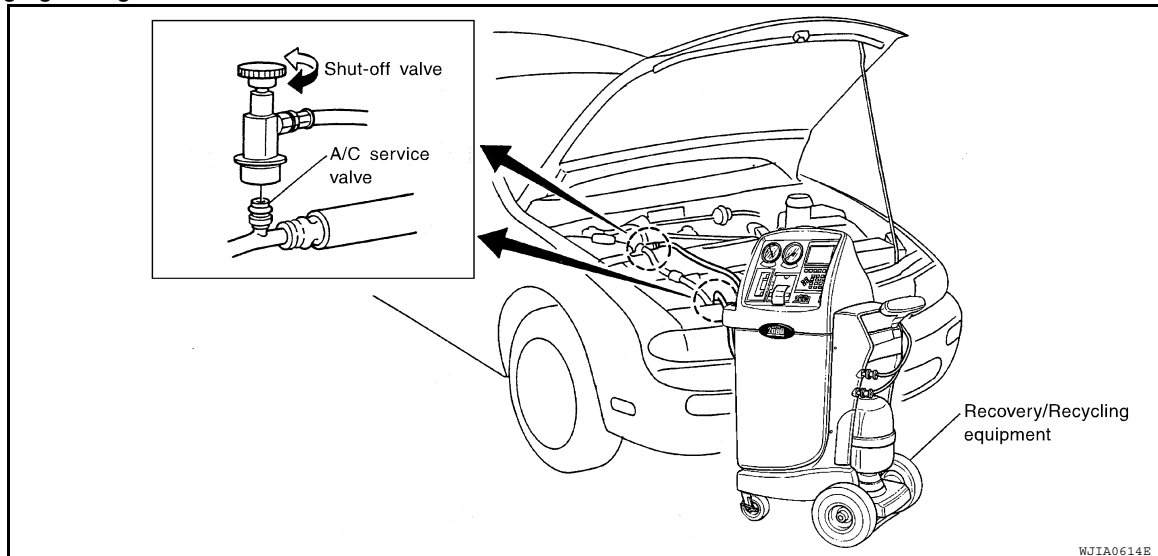
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#### SETTING OF SERVICE TOOLS AND EQUIPMENT

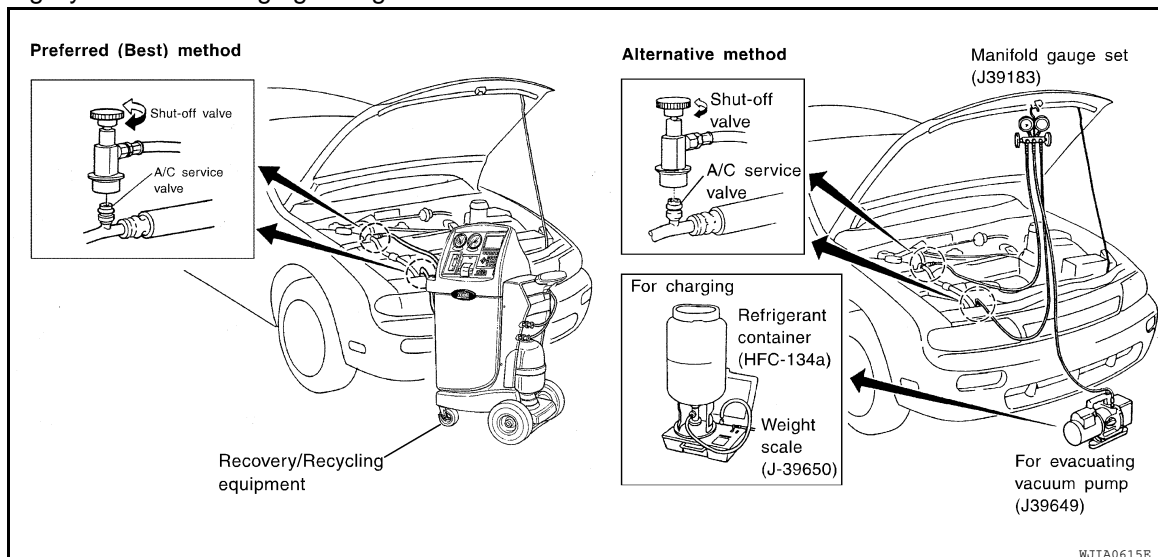
#### **WARNING:**

Avoid breathing the A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose, and throat. Remove the HFC-134a (R-134a) from the A/C system using certified service equipment meeting the requirements of SAE J2210 (R-134a recycling equipment) or SAE J2201 (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.

#### Discharging Refrigerant



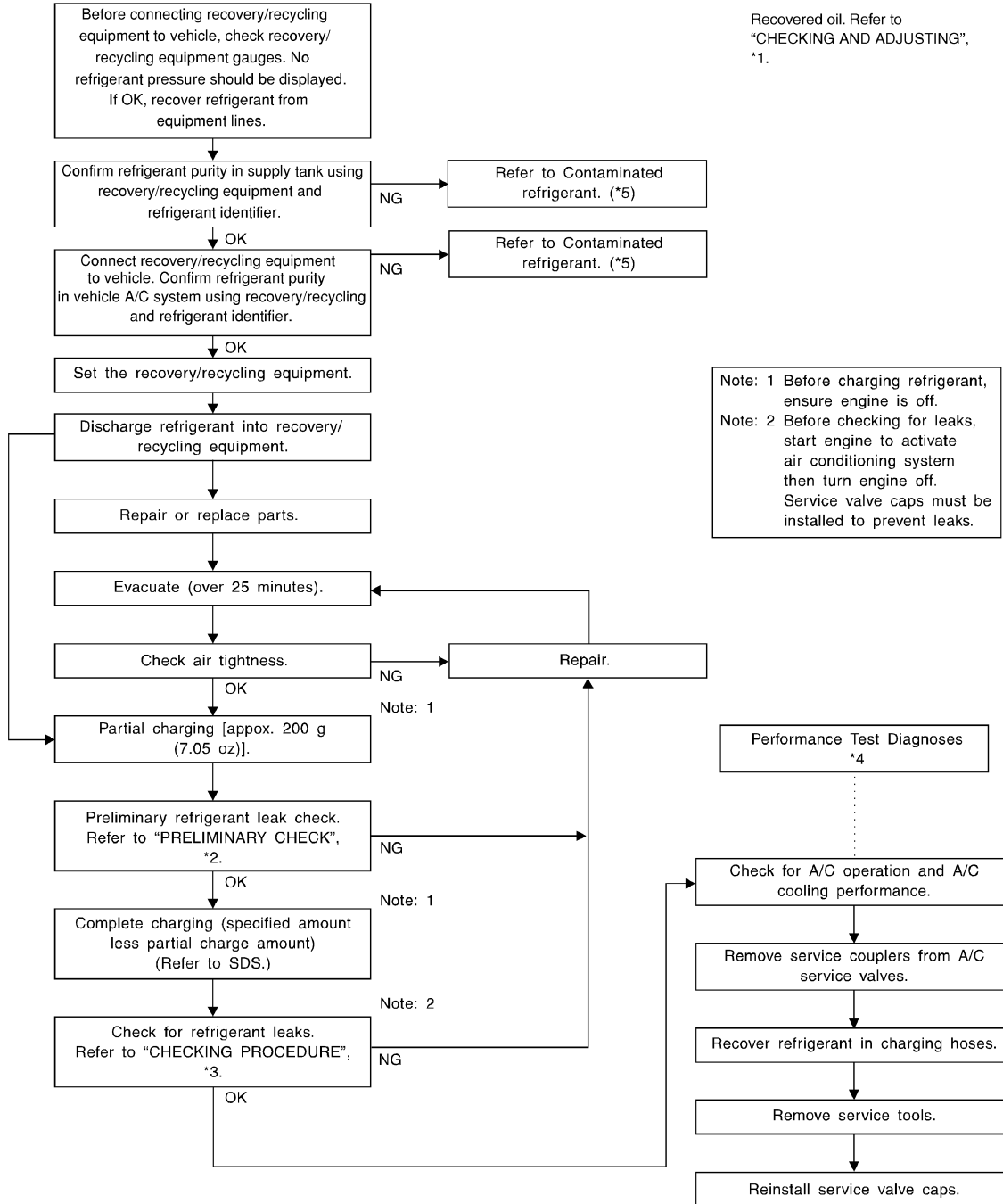
#### Evacuating System and Charging Refrigerant



# REFRIGERATION SYSTEM

< ON-VEHICLE MAINTENANCE >

## Discharging, Evacuating, and Recharging the A/C System



WJIA1923E

\*1 [HA-18, "Maintenance of Oil Quantity in Compressor"](#)

\*3 [HA-22, "Checking of Refrigerant Leaks"](#)

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

\*2 [HA-22, "Checking of Refrigerant Leaks"](#)

\*4 [HAC-5, "Operational Check"](#)

## Checking of Refrigerant Leaks

INFOID:000000005433196

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.

# REFRIGERATION SYSTEM

## < ON-VEHICLE MAINTENANCE >

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 - 50 mm (1 - 2 in) per second and no further than 6 mm (1/4 in) from the component.

**CAUTION:**

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

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# FLUORESCENT LEAK DETECTOR

< ON-VEHICLE MAINTENANCE >

## FLUORESCENT LEAK DETECTOR

### Checking System for Leaks Using the Fluorescent Leak Detector

INFOID:000000005433197

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 TXV) leak.
2. If the suspected area is difficult to see, use an adjustable mirror or wipe the area with a clean shop rag or cloth, with the UV lamp for dye residue.
3. After the leak is repaired, remove any residual dye using refrigerant dye cleaner (J-43872) to prevent future misdiagnosis.
4. Perform a system performance check and 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:000000005433198

#### NOTE:

This procedure is only necessary when recharging the A/C system or when the compressor has seized and has been replaced.

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

#### CAUTION:

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

3. Connect the injector tool to the A/C LOW PRESSURE side service valve.
4. Start the engine and switch the A/C ON and fan ON.
5. While the A/C is operating (compressor running), inject one bottle (1/4 ounce / 7.4 cc) of fluorescent dye through the low-pressure service valve using dye injector tool (J-41459), refer to the manufacturer's operating instructions.
6. With the engine still running, disconnect the injector tool from the low-pressure service valve.
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 a few minutes to a few days for the dye to penetrate the leak and become visible.



# ELECTRICAL LEAK DETECTOR

< ON-VEHICLE MAINTENANCE >

## ELECTRICAL LEAK DETECTOR

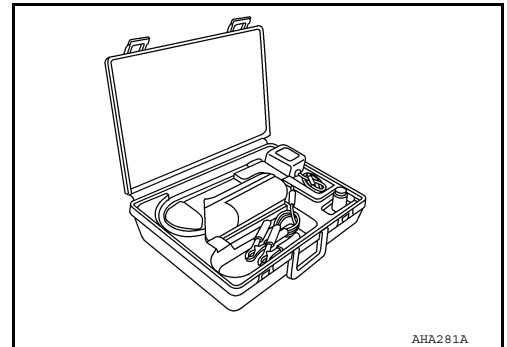
### Electronic Refrigerant Leak Detector

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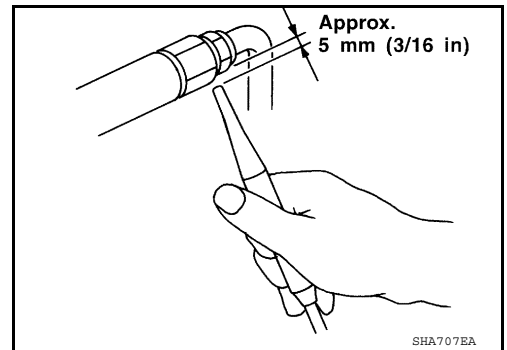
#### PRECAUTIONS FOR HANDLING THE LEAK DETECTOR

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

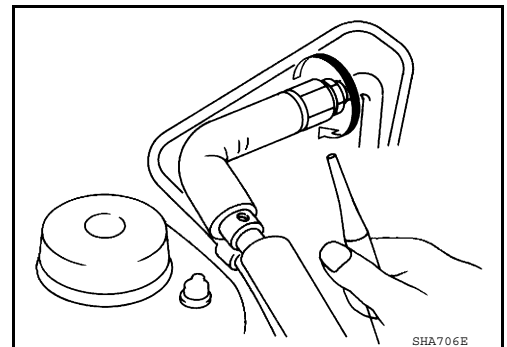
The leak detector is a delicate device. In order to use the leak detector properly, read the manufacturer's operating instructions and perform any specified maintenance.



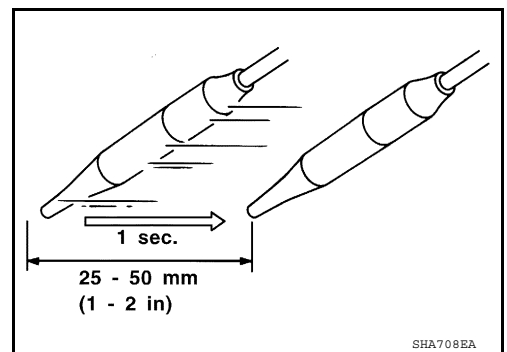
1. Position the leak detector probe approximately 5 mm (3/16 in) away from the point to be checked.



2. When testing, circle each fitting completely with the leak detector probe.



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



#### CHECKING PROCEDURE

##### NOTE:

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

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# ELECTRICAL LEAK DETECTOR

## < ON-VEHICLE MAINTENANCE >

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

**NOTE:**

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

4. Conduct the leak test from the high side (compressor discharge to evaporator inlet) to the low side (evaporator drain hose to the compressor shaft seal). Refer to [HA-28. "Component"](#). Clean the component to be checked and move the leak detector probe completely around the connection/component. Perform a leak check for the following areas:

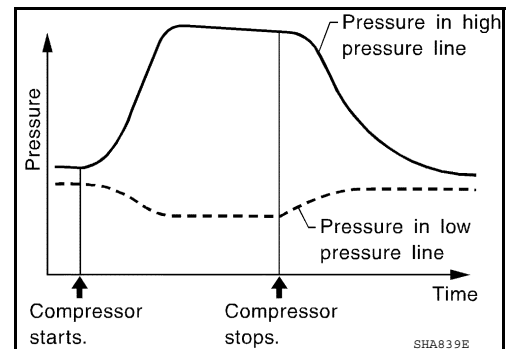
- Compressor
- High and low-pressure hose fittings, relief valve and shaft seal.
- Liquid tank
- Refrigerant pressure sensor
- Service valves
  - Check that all the service valve caps are secure on the service valves (to prevent leaks).
  - After removing A/C manifold gauge set from service valves, wipe any residue from the valves to prevent any false readings by the leak detector.
- Evaporator
  - With engine OFF, turn blower fan on high speed for at least 15 seconds to dissipate any refrigerant trace around the evaporator. 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 front air control as follows;
  - a. A/C switch: ON
  - b. Mode: Vent
  - c. Intake position: Recirculation
  - d. Temperature: MAX cold
  - e. Blower 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 the recovery/recycling equipment to the A/C system, check the recovery/recycling equipment gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover the refrigerant from the equipment lines and then check the refrigerant purity.
12. Confirm the refrigerant purity in the supply tank using the recovery/recycling equipment and the refrigerant identifier equipment.

## ELECTRICAL LEAK DETECTOR

### < ON-VEHICLE MAINTENANCE >

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13. Confirm the refrigerant purity in the A/C system using the recovery/recycling equipment and the refrigerant identifier equipment.
14. Discharge the A/C system using approved refrigerant recovery/recycling equipment. Repair the leaking fitting or component as necessary.
15. Evacuate and recharge the A/C system and perform the leak test to confirm there are no refrigerant leaks.
16. Conduct the A/C performance test to ensure that the system works properly. Refer to [HAC-5, "Operational Check"](#).

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# REFRIGERATION SYSTEM

< ON-VEHICLE REPAIR >

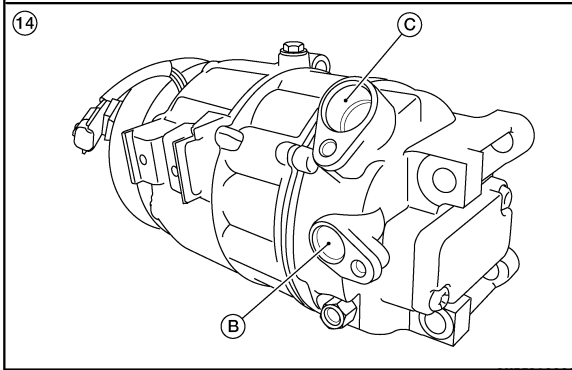
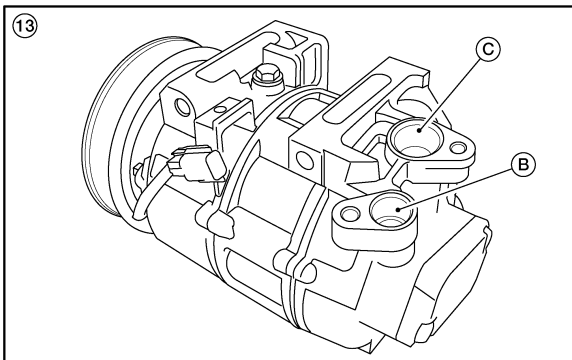
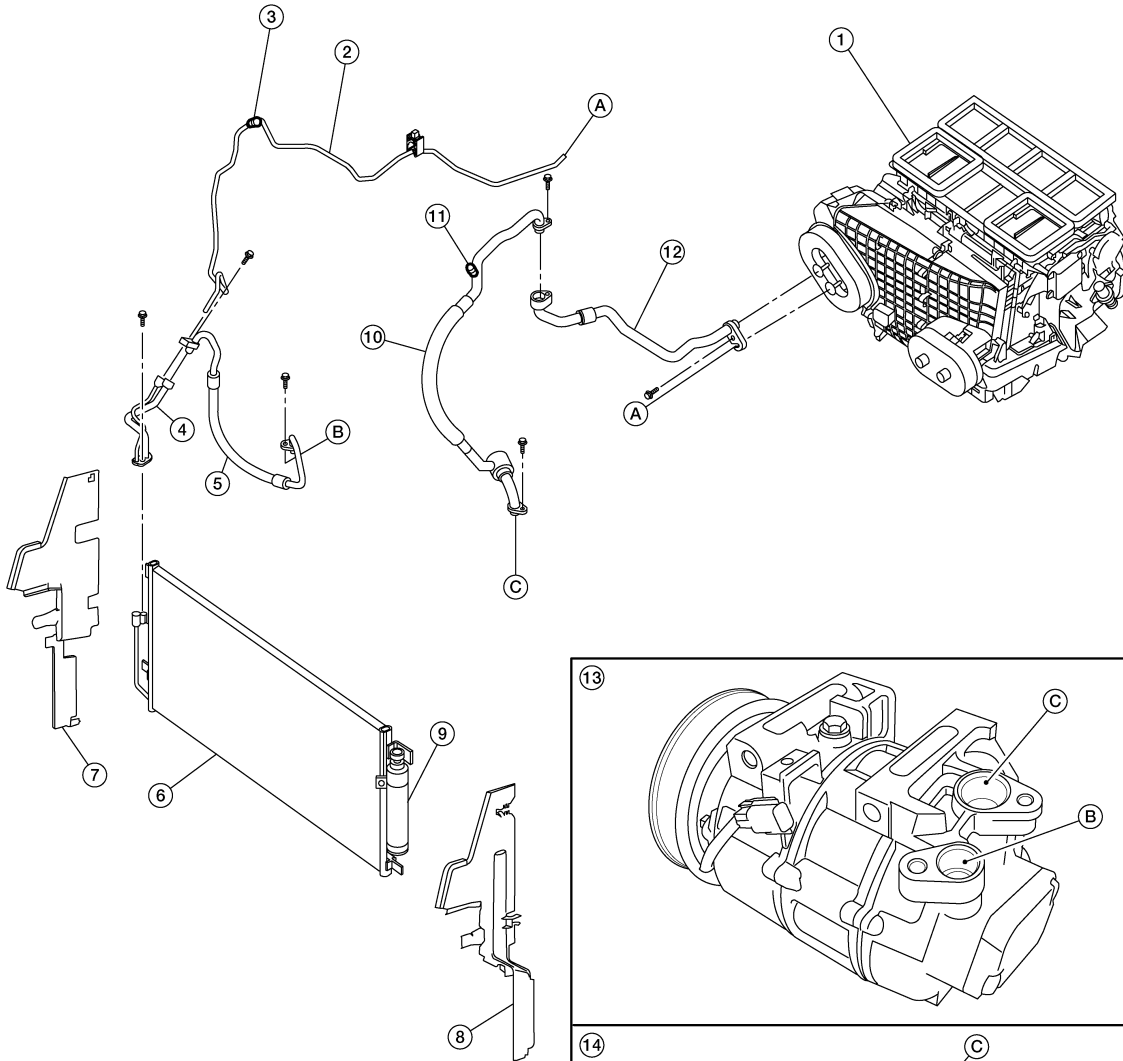
## ON-VEHICLE REPAIR

### REFRIGERATION SYSTEM

Component

INFOID:000000005433200

SEC. 270 • 272 • 275 • 276 • 278



AW11F1555Z

# REFRIGERATION SYSTEM

## < ON-VEHICLE REPAIR >

- |  |   |   |   |
|--|---|---|---|
| 1. Heater and cooling unit assembly          | 2. High-pressure pipe                       | 3. High-pressure A/C service valve                        | A |
| 4. Junction pipe                             | 5. High-pressure flexible hose              | 6. Condenser and liquid tank                              | B |
| 7. Air deflector RH                          | 8. Air deflector LH                         | 9. Refrigerant pressure sensor                            | C |
| 10. Low-pressure flexible hose               | 11. Low-pressure A/C service valve          | 12. Low-pressure pipe                                     | D |
| 13. Compressor (QR25DE)                      | 14. Compressor (VQ35DE)                     | A. High-pressure pipe to heater and cooling unit assembly | E |
| B. high-pressure flexible hose to compressor | C. low-pressure flexible hose to compressor |   | F |

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

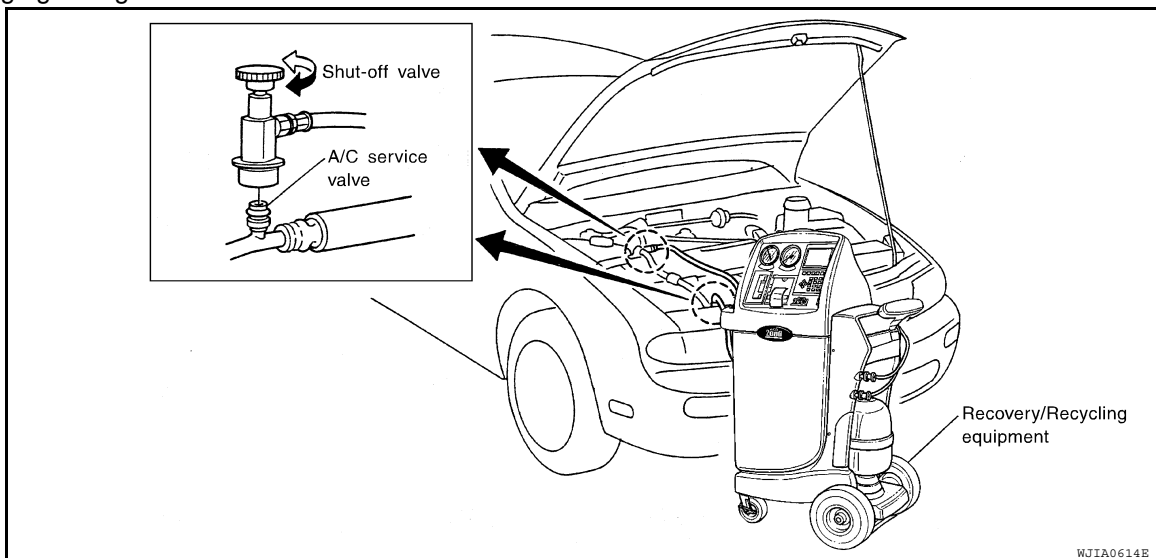
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### SETTING OF SERVICE TOOLS AND EQUIPMENT

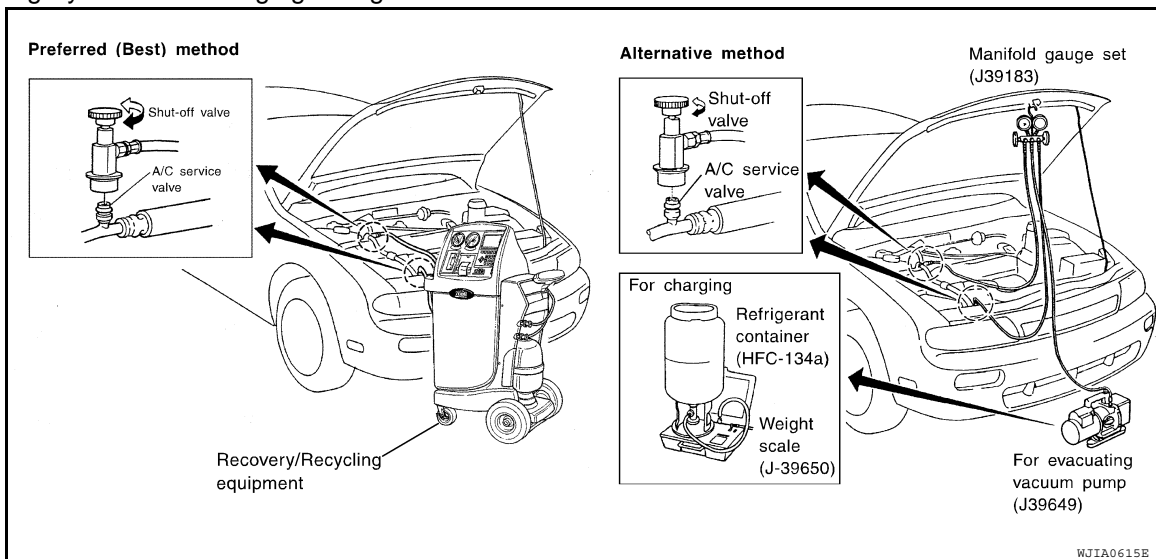
#### **WARNING:**

**Avoid breathing the A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose, and throat. Remove the HFC-134a (R-134a) from the A/C system using certified service equipment meeting the requirements of SAE J2210 (R-134a recycling equipment) or SAE J2201 (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.**

#### Discharging Refrigerant



#### Evacuating System and Charging Refrigerant



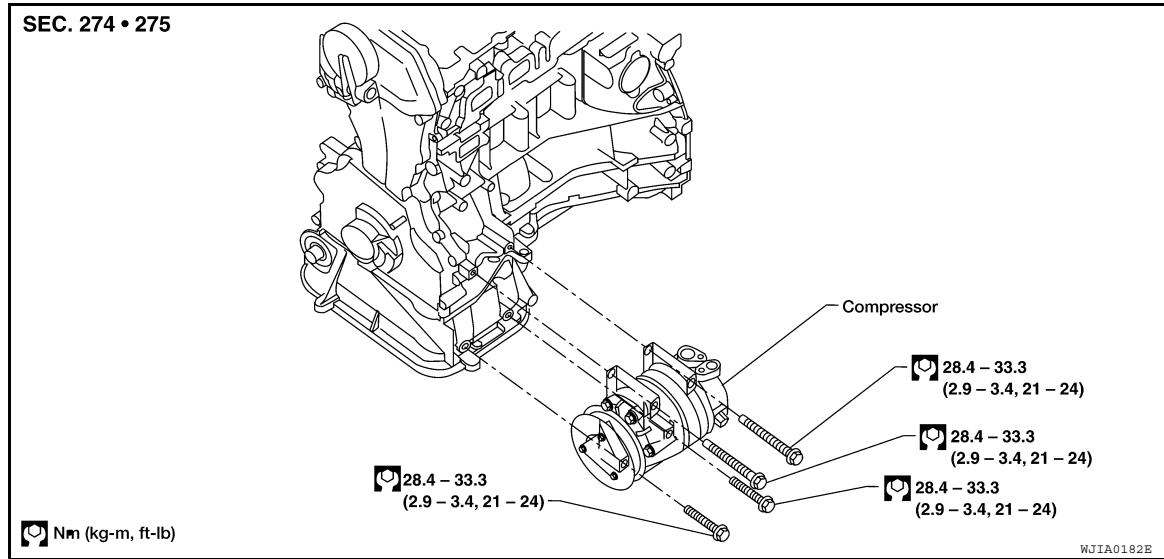
# COMPRESSOR

< ON-VEHICLE REPAIR >

## COMPRESSOR

### Removal and Installation for Compressor - QR25DE Models

INFOID:000000005433202



#### REMOVAL

1. Discharge the refrigerant. Refer to [HA-29, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the front air duct. Refer to [EM-25, "Removal and Installation"](#).
3. Remove the engine undercover.
4. Remove the front RH wheel and tire. Refer to [WT-65, "Adjustment"](#).
5. Remove the side cover from inside the front RH wheel well.
6. Remove the drive belt. Refer to [EM-16, "Removal and Installation"](#).
7. Remove the clip and reposition the power steering pipe out of the way.
8. Disconnect the compressor connector.
9. Disconnect the high-pressure flexible hose and low-pressure flexible hose from the compressor.

#### CAUTION:

**Cap or wrap the joint of the hose with a suitable material such as vinyl tape to avoid the entry of any contaminants.**

10. Remove the compressor bolts, then remove the compressor using power tools.

#### INSTALLATION

Installation is in the reverse order of removal.

#### CAUTION:

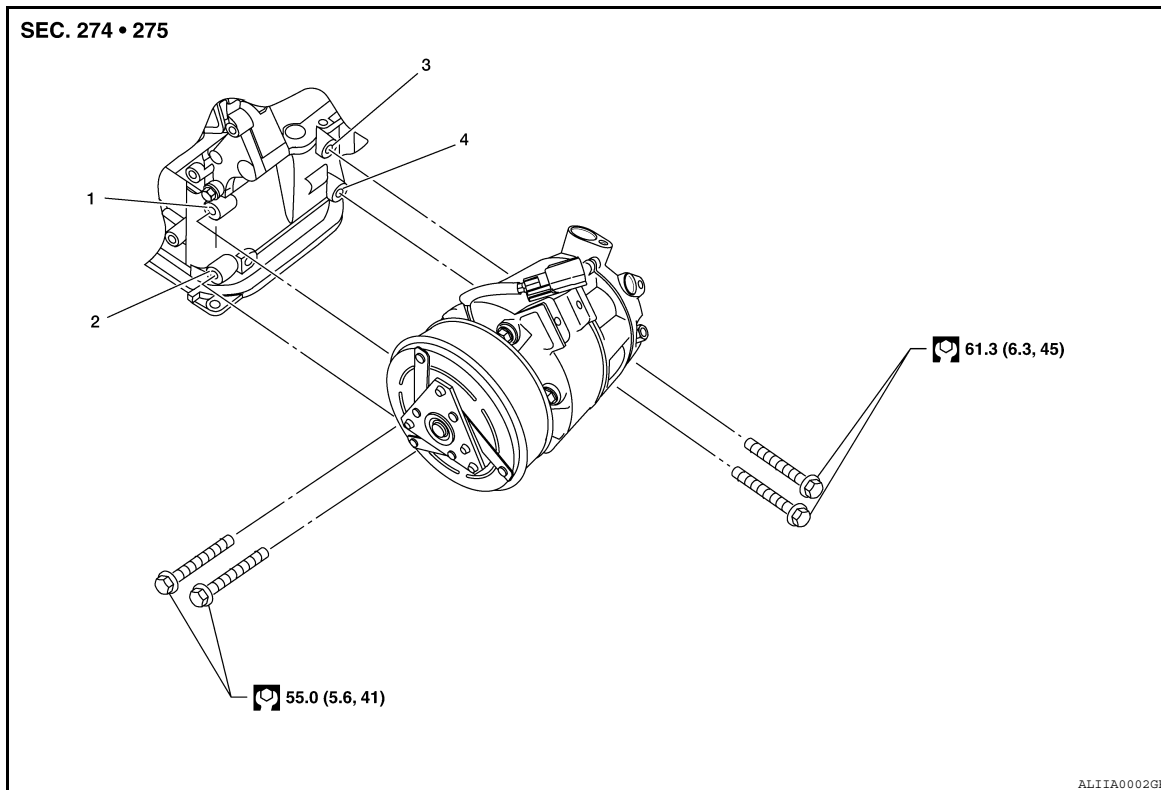
- Replace the O-ring of the low-pressure flexible hose and high-pressure flexible hose with new ones, then apply A/C oil to them for installation.
- After charging the A/C refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

# COMPRESSOR

< ON-VEHICLE REPAIR >

## Removal and Installation for Compressor - VQ35DE Models

INFOID:000000005433203



**CAUTION:**

For installation, tighten the compressor bolts in the order as shown.

### REMOVAL

1. Discharge the refrigerant. Refer to [HA-29, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the engine cooling fan and shroud assembly. Refer to [CO-39, "Removal and Installation"](#).
3. Disconnect the high-pressure flexible hose and low-pressure flexible hose from the compressor.

**CAUTION:**

Cap or wrap the joint of the hose with suitable material such as vinyl tape to avoid the entry of any contaminants.

4. Remove the front RH wheel and tire.
5. Remove the RH engine side undercovers.
6. Disconnect the clamp and reposition the power steering pipe out of the way.
7. Disconnect the compressor connector.
8. Remove the drive belt. Refer to [EM-120, "Removal and Installation"](#).
9. Remove the RH compressor bolts..
10. Remove the front compressor bolts using power tool.
11. Disconnect the compressor wire harness clip from the compressor.
12. Remove the compressor.

### INSTALLATION

Installation is in the reverse order of removal.

**CAUTION:**

- For installation, tighten the compressor bolts in the order as shown.
- Replace the O-rings on the low-pressure flexible hose and high-pressure flexible hose with new ones, then apply A/C oil to them for installation.
- After charging the A/C refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

# LOW-PRESSURE FLEXIBLE HOSE

< ON-VEHICLE REPAIR >

## LOW-PRESSURE FLEXIBLE HOSE

### Removal and Installation for Low-Pressure Flexible Hose

INFOID:000000005433204

#### QR25DE

##### Removal

1. Discharge the refrigerant. Refer to [HA-29, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the front air duct. Refer to [EM-25, "Removal and Installation"](#).
3. Remove the low-pressure flexible hose. Refer to [HA-28, "Component"](#).

**CAUTION:**

**Cap or wrap the joint of the hose with a suitable material such as vinyl tape to avoid the entry of contaminants.**

##### Installation

Installation is in the reverse order of removal.

**CAUTION:**

- **Replace the O-ring on the low-pressure flexible hose with a new one, then apply A/C oil to it for installation.**
- **After recharging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).**

#### VQ35DE

##### Removal

1. Discharge the refrigerant. Refer to [HA-29, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the engine cooling fan and shroud assembly. Refer to [CO-39, "Removal and Installation"](#).
3. Remove the low-pressure flexible hose. Refer to [HA-28, "Component"](#).

**CAUTION:**

**Cap or wrap the joint of the hose with a suitable material such as vinyl tape to avoid the entry of contaminants.**

##### Installation

Installation is in the reverse order of removal.

**CAUTION:**

- **Replace the O-ring on the low-pressure flexible hose with a new one, then apply A/C oil to it for installation.**
- **After recharging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).**



# LOW-PRESSURE PIPE

< ON-VEHICLE REPAIR >

## LOW-PRESSURE PIPE

### Removal and Installation for Low-Pressure Pipe

INFOID:000000005433205

#### QR25DE

##### Removal

1. Discharge the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Reposition the power steering reservoir out of the way without disconnecting the hose.
3. Reposition the engine coolant reservoir out of the way without disconnecting the hose.
4. Remove the low-pressure pipe. Refer to [HA-28, "Component"](#).

**CAUTION:**

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

##### Installation

Installation is in the reverse order of removal.

**CAUTION:**

- Replace the O-ring on the low-pressure pipe with a new one, then apply A/C oil to it for installation.
- After recharging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

#### VQ35DE

##### Removal

1. Discharge the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the strut tower bar. Refer to [FSU-12, "Exploded View"](#).
3. Remove the upper cowl. Refer to [EXT-19, "Removal and Installation"](#).
4. Remove the lower RH cowl.
5. Disconnect the power steering hose clamp to reposition the power steering hose out of the way.
6. Reposition the power steering reservoir out of the way without disconnecting the hose.
7. Reposition the engine coolant reservoir out of the way without disconnecting the hose.
8. Disconnect the harness bracket from the engine cover.
9. Remove the low-pressure pipe. Refer to [HA-28, "Component"](#).

**CAUTION:**

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

##### Installation

Installation is in the reverse order of removal.

**CAUTION:**

- Replace the O-ring on the low-pressure pipe with a new one, then apply A/C oil to it for installation.
- After recharging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

# HIGH-PRESSURE FLEXIBLE HOSE

< ON-VEHICLE REPAIR >

## HIGH-PRESSURE FLEXIBLE HOSE

### Removal and Installation for High-Pressure Flexible Hose

INFOID:000000005433206

#### QR25DE

##### Removal

1. Discharge the refrigerant. Refer to [HA-29, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Reposition the power steering reservoir out of the way without disconnecting the hose.
3. Reposition the engine coolant reservoir out of the way without disconnecting the hose.
4. Remove the high-pressure flexible hose. Refer to [HA-28, "Component"](#).

**CAUTION:**

**Cap or wrap the joint of the hose with a suitable material such as vinyl tape to avoid the entry of contaminants.**

##### Installation

Installation is in the reverse order of removal.

**CAUTION:**

- **Replace the O-ring of the high-pressure flexible hose with a new one, then apply A/C oil to it for installation.**
- **After charging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).**

#### VQ35DE

##### Removal

1. Discharge the refrigerant. Refer to [HA-29, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the engine cooling fan and shroud assembly. Refer to [CO-39, "Removal and Installation"](#).
3. Reposition the power steering reservoir out of the way without disconnecting the hose.
4. Reposition the engine coolant reservoir out of the way without disconnecting the hose.
5. Remove the high-pressure flexible hose. Refer to [HA-28, "Component"](#).

**CAUTION:**

**Cap or wrap the joint of the hose with a suitable material such as vinyl tape to avoid the entry of contaminants.**

##### Installation

Installation is in the reverse order of removal.

**CAUTION:**

- **Replace the O-ring of the high-pressure flexible hose with a new one, then apply A/C oil to it for installation.**
- **After charging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).**

# HIGH-PRESSURE PIPE

< ON-VEHICLE REPAIR >

## HIGH-PRESSURE PIPE

### Removal and Installation for High-Pressure Pipe

INFOID:000000005433207

#### QR25DE

##### Removal

1. Discharge the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Reposition the power steering reservoir out of the way without disconnecting the hose.
3. Reposition the engine coolant reservoir out of the way without disconnecting the hose.
4. Remove the high-pressure pipe. Refer to [HA-28, "Component"](#).

##### **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 the O-ring of the high-pressure pipe with a new one, then apply compressor oil to it when installing it.
- After charging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

#### VQ35DE

##### Removal

1. Discharge the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the strut tower bar. Refer to [FSU-12, "Exploded View"](#).
3. Remove the upper cowl. Refer to [EXT-19, "Removal and Installation"](#).
4. Remove the lower RH cowl.
5. Disconnect the power steering hose clamp to reposition the power steering hose out of the way.
6. Reposition the power steering reservoir out of the way without disconnecting the hose.
7. Reposition the engine coolant reservoir out of the way without disconnecting the hose.
8. Remove the high-pressure pipe. Refer to [HA-28, "Component"](#).

##### **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 the O-ring of the high-pressure pipe with a new one, then apply compressor oil to it when installing it.
- After charging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

### Removal and Installation for Junction Pipe

INFOID:000000005433208

#### REMOVAL

1. Discharge the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the front air duct. Refer to [EM-25, "Removal and Installation"](#) (QR25DE), [EM-129, "Removal and Installation"](#) (VQ35DE).
3. Remove the front grille. Refer to [EXT-18, "Removal and Installation"](#).
4. Remove the junction pipe. Refer to [HA-28, "Component"](#).

##### **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 the O-ring of the junction pipe with a new one, then apply compressor oil to it when installing it.
- After charging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

# CONDENSER

< ON-VEHICLE REPAIR >

## CONDENSER

### Removal and Installation for Condenser

INFOID:000000005433209

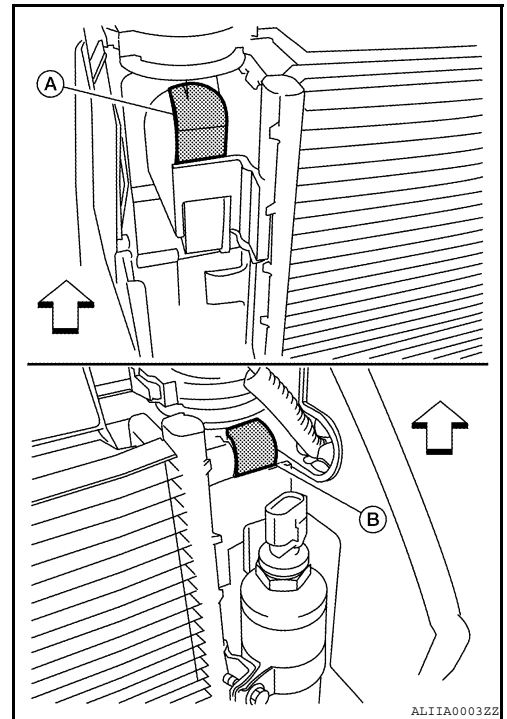
#### REMOVAL

1. Discharge the refrigerant. Refer to [HA-29, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the front fascia (coupe only). Refer to [EXT-18, "Removal and Installation"](#).
3. Remove the front grille (sedan only). Refer to [EXT-40, "Removal and Installation"](#).
4. Remove the junction pipe. Refer to [HA-35, "Removal and Installation for Junction Pipe"](#).

**CAUTION:**

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

5. Disconnect the refrigerant pressure sensor connector.
6. Depress the top RH clip (A) and the top LH clip (B) to release the top condenser brackets as shown.
7. Slide the condenser up to release the condenser from the clips as shown.



8. Remove the condenser.  
**CAUTION:**  
**Do not damage the condenser fins**
9. Remove the refrigerant pressure sensor.

#### INSTALLATION

Installation is in the reverse order of removal.

Refer to [HA-28, "Component"](#).

**CAUTION:**

- Do not damage the condenser fins.
- Replace the O-rings of the junction pipe and refrigerant pressure sensor with new ones, then apply A/C oil to them after installing them.
- When charging refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

# AMBIENT SENSOR

< ON-VEHICLE REPAIR >

## AMBIENT SENSOR

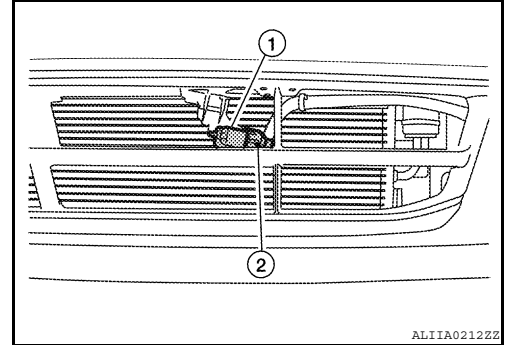
### Removal and Installation

INFOID:000000005433210

#### SEDAN

##### Removal

1. From under the vehicle, disconnect the ambient sensor connector (2).
2. Release the ambient sensor clip and remove the ambient sensor (1) from the ambient sensor bracket.



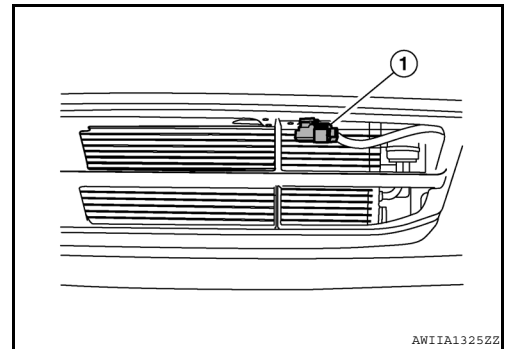
##### Installation

Installation is in the reverse order of removal.

#### COUPE

##### Removal

1. Remove the ambient sensor (1) from the front bumper reinforcement.
2. Disconnect the ambient sensor connector and remove the ambient sensor.



##### Installation

Installation is in the reverse order of removal.

A  
B  
C  
D  
E  
F  
G  
H  
HA  
J  
K  
L  
M  
N  
O  
P

# REFRIGERANT PRESSURE SENSOR

< ON-VEHICLE REPAIR >

## REFRIGERANT PRESSURE SENSOR

### Removal and Installation for Refrigerant Pressure Sensor

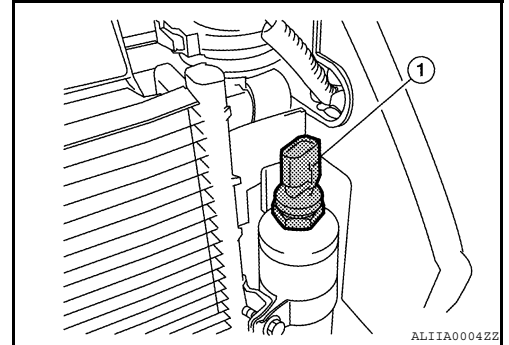
INFOID:000000005433211

#### REMOVAL

1. Discharge the refrigerant. Refer to [HA-29, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the front grille (sedan only). Refer to [EXT-18, "Removal and Installation"](#).
3. Remove the front fascia (coupe only). Refer to [EXT-14, "Removal and Installation"](#).
4. Disconnect the refrigerant pressure sensor connector and remove the refrigerant pressure sensor (1) from the liquid tank on the condenser.

**CAUTION:**

**Do not damage the condenser fins.**



#### INSTALLATION

Installation is in the reverse order of removal.

**CAUTION:**

**Replace the O-ring of the refrigerant pressure sensor with a new one, then apply compressor oil to it when installing it.**

# EXPANSION VALVE

< ON-VEHICLE REPAIR >

## EXPANSION VALVE

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### Removal and Installation for Expansion Valve

INFOID:000000005433212

The expansion valve is part of the evaporator assembly. Refer to [VTL-20. "Removal and Installation"](#).

- A
- B
- C
- D
- E
- F
- G
- H
- HA**
- J
- K
- L
- M
- N
- O
- P

## SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS)

### SERVICE DATA AND SPECIFICATIONS (SDS)

#### Service Data and Specification (SDS)

INFOID:000000005433213

#### COMPRESSOR

Model	VALEO	
Type	DCS-171C	
Displacement	171 cm <sup>3</sup> (10.43 in <sup>3</sup> ) / revolution	
Direction of rotation	Clockwise (viewed from drive end)	
Drive belt	QR25DE	Poly V 6-grooves
	VQ35DE	Poly V 7-grooves

#### OIL

Name	NISSAN A/C System Oil Type S or equivalent	
Capacity	Total in system	150 mℓ (5.03 US fl oz, 5.3 Imp fl oz)
	Compressor (service part) charging amount	Refer to <a href="#">HA-18, "Maintenance of Oil Quantity in Compressor"</a> .

#### REFRIGERANT

Type	HFC-134a (R-134a)
Capacity	0.55 ± 0.025 kg (1.21 ± 0.055 lb)