

SECTION **HA**

HEATER & AIR CONDITIONING SYSTEM

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000000959834

DETAILED FLOW

1. LISTEN TO CUSTOMER COMPLAINT

Listen to customer complaint. (Get detailed information about the conditions and environment when the symptom occurs.)

>> GO TO 2.

2. VERIFY THE SYMPTOM WITH OPERATIONAL CHECK

Verify the symptom with operational check. Refer to [HAC-5, "WITHOUT LEFT AND RIGHT VENTILATION TEMPERATURE SEPARATELY CONTROL SYSTEM : Description & Inspection"](#) (Without left and right ventilation temperature separately control system) or [HAC-9, "WITH LEFT AND RIGHT VENTILATION TEMPERATURE SEPARATELY CONTROL SYSTEM : Description & Inspection"](#) (With left and right ventilation temperature separately control system).

>> GO TO 3.

3. GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis (Refer to [HAC-117, "Diagnosis Chart By Symptom"](#) below).

>> GO TO 4.

4. REPAIR OR REPLACE

Repair or replace the specific parts

>> GO TO 5.

5. FINAL CHECK

Final check.

Is the inspection result normal?

YES >> CHECK OUT

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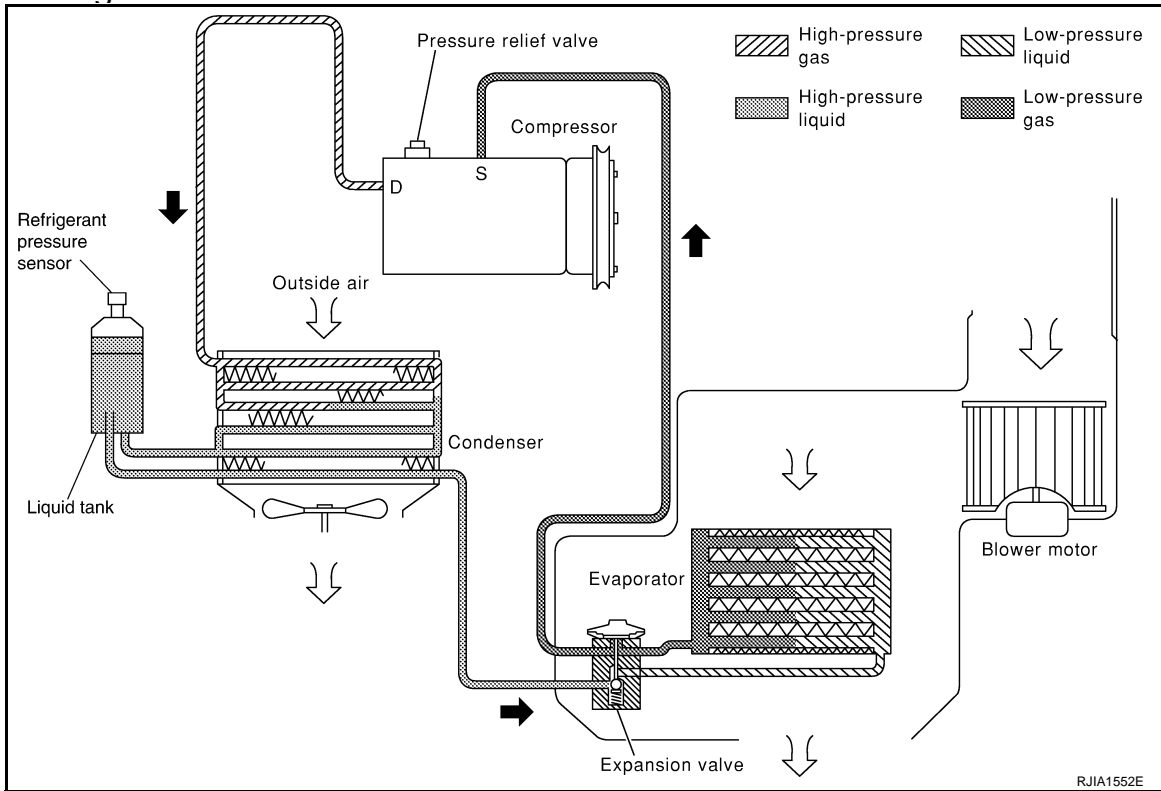
REFRIGERATION SYSTEM

< FUNCTION DIAGNOSIS >

FUNCTION DIAGNOSIS

REFRIGERATION SYSTEM

System Diagram



System Description

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REFRIGERANT CYCLE

Refrigerant Flow

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

Freeze Protection

To prevent evaporator frozen up, the evaporator air temperature is monitored, and the voltage signal to the display and A/C auto amp. will make the A/C relay go OFF and stop the compressor.

REFRIGERANT SYSTEM PROTECTION

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 3,119 kPa (31.8 kg/cm², 452 psi), or below about 118 kPa (1.2 kg/cm², 17 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 3,628 kPa (37 kg/cm², 526 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.

LUBRICANT

REFRIGERATION SYSTEM

< FUNCTION DIAGNOSIS >

Maintenance of Lubricant Quantity in Compressor

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

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

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

Lubricant

Name : Nissan A/C System Oil Type S

Component Parts Location

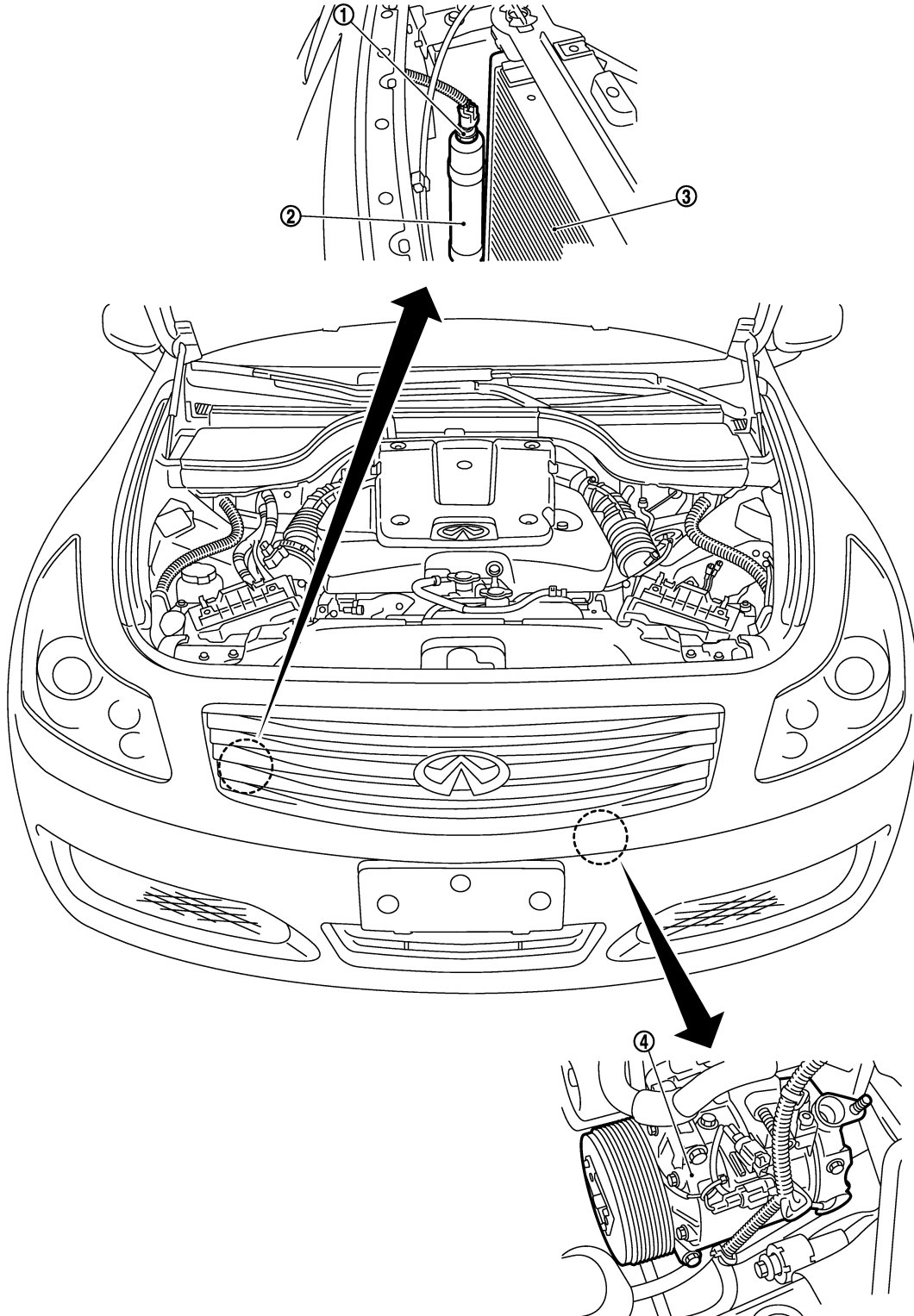
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REFRIGERATION SYSTEM

< FUNCTION DIAGNOSIS >



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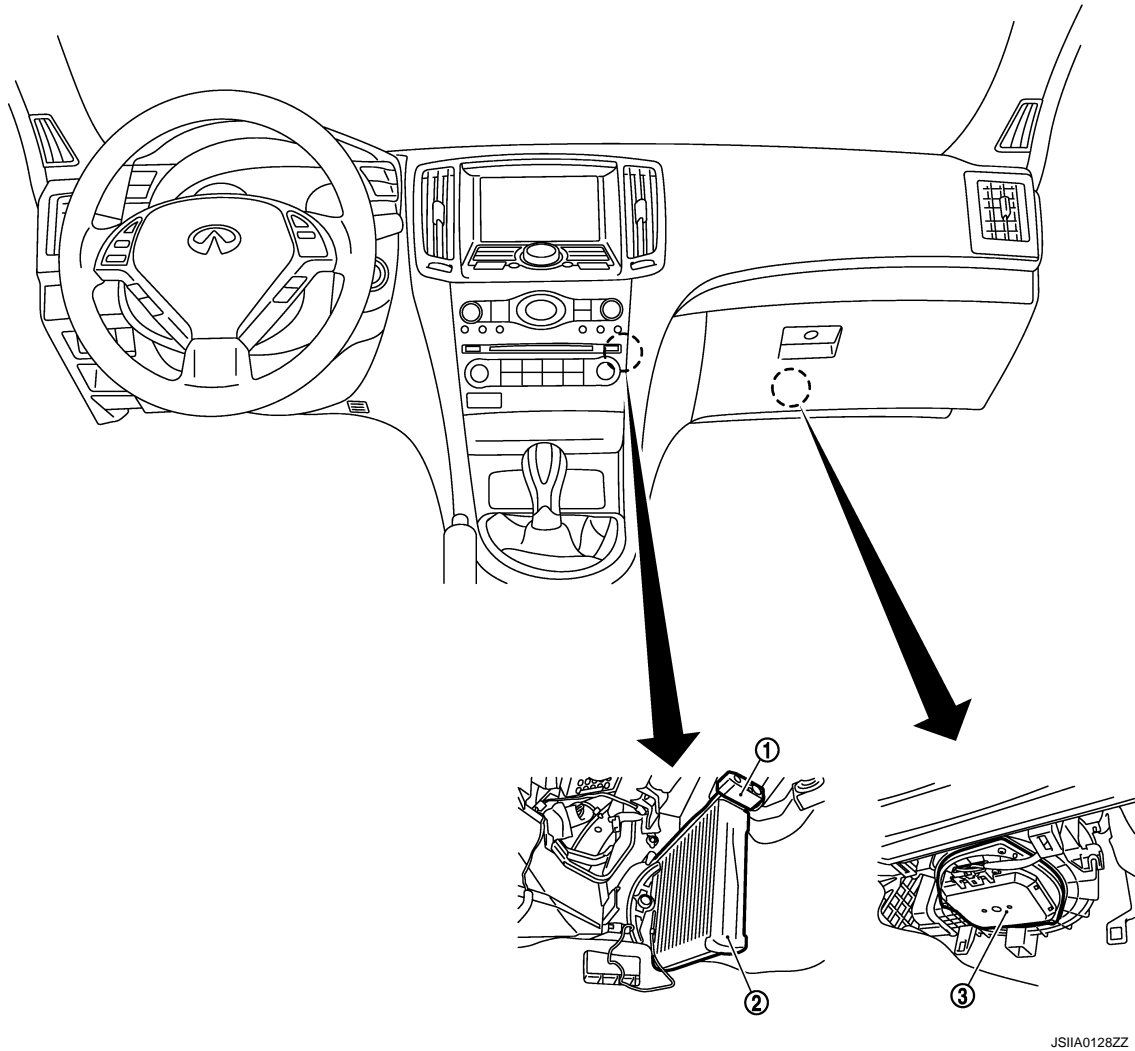
1. Refrigerant pressure sensor
4. Compressor

2. Liquid tank

3. Condenser

REFRIGERATION SYSTEM

< FUNCTION DIAGNOSIS >



1. Expansion valve

2. Evaporator

3. Blower motor

Component Description

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Component	Description
Compressor	Intakes, compresses, and discharges refrigerant, then conveys it to condenser.
Condenser	Condenses refrigerant, and then conveys it to liquid tank.
Liquid tank	Drives moisture out of refrigerant, eliminates foreign matter, then conveys refrigerant to expansion valve.
Refrigerant pressure sensor	Refer to HAC-92, "Component Inspection" .
Expansion valve	Vaporizes refrigerant, controls the amount of flow, then conveys refrigerant to evaporator.
Evaporator	Cools passing air, and then conveys it to compressor.
Blower motor	Takes in air in the vehicle or fresh outside air, and then adjusts room temperature by air conditioning.

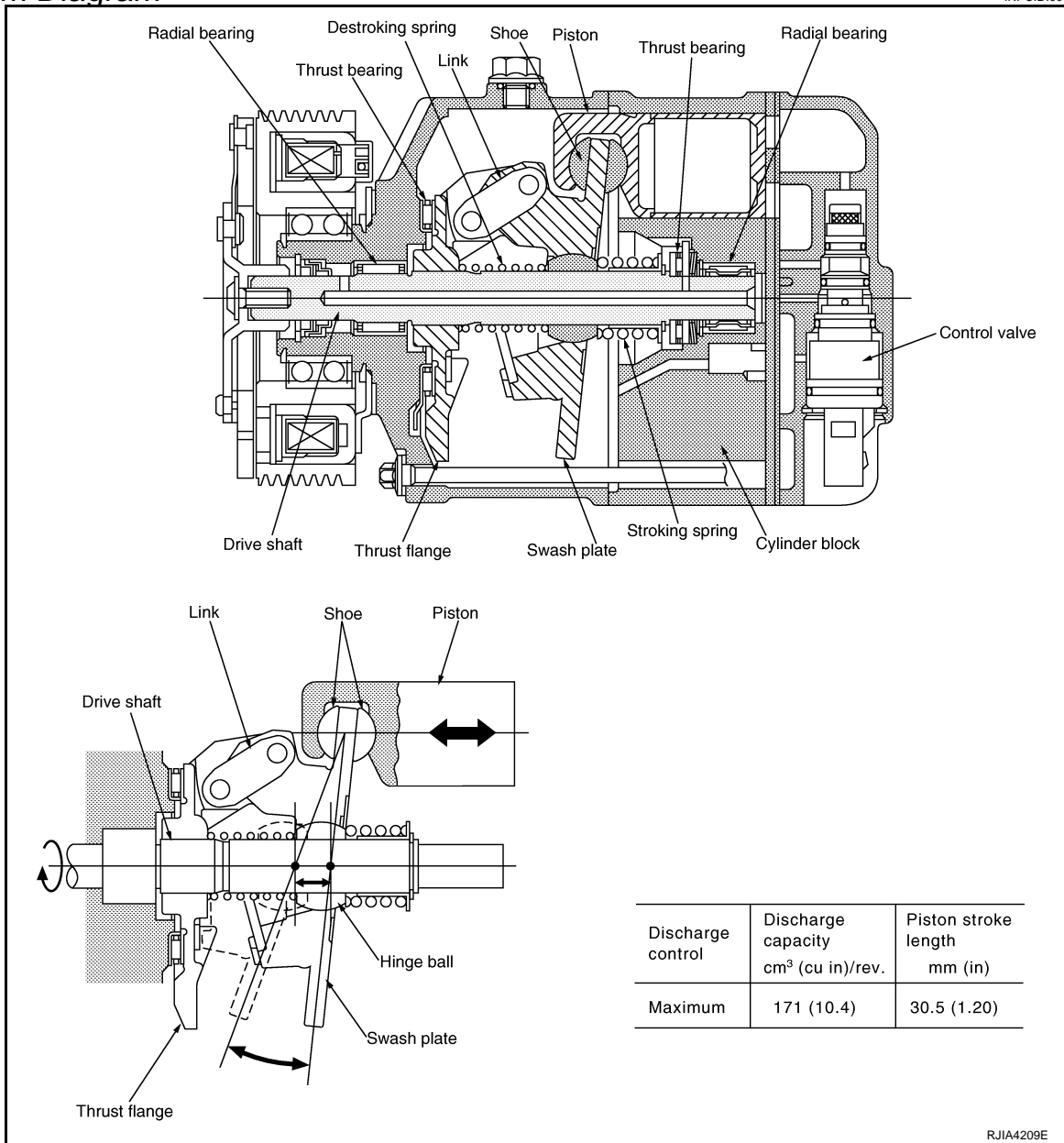
VARIABLE DISPLACEMENT COMPRESSOR SYSTEM

< FUNCTION DIAGNOSIS >

VARIABLE DISPLACEMENT COMPRESSOR SYSTEM

System Diagram

INFOID:000000000959839



System Description

INFOID:000000000959840

1. The variable compressor provides refrigerant control under varying conditions. During cold winters, it may not produce high refrigerant pressure discharge (compared to previous units) when used with air conditioning systems.
2. For air conditioning systems with the compressor, the clutch remains engaged unless: the system main switch, fan switch or ignition switch is turned OFF. When ambient (outside) temperatures are low or when the amount of refrigerant is insufficient, the clutch is disengaged to protect the compressor.

DESCRIPTION

The variable compressor is a swash plate type that changes piston stroke in response to the required cooling capacity.

The tilt of the swash plate allows the piston's stroke to change so that refrigerant discharge continuously change from approx. 0 to 171 cm³ (0 to 10.4 cu in).

OPERATION

VARIABLE DISPLACEMENT COMPRESSOR SYSTEM

< FUNCTION DIAGNOSIS >

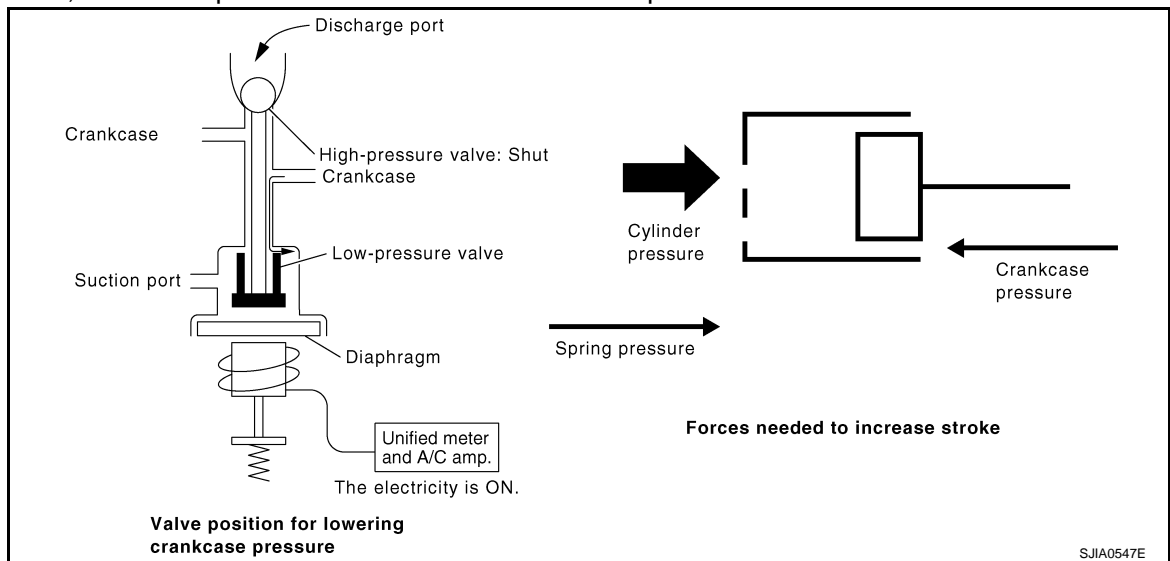
Control Valve

- By changing high-pressure valve lift amount, built-in electronic control valve executes the following:
 - Controls high-pressure valve discharge amount.
 - Changes crankcase pressure in compressor.
 - Changes angle of wash plate.
- Amount of high-pressure valve lift is determined by factors below.
 - Low-pressure applied to diaphragm
 - Spring load of set spring
 - Balance of magnetic force generated in magnet coil
- Electronic control valve (ECV) magnet coil receives electric signal (duty control) from unified meter and A/C amp. Then, magnetic force generated by electric current is changed to control high-pressure valve lift amount.

Maximum Cooling

High-pressure valve is closed by magnetic force generated by electric signal sent from unified meter and A/C amp. At this time, cylinder moves full stroke due to pressure balance between inside crankcase (P_c) and suction line (P_s).

Under this condition, the swash plate is set to the maximum stroke position.



Capacity Control

When no electric signal is sent from unified meter and A/C amp. (current: OFF), high-pressure valve is opened by spring force.

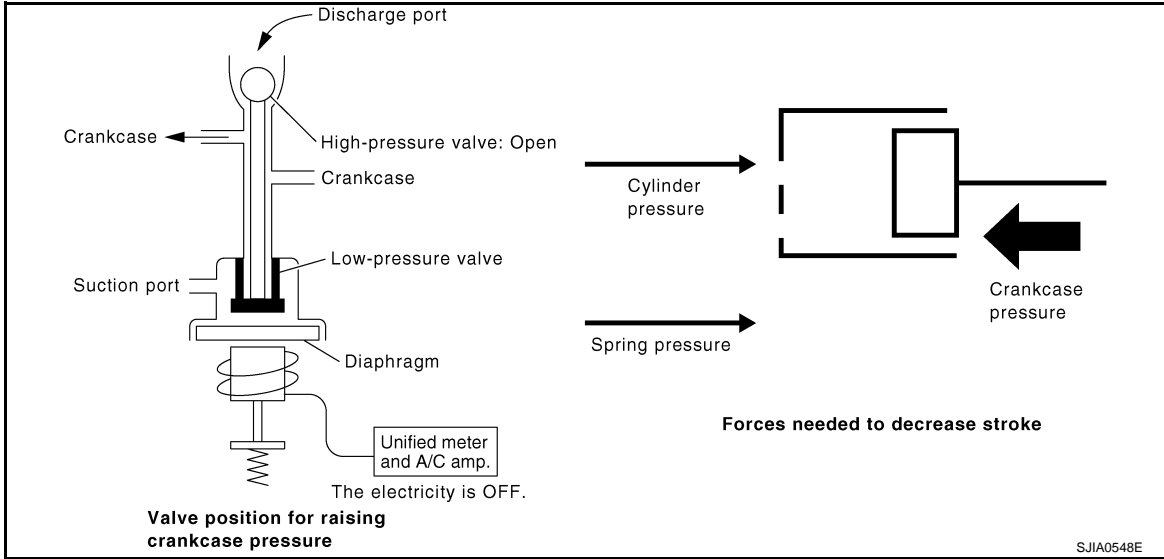
Since suction pressure is low, it makes the suction port close and the discharge port open. Thus, crankcase pressure becomes high as high-pressure enters the crankcase.

- The force acts around the link near the swash plate, and is generated by the pressure difference before and behind the piston.
- The thrust flange and link are located where the piston generates the highest pressure. Piston pressure is between suction pressure P_s and discharge pressure P_d , which is close to suction pressure P_s . If crankcase pressure P_c rises due to capacity control, the force around the link makes the swash plate angle decrease

VARIABLE DISPLACEMENT COMPRESSOR SYSTEM

< FUNCTION DIAGNOSIS >

and also the piston stroke decrease. In other words, crankcase pressure increase triggers pressure difference between the piston and the crankcase. The pressure difference changes the angle of the swash plate.



REFRIGERATION SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

REFRIGERATION SYSTEM SYMPTOMS

SYMPTOM DIAGNOSIS PROCEDURE

SYMPTOM DIAGNOSIS PROCEDURE : Trouble Diagnosis For Unusual Pressure

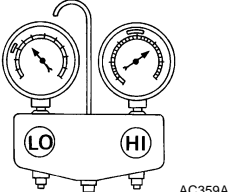
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Whenever system's high and/or low side pressure(s) is/are unusual, diagnose using a manifold gauge. The marker above the gauge scale in the following tables indicates the standard (usual) pressure range. Since the standard (usual) pressure, however,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

BOTH HIGH- AND LOW-PRESSURE SIDES ARE TOO HIGH

BOTH HIGH- AND LOW-PRESSURE SIDES ARE TOO HIGH : Symptom Table

INFOID:000000000959842

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

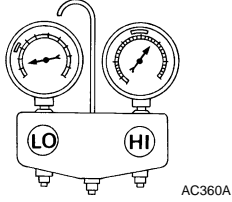
HIGH-PRESSURE SIDE IS TOO HIGH AND LOW-PRESSURE SIDE IS TOO LOW

HIGH-PRESSURE SIDE IS TOO HIGH AND LOW-PRESSURE SIDE IS TOO LOW : Symptom Table

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REFRIGERATION SYSTEM SYMPTOMS

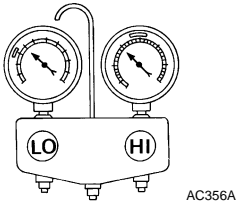
< SYMPTOM DIAGNOSIS >

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>	<p>Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot.</p>	<p>High-pressure tube or parts located between compressor and condenser are clogged or crushed.</p>	<ul style="list-style-type: none"> Check and repair or replace malfunctioning parts. Check lubricant for contamination.

HIGH-PRESSURE SIDE IS TOO LOW AND LOW-PRESSURE SIDE IS TOO HIGH

HIGH-PRESSURE SIDE IS TOO LOW AND LOW-PRESSURE SIDE IS TOO HIGH : Symptom Table

INFOID:000000000959844

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>	<p>High- and low-pressure sides become equal soon after compressor operation stops.</p>	<p>Compressor pressure operation is improper. ↓ Damaged inside compressor packings.</p>	<p>Replace compressor.</p>
	<p>No temperature difference between high- and low-pressure sides.</p>	<p>Compressor pressure operation is improper. ↓ Damaged inside compressor packings.</p>	<p>Replace compressor.</p>

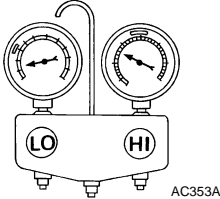
BOTH HIGH- AND LOW-PRESSURE SIDES ARE TOO LOW

BOTH HIGH- AND LOW-PRESSURE SIDES ARE TOO LOW : Symptom Table

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REFRIGERATION SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Both high- and low-pressure sides are too low.</p>  <p style="text-align: right; font-size: small;">AC353A</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 lubricant 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 is 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 lubricant for contamination.
	Expansion valve and liquid tank are warm or slightly cool when touched.	Low refrigerant charge. ↓ Leaking fittings or components.	Check refrigerant for leaks. Refer to HA-34, "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 lubricant 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 lubricant for contamination.
	Air flow volume is not enough or is too low.	Evaporator is frozen.	<ul style="list-style-type: none"> • Check intake sensor circuit. Refer to HAC-102, "Diagnosis Procedure". • Replace compressor. • Repair evaporator fins. • Replace evaporator. • Refer to HAC-86, "WITH LEFT AND RIGHT VENTILATION TEMPERATURE SEPARATELY CONTROL SYSTEM : Diagnosis Procedure".

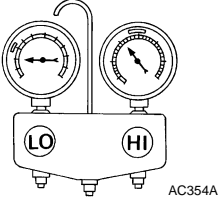
LOW-PRESSURE SIDE SOMETIMES BECOMES NEGATIVE

LOW-PRESSURE SIDE SOMETIMES BECOMES NEGATIVE : Symptom Table

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REFRIGERATION SYSTEM SYMPTOMS

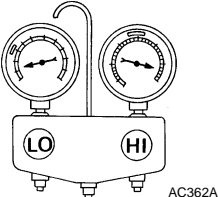
< SYMPTOM DIAGNOSIS >

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

LOW-PRESSURE SIDE BECOMES NEGATIVE

LOW-PRESSURE SIDE BECOMES NEGATIVE : Symptom Table

INFOID:00000000959847

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

PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:000000000959848

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.

Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:000000000959849

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, 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. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

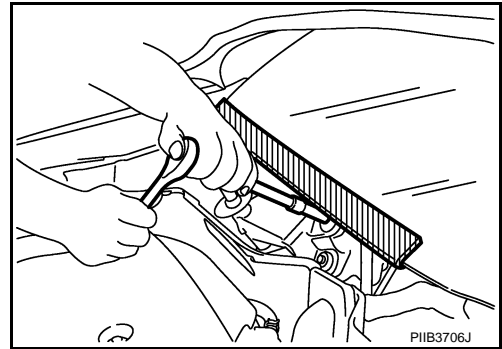
Precaution for Procedure without Cowl Top Cover

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PRECAUTIONS

< PRECAUTION >

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



Precautions For Xenon Headlamp Service

INFOID:000000000959851

WARNING:

Comply with the following warnings to prevent any serious accident.

- Disconnect the battery cable (negative terminal) or the power supply fuse before installing, removing, or touching the xenon headlamp (bulb included). The xenon headlamp contains high-voltage generated parts.
- Never work with wet hands.
- Check the xenon headlamp ON-OFF status after assembling it to the vehicle. Never turn the xenon headlamp ON in other conditions. Connect the power supply to the vehicle-side connector. (Turning it ON outside the lamp case may cause fire or visual impairments.)
- Never touch the bulb glass immediately after turning it OFF. It is extremely hot.

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

- Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)
- Never perform HID circuit inspection with a tester.
- Never touch the xenon bulb glass with hands. Never put oil and grease on it.
- Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.
- Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).

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

INFOID:000000000959852

CAUTION:

- CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed and compressor malfunction is likely to occur, refer to "CONTAMINATED REFRIGERANT" below. To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.
- Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If lubricant other than that specified is used, compressor malfunction is likely to occur.
- The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:
 - When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.
 - When installing refrigerant components to a vehicle, never remove the caps (unseal) until just before connecting the components. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.
 - Only use the specified lubricant from a sealed container. Immediately reseal containers of lubricant. Without proper sealing, lubricant will become moisture saturated and should not be used.
 - Never allow lubricant (Nissan A/C System Oil Type S) to come in contact with styrene foam parts. Damage may result.

CONTAMINATED REFRIGERANT

If a refrigerant other than pure HFC-134a (R-134a) is identified in a vehicle, take appropriate steps shown below:

- 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 service equipment and refrigerant supply.

PRECAUTIONS

< PRECAUTION >

- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- In case of repairing, recover the refrigerant using only **dedicated equipment and containers. Never recover contaminated refrigerant into the existing service equipment.** If the facility does not have dedicated recovery equipment, 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

INFOID:000000000959853

WARNING:

- **Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) from the A/C system, using certified service equipment meeting requirements of SAE J-2210 [HFC-134a (R-134a) recycling equipment], or J-2209 [HFC-134a (R-134a) recovery equipment]. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.**
- **Never 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.**
- **Never store or heat refrigerant containers above 52°C (126°F).**
- **Never 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.**
- **Never 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.**
- **Never 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.**

Refrigerant Connection

INFOID:000000000959854

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

- Expansion valve to evaporator
- Refrigerant pressure sensor to liquid tank

ABOUT ONE-TOUCH JOINT

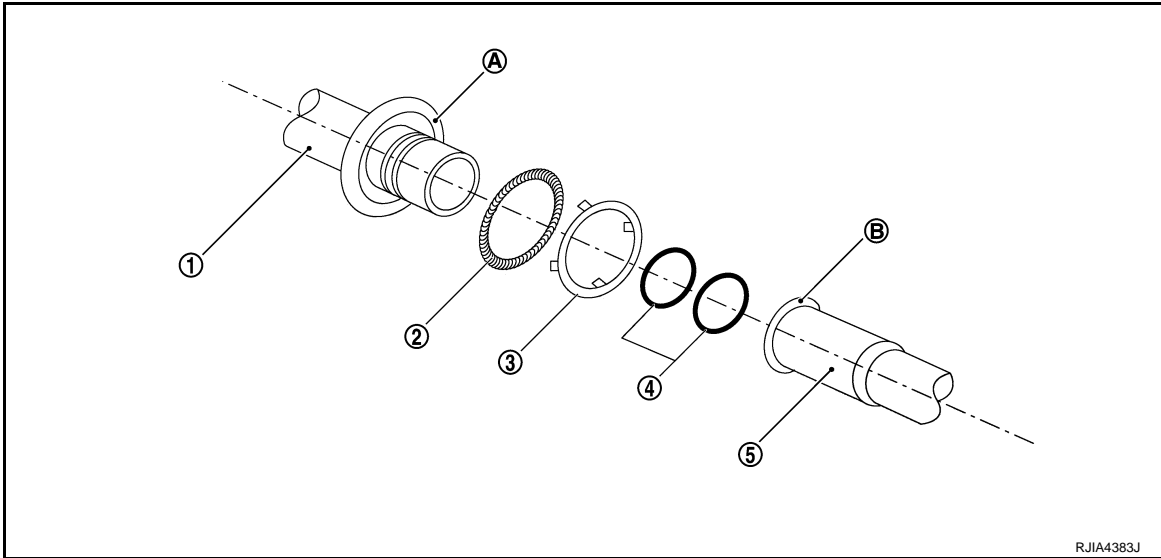
Description

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

PRECAUTIONS

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COMPONENT PARTS



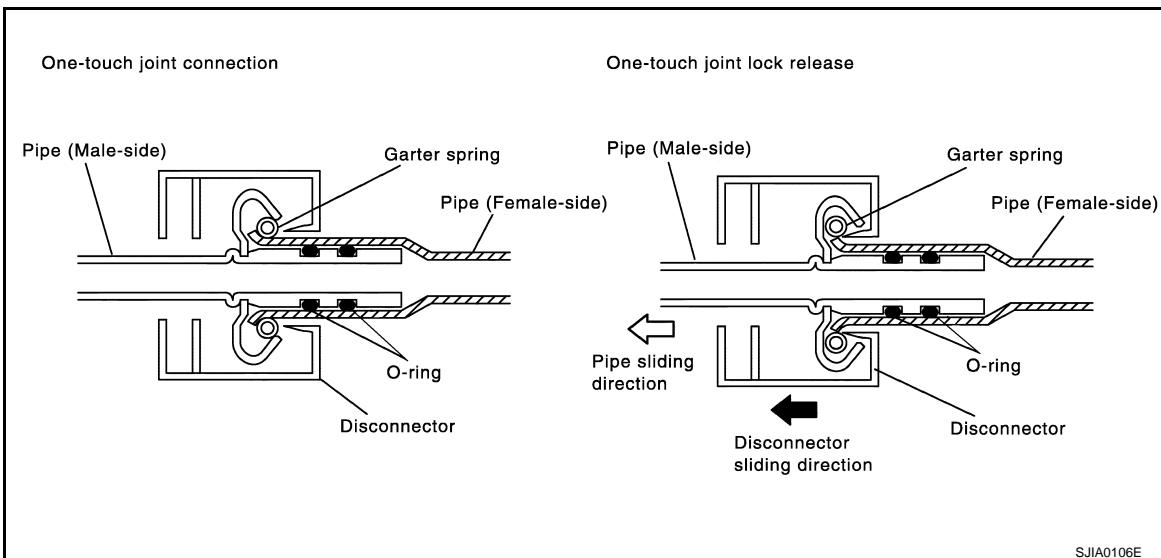
FUNCTIONS OF COMPONENT PARTS

1	Pipe (Male-side)	<ul style="list-style-type: none"> Retains O-rings (4). Retains garter spring (2) in cage (A).
2	Garter spring	Anchors female-side piping (5).
3	Indicator ring	When connection is made properly, this is ejected from male-side piping (1). (This part is no longer necessary after connection.)
4	O-ring	Seals connection point. (Not reusable)
5	Pipe (Female-side)	<ul style="list-style-type: none"> Seals connection by compressing O-rings (4). Anchors piping connection using flare (B) and garter spring (2).

NOTE:

- Garter spring (2) cannot be removed from cage (A) of male-side piping.
- Indicator ring (3) remains near piping connection point, however, this is not a malfunction. (This is to check piping connection during factory assembly.)

REMOVAL

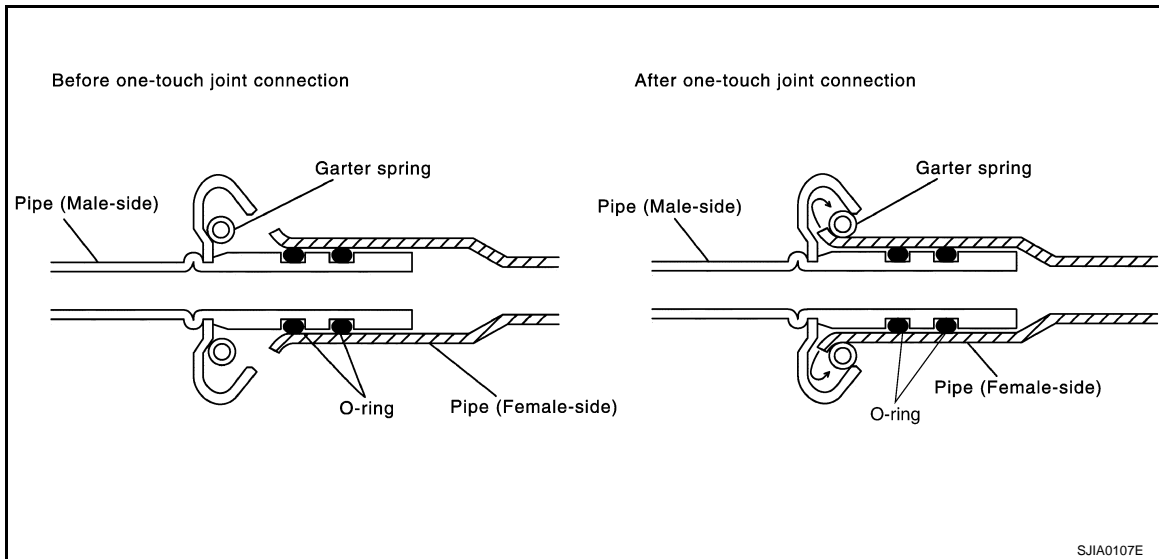


- Clean piping connection point, and set a disconnector.
- Slide disconnector in axial direction of piping, and stretch garter spring with tapered point of disconnector.
- Slide disconnector farther so that inside diameter of garter spring becomes larger than outside diameter of female-side piping flare.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

PRECAUTIONS

< PRECAUTION >

INSTALLATION



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

NOTE:

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

CAUTION:

- Female-side piping connection point is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.

NOTE:

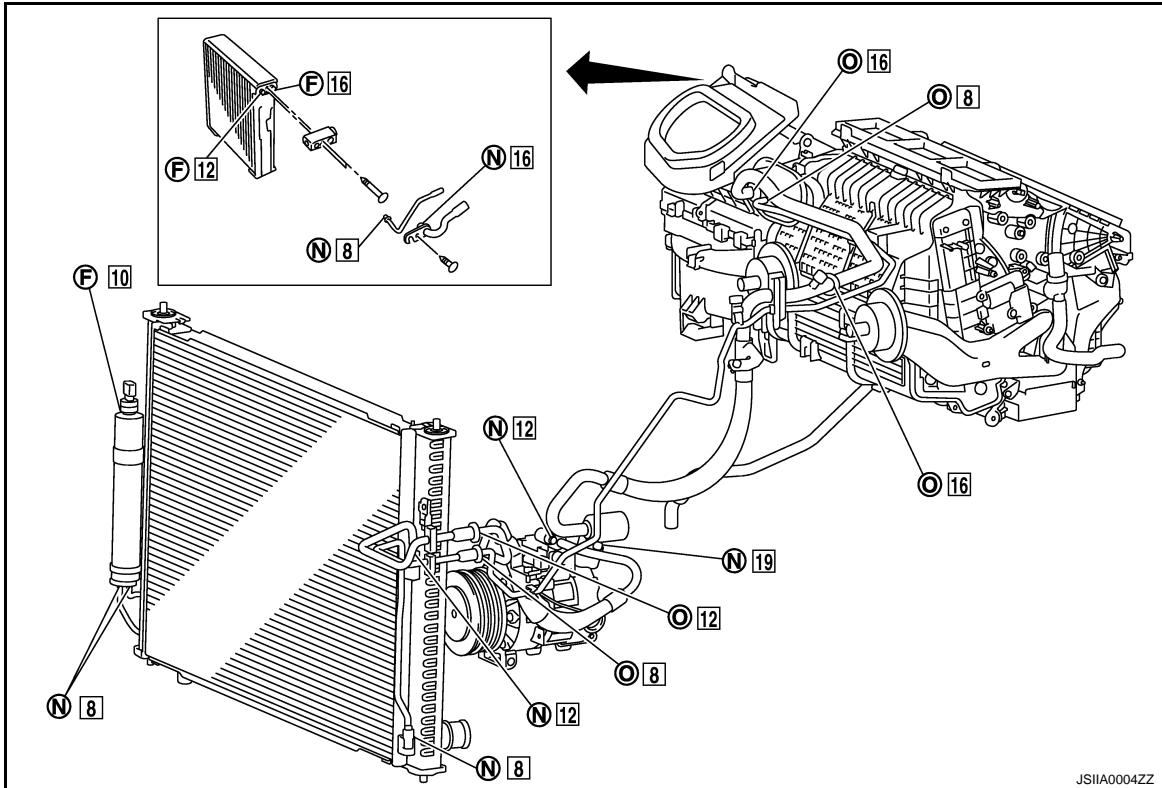
One-touch joint connection is used in points below.

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

O-RING AND REFRIGERANT CONNECTION

PRECAUTIONS

< PRECAUTION >



F. Former type refrigerant connection N. New type refrigerant connection O. One-touch joint

□: O-ring size

CAUTION:

The new and former refrigerant connections use different O-ring configurations. Never confuse O-rings since they are not interchangeable. If a wrong O-ring is installed, refrigerant may leak at the connection.

O-Ring Part Numbers and Specifications

Connection type	Piping connection point		Part number	QTY	O-ring size
New	Low-pressure flexible hose to low-pressure pipe 2 (One-touch joint)		92473 N8221	2	16
	High-pressure pipe 1 to high-pressure pipe 2 (One-touch joint)		92471 N8221	2	8
	Condenser pipe assembly to high-pressure flexible hose (One-touch joint)		92472 N8221	2	12
	Condenser pipe assembly to high-pressure pipe 1 (One-touch joint)		92471 N8221	2	8
	Radiator & condenser assembly to condenser pipe assembly	Inlet	92472 N8210	1	12
		Outlet	92471 N8210	1	8
	Low-pressure pipe 1 to low-pressure pipe 2		92473 N8210	1	16
	Low-pressure pipe 1 to expansion valve		92473 N8210	1	16
	High-pressure pipe 2 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 radiator & condenser assembly	Inlet	92471 N8210	1	8
Outlet		1			

PRECAUTIONS

< PRECAUTION >

Connection type	Piping connection point		Part number	QTY	O-ring size
Former	Refrigerant pressure sensor to liquid tank		J2476 89956	1	10
	Expansion valve to evaporator	Inlet	92475 71L00	1	12
		Outlet	92475 72L00	1	16

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.

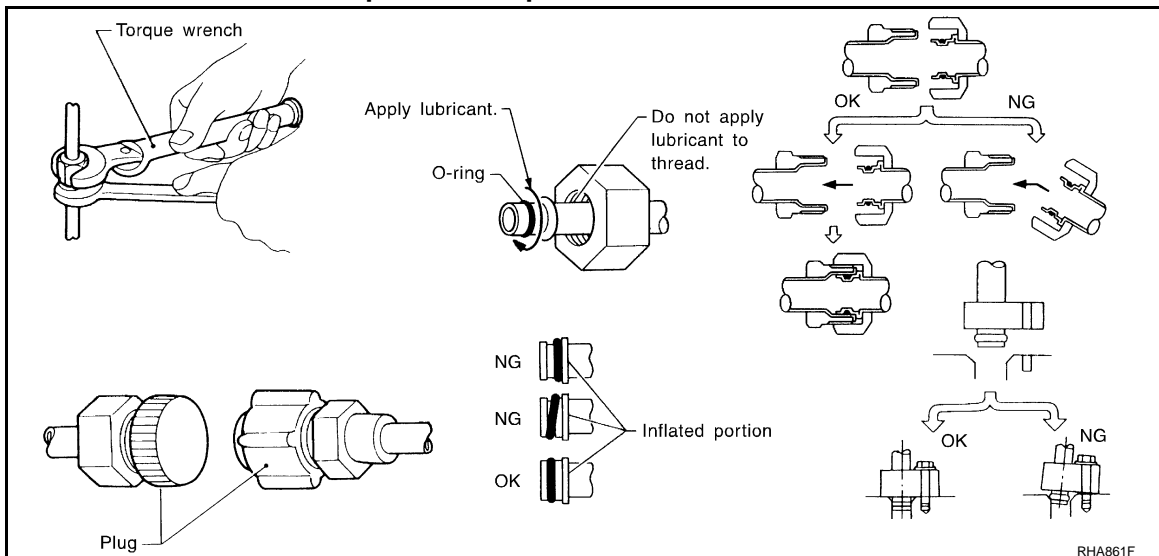
CAUTION:

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

- When the compressor is removed, store it in the same way as it is when mounted on the car. Failure to do so will cause lubricant to enter the low-pressure chamber.
- When connecting tubes, always use a torque wrench and a back-up wrench.
- After disconnecting tubes, immediately plug all openings to prevent entry of dust and moisture.
- When installing an air conditioner in the vehicle, connect the pipes at the final stage of the operation. Never remove the seal caps of pipes and other components until just before required for connection.
- Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.
- Thoroughly remove moisture from the refrigeration system before charging the refrigerant.
- Always replace used O-rings.
- When connecting tube, apply lubricant to circle of the O-rings shown in illustration. Be careful not to apply lubricant to threaded portion.

Name : Nissan A/C System Oil
Type S

- O-ring must be closely attached to the groove portion of tube.
- When replacing the O-ring, be careful not to damage O-ring and tube.
- Connect tube until a click can be heard, then tighten the nut or bolt by hand. 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.



Service Equipment

INFOID:000000000959855

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.

ELECTRICAL LEAK DETECTOR

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

PRECAUTIONS

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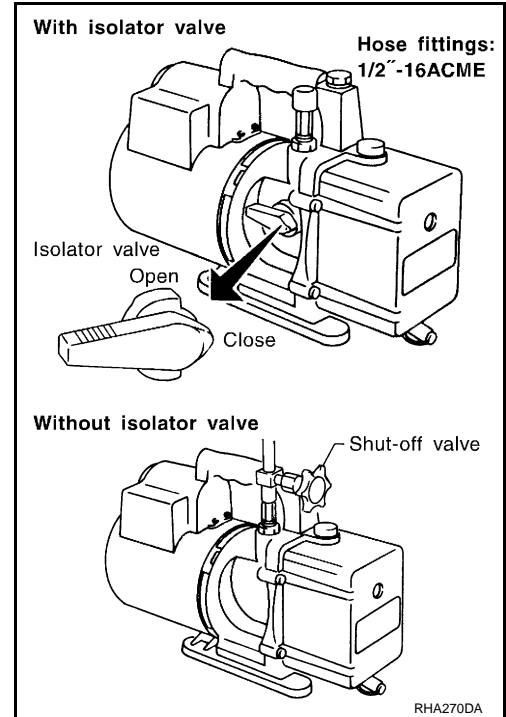
VACUUM PUMP

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

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

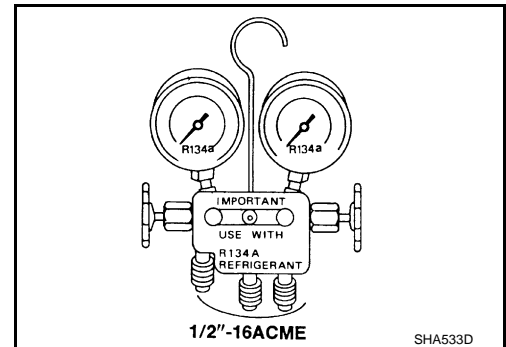
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has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

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



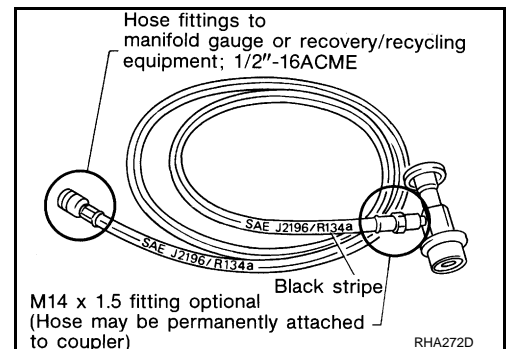
MANIFOLD GAUGE SET

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



SERVICE HOSES

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



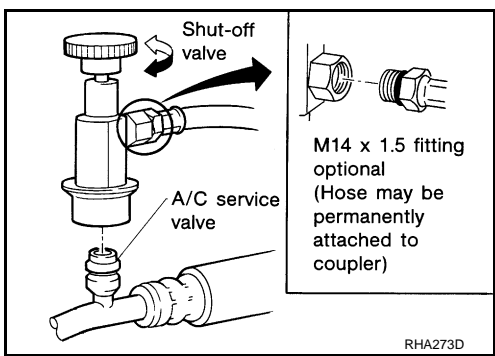
SERVICE COUPLERS

PRECAUTIONS

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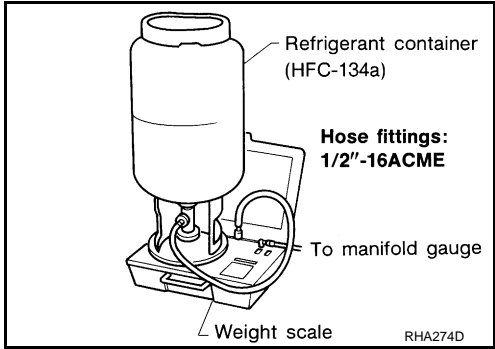
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



REFRIGERANT WEIGHT SCALE

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



CHARGING CYLINDER

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

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COMPRESSOR

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COMPRESSOR

General Precautions

INFOID:000000000959856

CAUTION:

- Plug all openings to prevent moisture and foreign matter from entering.
- When the compressor is removed, store it in the same way as it is when mounted on the car.
- When replacing or repairing compressor, follow "Maintenance of Lubricant Quantity in Compressor" exactly. Refer to [HA-30, "Adjustment"](#).
- Keep friction surfaces between clutch and pulley clean. If the surface is contaminated with lubricant, wipe it off by using a clean waste cloth moistened with thinner.
- After compressor service operation, turn the compressor shaft by hand more than five turns in both directions. This will equally distribute lubricant inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for one hour.
- After replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation.

LEAK DETECTION DYE

< PRECAUTION >

LEAK DETECTION DYE

General Precautions

INFOID:00000000959857

CAUTION:

- 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 electrical leak detector (SST: J-41995). The fluorescent dye leak detector should be used in conjunction with an electrical leak detector (SST: J-41995) to pin-point refrigerant leaks.
- For the purpose of safety and customer's satisfaction, read and follow all manufacture's operating instructions and precautions prior to performing the work.
- A compressor shaft seal should not necessarily be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electrical leak detector (SST: J-41995).
- Always remove any remaining dye from the leak area after repairs are completed to avoid a misdiagnosis during a future service.
- Never 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.
- Never spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Never 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. Never use HFC-134a (R-134a) leak detection dye in CFC-12 (R-12) A/C system, or CFC-12 (R-12) leak detection 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 three years or a little over unless a compressor malfunction occurs.

IDENTIFICATION

NOTE:

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

IDENTIFICATION LABEL FOR VEHICLE

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

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PREPARATION

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PREPARATION

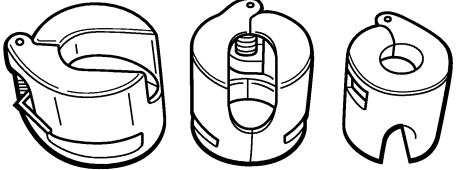
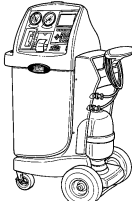
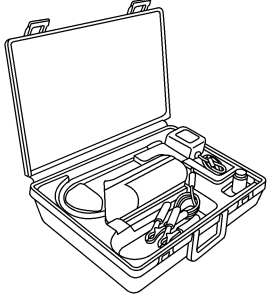
Special Service Tool

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

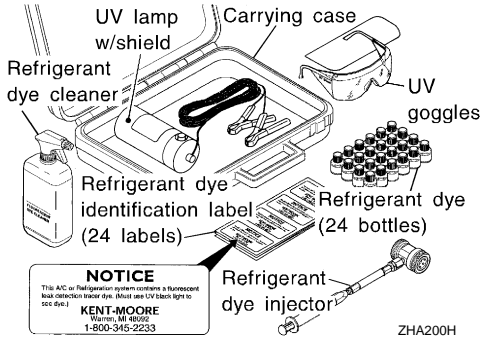
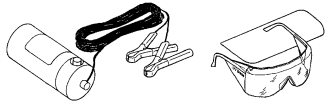

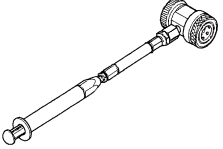

HFC-134a (R-134a) Service Tool and Equipment

- Never mix HFC-134a (R-134a) refrigerant and/or its specified lubricant with CFC-12 (R-12) refrigerant and/or its lubricant.
- Separate and non-interchangeable service equipment must be used for handling each type of refrigerant/lubricant.
- Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and/or lubricant) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerants/lubricant.
- Never use adapters that convert one size fitting to another: refrigerant/lubricant contamination occurs and compressor malfunction may result.

Tool number (Kent-Moore No.) Tool name		Description
<p>9253089908 (for high-pressure pipe 1) (-) 9253089912 (for high-pressure flexible hose) (-) 9253089916 (for low-pressure pipe 2 and low-pressure flexible hose) (-) Disconnecter tool set (J-45815)</p>	 <p style="text-align: center;"> 9253089916 (16 mm) 9253089912 (12 mm) 9253089908 (8 mm) </p> <p style="text-align: center;"> Disconnecter tool set : J-45815 <small>SJIA1274E</small> </p>	<p>Disconnect one-touch joint connection</p>
<p>(ACR2005-NI) ACR5 A/C Service Center</p>	 <p style="text-align: center;"><small>WJIA0293E</small></p>	<p>Function: Refrigerant recovery, recycling and recharging</p>
<p>(J-41995) Electrical leak detector</p>	 <p style="text-align: center;"><small>AHA281A</small></p>	<p>Power supply: DC 12 V (Battery terminal)</p>

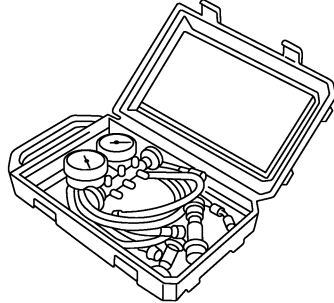
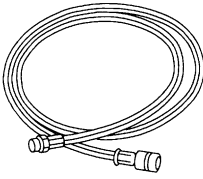
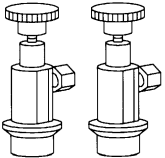

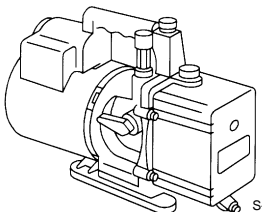
PREPARATION

< PREPARATION >

Tool number (Kent-Moore No.) Tool name	Description	A B C D E F G H HA J K L M N O P
<p>(J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) HFC-134a (R-134a) dye injector Use with J-41447, 1/4 ounce bottle (J-41447) HFC-134a (R-134a) fluorescent leak detection dye (Box of 24, 1/4 ounce bottles) (J-43872) Refrigerant dye cleaner</p>	 <p style="text-align: center;">ZHA200H</p>	<p>Power supply: DC 12 V (Battery terminal)</p>
<p>(J-42220) UV lamp and UV safety goggles</p>	 <p style="text-align: center;">SHA438F</p>	<p>Power supply: DC 12 V (Battery terminal) For checking refrigerant leak when fluorescent dye is installed in A/C system Includes: UV lamp and UV safety goggles</p>
<p>(J-41447) HFC-134a (R-134a) fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)</p>	 <p style="text-align: center;">Refrigerant dye (24 bottles) SHA439F</p>	<p>Application: For HFC-134a (R-134a) PAG oil Container: 1/4 ounce (7.4 cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)</p>
<p>(J-41459) HFC-134a (R-134a) dye injector Use with J-41447, 1/4 ounce bottle</p>	 <p style="text-align: center;">SHA440F</p>	<p>For injecting 1/4 ounce of fluorescent leak detection dye into A/C system</p>
<p>(J-43872) Refrigerant dye cleaner</p>	 <p style="text-align: center;">SHA441F</p>	<p>For cleaning dye spills</p>

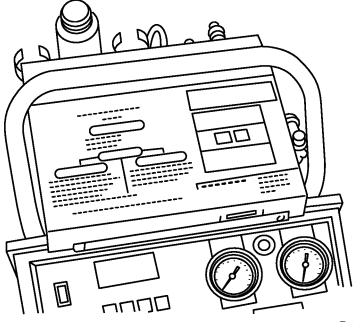
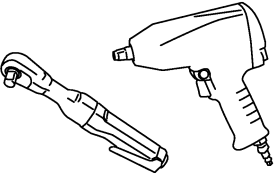
PREPARATION

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Tool number (Kent-Moore No.) Tool name	Description
<p>(J-39183) Manifold gauge set (with hoses and couplers)</p>  <p style="text-align: right; font-size: small;">RJA0196E</p>	<p>Identification:</p> <ul style="list-style-type: none"> The gauge face indicates HFC-134a (R-134a). <p>Fitting size: Thread size</p> <ul style="list-style-type: none"> 1/2"-16 ACME
<p>Service hoses</p> <ul style="list-style-type: none"> High-pressure side hose (J-39501-72) Low-pressure side hose (J-39502-72) Utility hose (J-39476-72)  <p style="text-align: right; font-size: small;">S-NT201</p>	<p>Hose color:</p> <ul style="list-style-type: none"> Low-pressure side hose: Blue with black stripe High-pressure side hose: Red with black stripe Utility hose: Yellow with black stripe or green with black stripe <p>Hose fitting to gauge:</p> <ul style="list-style-type: none"> 1/2"-16 ACME
<p>Service couplers</p> <ul style="list-style-type: none"> High-pressure side coupler (J-39500-20) Low-pressure side coupler (J-39500-24)  <p style="text-align: right; font-size: small;">S-NT202</p>	<p>Hose fitting to service hose: M14 x 1.5 fitting is optional or permanently attached.</p>
<p>(J-39650) Refrigerant weight scale</p>  <p style="text-align: right; font-size: small;">S-NT200</p>	<p>For measuring of refrigerant</p> <p>Fitting size: Thread size</p> <p>1/2"-16 ACME</p>
<p>(J-39649) Vacuum pump (Including the isolator valve)</p>  <p style="text-align: right; font-size: small;">S-NT203</p>	<p>Capacity:</p> <ul style="list-style-type: none"> Air displacement: 4 CFM Micron rating: 20 microns Oil capacity: 482 g (17 oz.) <p>Fitting size: Thread size</p> <ul style="list-style-type: none"> 1/2"-16 ACME

PREPARATION

< PREPARATION >

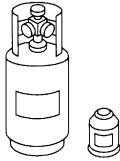

Tool name	Description
Refrigerant identifier equipment  <p style="text-align: right; font-size: small;">RJIA0197E</p>	Checking for refrigerant purity and system contamination
Power tool  <p style="text-align: right; font-size: small;">PBIC0190E</p>	For loosening bolts and nuts

Sealant or/and Lubricant

INFOID:000000000959860

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

- Never mix HFC-134a (R-134a) refrigerant and/or its specified lubricant with CFC-12 (R-12) refrigerant and/or its lubricant.
- Separate and non-interchangeable service equipment must be used for handling each type of refrigerant/lubricant.
- Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and/or lubricant) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerants/lubricant.
- Never use adapters that convert one size fitting to another: refrigerant/lubricant contamination occurs and compressor malfunction may result.

Tool name	Description
HFC-134a (R-134a) refrigerant  <p style="text-align: right; font-size: x-small;">S-NT196</p>	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 (DH-PS)  <p style="text-align: right; font-size: x-small;">S-NT197</p>	Type: Polyalkylene glycol oil (PAG), type S (DH-PS) Application: HFC-134a (R-134a) swash plate compressors (Nissan only) Capacity: 40 mℓ (1.4 US fl oz., 1.4 Imp fl oz.)

LUBRICANT

< ON-VEHICLE MAINTENANCE >

ON-VEHICLE MAINTENANCE

LUBRICANT

Adjustment

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LUBRICANT RETURN OPERATION

Adjust the lubricant quantity according to the test group shown below.

1. CHECK LUBRICANT RETURN OPERATION

Can lubricant return operation be performed?

- A/C system works properly.
- There is no evidence of a large amount of lubricant leakage.

CAUTION:

If excessive lubricant leakage is noted, never perform the lubricant return operation.

Is it successful?

YES >> GO TO 2.

NO >> GO TO 3.

2. PERFORM LUBRICANT RETURN OPERATION, PROCEEDING AS FOLLOWS

1. Start the engine, and set to the following conditions:
 - Engine speed: Idling to 1,200 rpm
 - A/C switch: ON
 - Blower speed: Max. position
 - Temp. control: Optional [Set so that intake air temperature is 25 to 30°C (77 to 86°F).]
 - Intake position: Recirculation (REC)
2. Perform lubricant return operation for about 10 minutes.
3. Stop the engine.

>> GO TO 3.

3. CHECK REPLACEMENT PART

Should the compressor be replaced?

YES >> Refer to "LUBRICANT ADJUSTING PROCEDURE FOR COMPRESSOR REPLACEMENT".

NO >> Refer to "LUBRICANT ADJUSTING PROCEDURE FOR COMPONENTS REPLACEMENT EXCEPT COMPRESSOR".

LUBRICANT ADJUSTING PROCEDURE FOR COMPONENTS REPLACEMENT EXCEPT COMPRESSOR

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

Part replaced	Lubricant to be added to system		Remarks
	Amount of lubricant m ℓ (US fl oz., Imp fl oz.)		
Evaporator	75 (2.5, 2.6)		—
Condenser	35 (1.2, 1.2)		—
Liquid tank	10 (0.3, 0.4)		—
In case of refrigerant leak	30 (1.0, 1.1)		Large leak
	—		Small leak *1

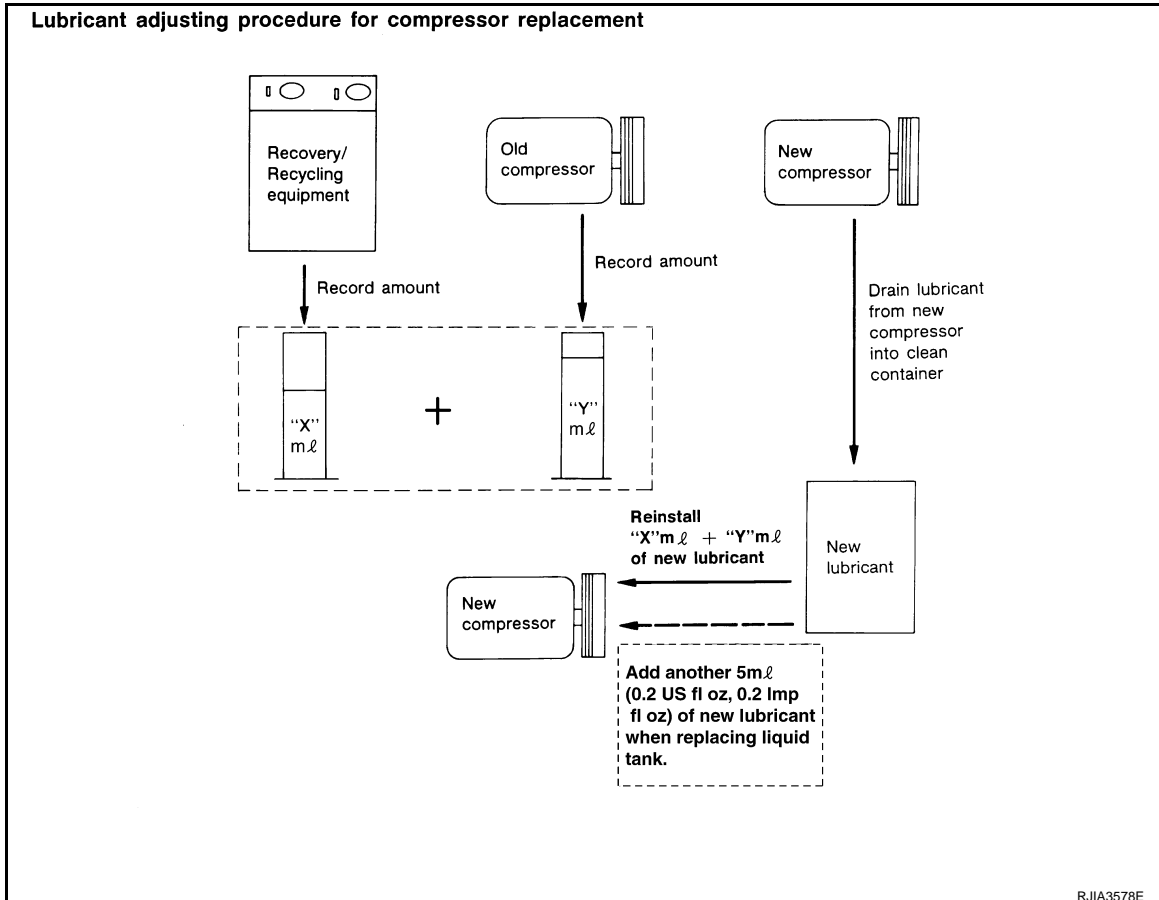
*1: If the refrigerant leak is small, no addition of lubricant is needed.

LUBRICANT ADJUSTING PROCEDURE FOR COMPRESSOR REPLACEMENT

LUBRICANT

< ON-VEHICLE MAINTENANCE >

1. Before connecting recovery/recycling recharging equipment to vehicle, check recovery/recycling recharging equipment gauges. No refrigerant pressure should be displayed. If NG, recover refrigerant from equipment lines.
 2. Connect recovery/recycling recharging equipment to vehicle. Confirm refrigerant purity in supply tank using recovery/recycling recharging equipment and refrigerant identifier. If NG, refer to [HA-16, "Working with HFC-134a \(R-134a\)"](#).
 3. Confirm refrigerant purity in vehicle A/C system using recovery/recycling recharging equipment and refrigerant identifier. If NG, refer to [HA-16, "Working with HFC-134a \(R-134a\)"](#).
 4. Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure lubricant discharged into the recovery/recycling equipment.
 5. Drain the lubricant from the old (removed) compressor into a graduated container and recover the amount of lubricant drained.
 6. Drain the lubricant from the new compressor into a separate, clean container.
 7. Measure an amount of new lubricant installed equal to amount drained from old compressor. Add this lubricant to new compressor through the suction port opening.
 8. Measure an amount of new lubricant equal to the amount recovered during discharging. Add this lubricant to new compressor through the suction port opening.
 9. If the liquid tank also needs to be replaced, add another 5 mℓ (0.2 US fl oz., 0.2 Imp fl oz.) of lubricant at this time.
- Do not add this 5 mℓ (0.2 US fl oz., 0.2 Imp fl oz.) of lubricant when replaces the compressor only.



REFRIGERATION SYSTEM

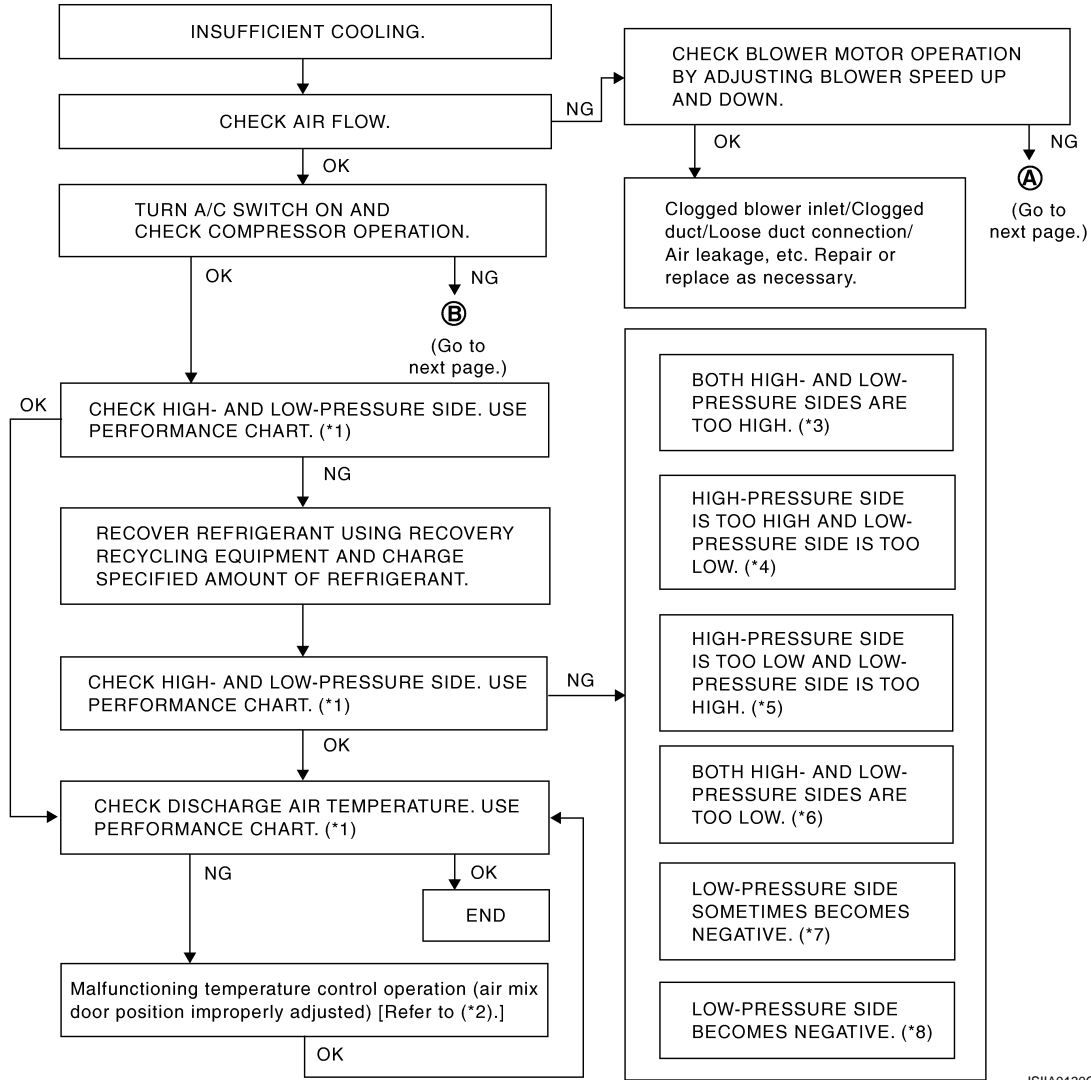
< ON-VEHICLE MAINTENANCE >

REFRIGERATION SYSTEM

Inspection

INFOID:000000000959862

PERFORMANCE TEST DIAGNOSIS



JSIIA0130GB

*1 "PERFORMANCE CHART" in [HA-32, "Inspection"](#).

*2 [HAC-75, "WITH LEFT AND RIGHT VENTILATION TEMPERATURE SEPARATELY CONTROL SYSTEM: Diagnosis Procedure"](#)

*3 [HA-11, "BOTH HIGH- AND LOW-PRESSURE SIDES ARE TOO HIGH: Symptom Table"](#)

*4 [HA-11, "HIGH-PRESSURE SIDE IS TOO HIGH AND LOW-PRESSURE SIDE IS TOO LOW: Symptom Table"](#)

*5 [HA-12, "HIGH-PRESSURE SIDE IS TOO LOW AND LOW-PRESSURE SIDE IS TOO HIGH: Symptom Table"](#)

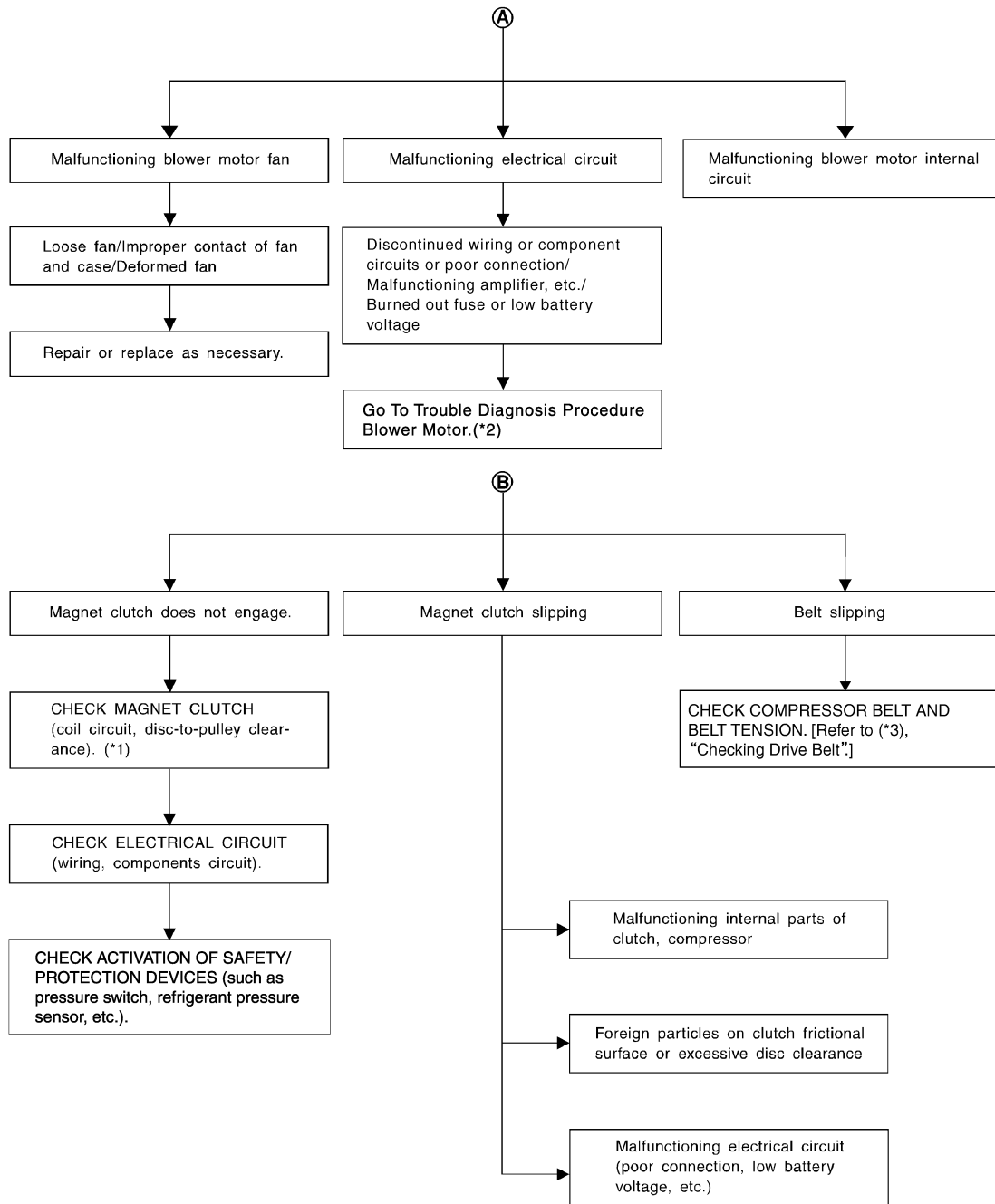
*6 [HA-12, "BOTH HIGH- AND LOW-PRESSURE SIDES ARE TOO LOW: Symptom Table"](#)

*7 [HA-13, "LOW-PRESSURE SIDE SOMETIMES BECOMES NEGATIVE: Symptom Table"](#)

*8 [HA-14, "LOW-PRESSURE SIDE BECOMES NEGATIVE: Symptom Table"](#)

REFRIGERATION SYSTEM

< ON-VEHICLE MAINTENANCE >



SJA1642E

*1 [HA-44. "Inspection"](#)

*2 [HAC-86. "WITH LEFT AND RIGHT VENTILATION TEMPERATURE SEPARATELY CONTROL SYSTEM: Diagnosis Procedure"](#)

*3 [EM-12. "Checking"](#)

Performance Chart




TEST CONDITION

INFOID:000000000959863

REFRIGERATION SYSTEM

< ON-VEHICLE MAINTENANCE >

Testing must be performed as follows:

Vehicle condition	Indoors or in the shade (in a well-ventilated place)
Doors	Closed
Door windows	Open
Hood	Open
TEMP.	Max. COLD
Mode switch	 (Ventilation) set
Intake switch	 (Recirculation) set
 Fan (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)	6.3 - 7.9 (43 - 46)
	25 (77)	10.6 - 12.8 (51 - 55)
	30 (86)	14.8 - 17.6 (59 - 64)
	35 (95)	19.0 - 22.3 (66 - 72)
60 - 70	20 (68)	7.9 - 9.4 (46 - 49)
	25 (77)	12.8 - 14.9 (55 - 59)
	30 (86)	17.6 - 20.3 (64 - 69)
	35 (95)	22.3 - 25.7 (72 - 78)

Ambient Air Temperature-to-operating Pressure Table

Ambient air		High-pressure (Discharge side) kPa (kg/cm ² , psi)	Low-pressure (Suction side) kPa (kg/cm ² , psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	20 (68)	768 - 940 (7.8 - 9.6, 111.4 - 136.3)	180 - 220 (1.8 - 2.2, 26.1 - 31.9)
	25 (77)	925 - 1,131 (9.4 - 11.5, 134.1 - 164.0)	218 - 267 (2.2 - 2.7, 31.6 - 38.7)
	30 (86)	1,082 - 1,322 (11.0 - 13.5, 156.9 - 191.7)	258 - 314 (2.6 - 3.2, 37.4 - 45.5)
	35 (95)	1,238 - 1,513 (12.6 - 15.4, 179.5 - 219.4)	296 - 362 (3.0 - 3.7, 42.9 - 52.5)
	40 (104)	1,395 - 1,704 (14.2 - 17.4, 202.3 - 247.1)	335 - 408 (3.4 - 4.2, 48.6 - 59.2)

Refrigerant Leaks

INFOID:000000000959864

Perform a visual inspection of all refrigeration parts, fittings, hoses and components for signs of A/C lubricant leakage, damage and corrosion. A/C lubricant leakage may indicate an area of refrigerant leakage. Allow extra inspection time in these areas when using either an electrical leak detector or fluorescent dye leak detector (SST: J-42220).

If dye is observed, confirm the leak with an electrical 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 electrical leak detector, move the probe along the suspected leak area at 1 to 2 inches per second and no further than 1/4 inch from the component.

REFRIGERATION SYSTEM

< ON-VEHICLE MAINTENANCE >

CAUTION:

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

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HA

FLUORESCENT LEAK DETECTOR

< ON-VEHICLE MAINTENANCE >

FLUORESCENT LEAK DETECTOR

Inspection

INFOID:00000000959865

CHECKING SYSTEM FOR LEAKS USING THE FLUORESCENT LEAK DETECTOR

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

NOTE:

Other gases in the work area or substances on the A/C components, for example, anti-freeze, windshield washer fluid, solvents and lubricants, may falsely trigger the leak detector. Make sure the surfaces to be checked are clean.

Clean with a dry cloth or blow off with shop air.

Do not allow the sensor tip of the detector to contact with any substance. This can also cause false readings and may damage the detector.

DYE INJECTION

(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 (3.52 kg/cm², 50 psi).
2. Pour one bottle (1/4 ounce / 7.4 cc) of the A/C refrigerant dye into the injector tool (SST: J-41459).
3. Connect the injector tool to the A/C low-pressure side service valve.
4. Start the 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 (SST: J-41459) (refer to the manufacturer's operating instructions).
6. With the engine still running, disconnect the injector tool from the service valve.

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.
8. Attach a blue label as necessary.

ELECTRICAL LEAK DETECTOR

< ON-VEHICLE MAINTENANCE >

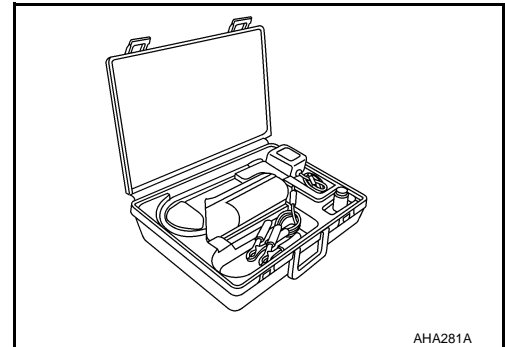
ELECTRICAL LEAK DETECTOR

Inspection

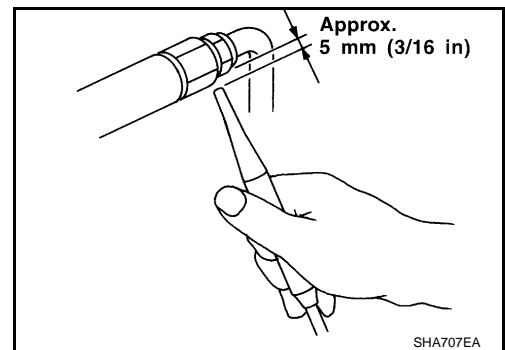
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PRECAUTIONS FOR HANDLING LEAK DETECTOR

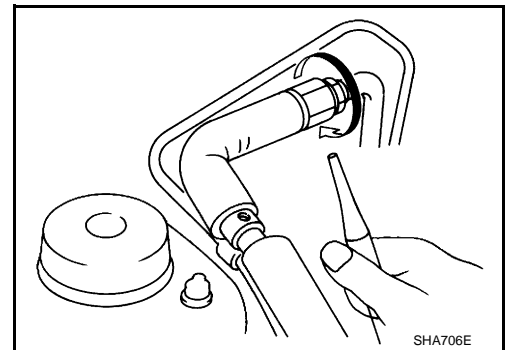
When performing a refrigerant leak check, use an electrical leak detector (SST: J-41995) or equivalent. Ensure that the instrument is calibrated and set properly per the operating instructions. The leak detector is a delicate device. In order to use the leak detector properly, read the operating instructions and perform any specified maintenance.



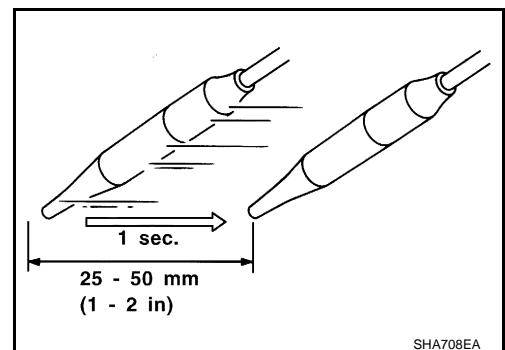
1. Position probe approximately 5 mm (3/16 in) away from point to be checked.



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



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



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. Stop the engine.

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ELECTRICAL LEAK DETECTOR

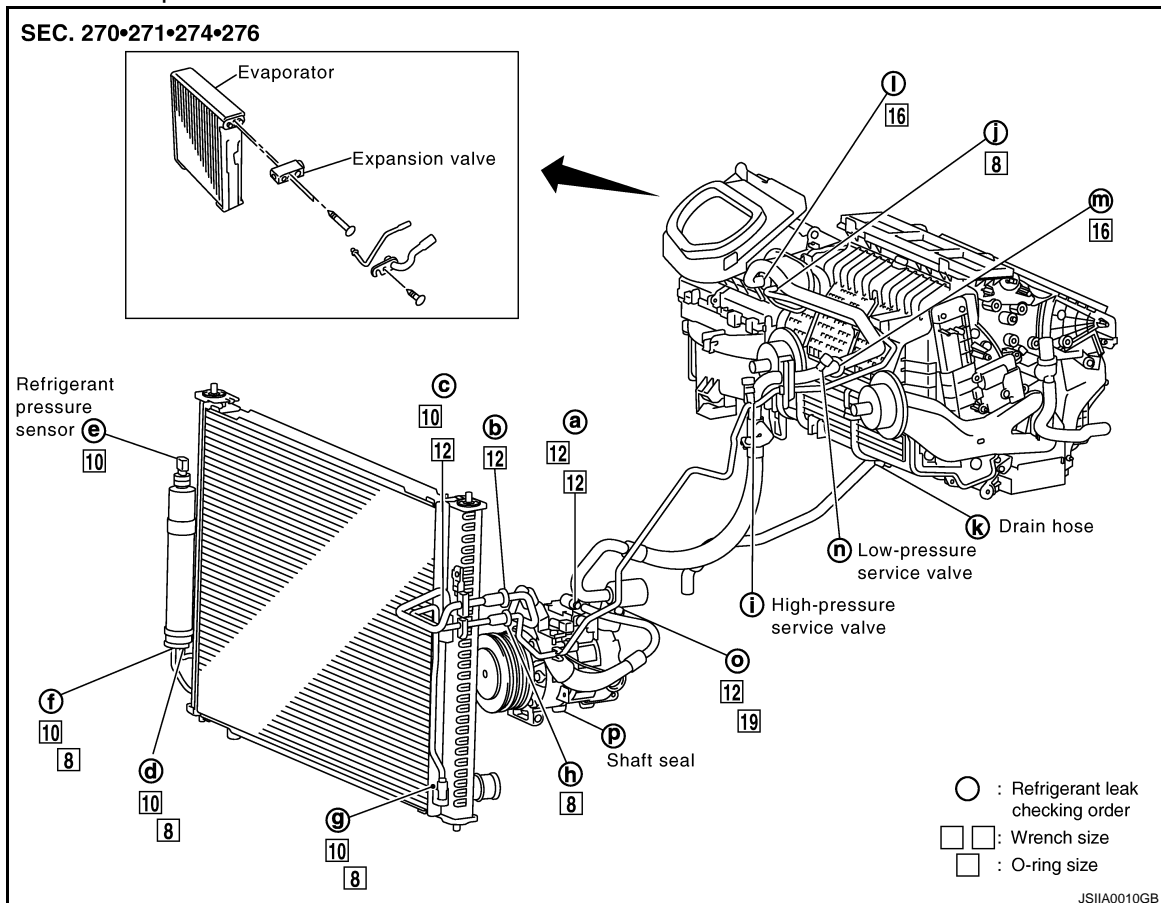
< ON-VEHICLE MAINTENANCE >

- Connect a suitable A/C manifold gauge set (SST: J-39183) to the A/C service valves.
- Check if the A/C refrigerant pressure is at least 345 kPa (3.52 kg/cm², 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/cm², 50 psi).

- Perform the leak test from the high-pressure side (compressor discharge a to evaporator inlet j) to the low-pressure side (evaporator drain hose k to shaft seal p). 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 condenser pipe assembly, high-pressure flexible hose and pipe.

Liquid tank

Check the fitting of radiator & condenser assembly and refrigerant pressure sensor.

Service valves

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

NOTE:

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

Cooling unit (Evaporator)

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

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

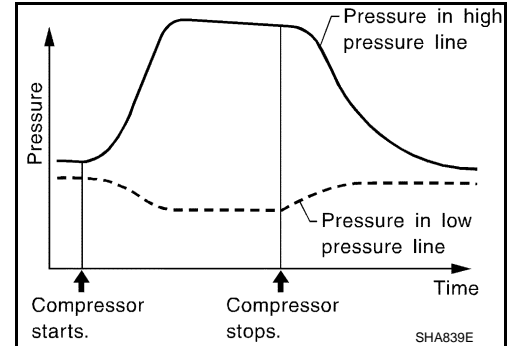
- If a leak detector detects a leak, verify at least once by blowing compressed air into area of suspected leak, then repeat check as outlined above.

ELECTRICAL LEAK DETECTOR

< ON-VEHICLE MAINTENANCE >

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 the engine.
8. Set the A/C control as follows;
 - a. A/C switch: ON
 - b. MODE door position: VENT (Ventilation)
 - c. Intake door position: Recirculation
 - d. Temperature setting: Max. cold
 - e. Fan speed: High
9. Run engine at 1,500 rpm for at least 2 minutes.
10. Stop the engine 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 recharging equipment to vehicle, check recovery/recycling recharging equipment gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover refrigerant from equipment lines and then check refrigerant purity.
12. Confirm refrigerant purity in supply tank using recovery/recycling recharging equipment and refrigerant identifier.
13. Confirm refrigerant purity in vehicle A/C system using recovery/recycling recharging equipment and refrigerant identifier.
14. Discharge A/C system using approved refrigerant recovery equipment. Repair the leaking fitting or component if necessary.
15. Evacuate and recharge A/C system and perform the leak test to confirm no refrigerant leaks.
16. Perform A/C performance test to ensure system works properly.

REFRIGERATION SYSTEM

< ON-VEHICLE REPAIR >

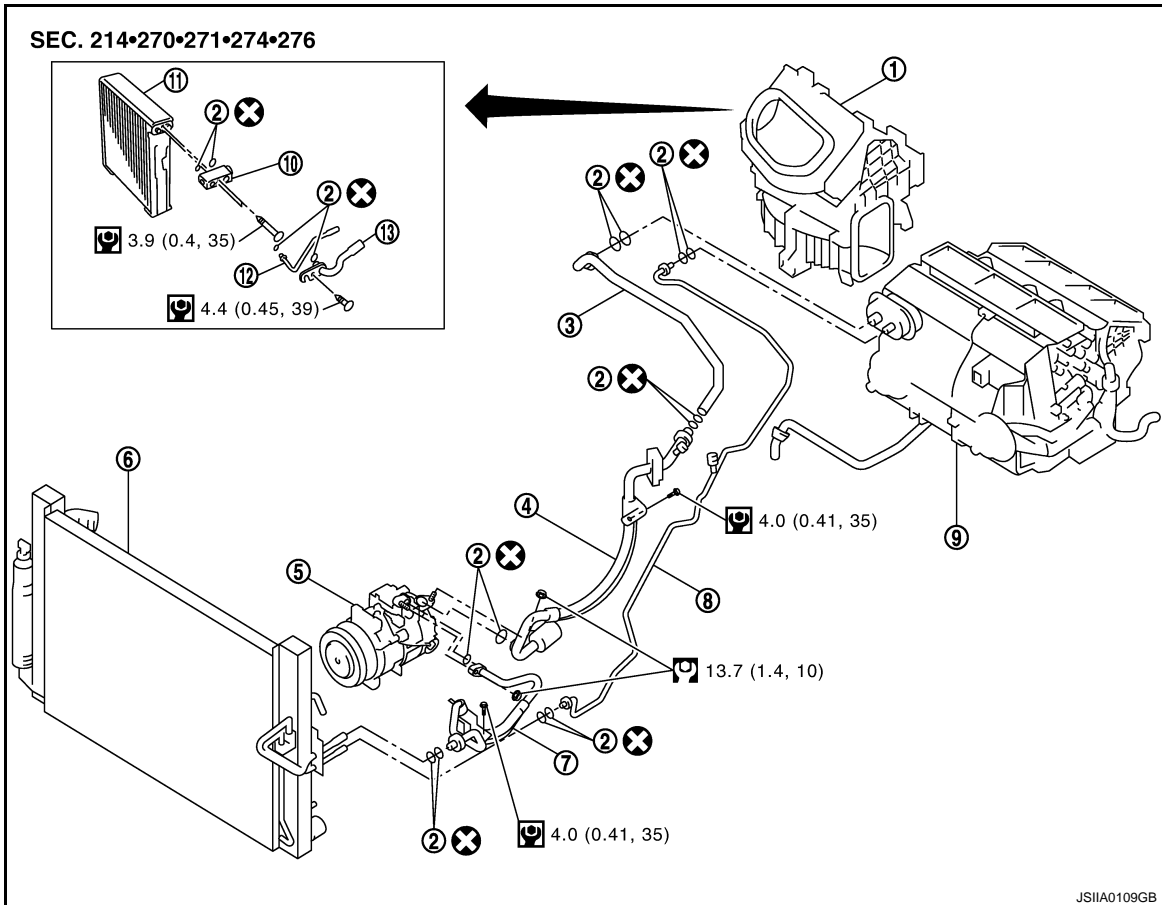
ON-VEHICLE REPAIR

REFRIGERATION SYSTEM

Exploded View

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Refer to [HA-17, "Refrigerant Connection"](#).



- | | | |
|--------------------------------|-------------------------|-----------------------------------|
| 1. Blower unit | 2. O-ring | 3. Low-pressure pipe 2 |
| 4. Low-pressure flexible hose | 5. Compressor | 6. Radiator & condenser assembly |
| 7. High-pressure flexible hose | 8. High-pressure pipe 1 | 9. Heater & cooling unit assembly |
| 10. Expansion valve | 11. Evaporator | 12. High-pressure pipe 2 |
| 13. Low-pressure pipe 1 | | |

Inspection After Installation

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SETTING OF SERVICE TOOLS AND EQUIPMENT

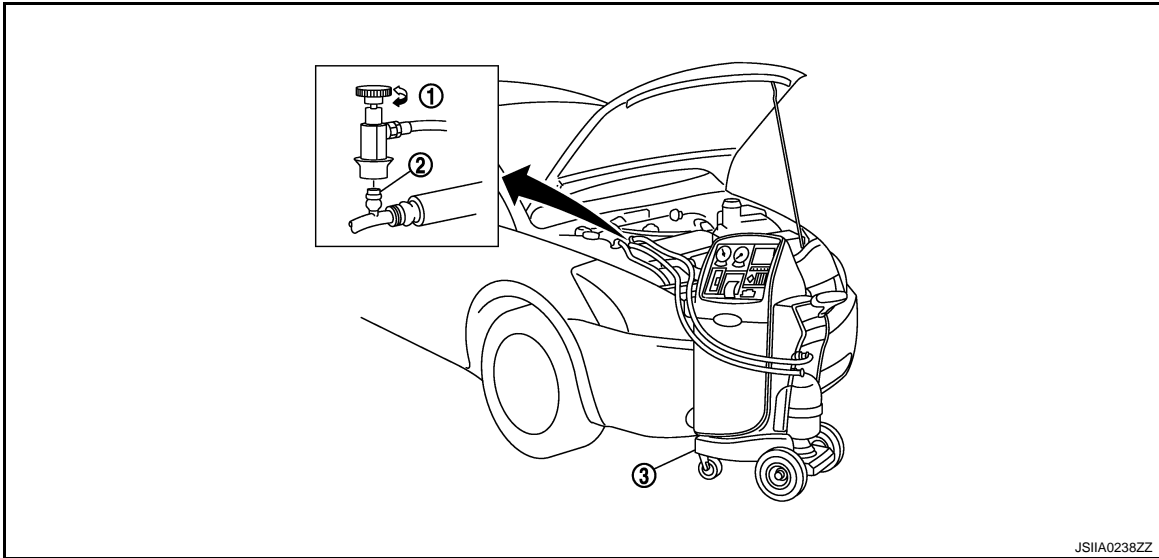
Discharging Refrigerant

WARNING:

Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) from A/C system using certified service equipment meeting requirements of SAE J-2210 [HFC-134a (R-134a) recycling equipment] or J-2209 [HFC-134a (R-134a) recovery equipment]. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.

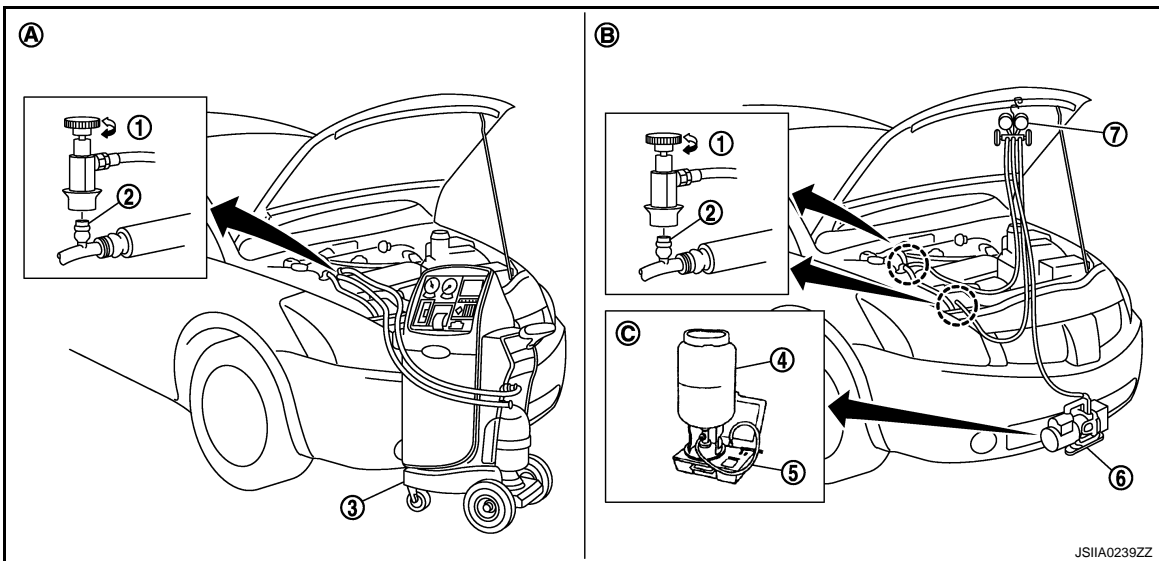
REFRIGERATION SYSTEM

< ON-VEHICLE REPAIR >



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

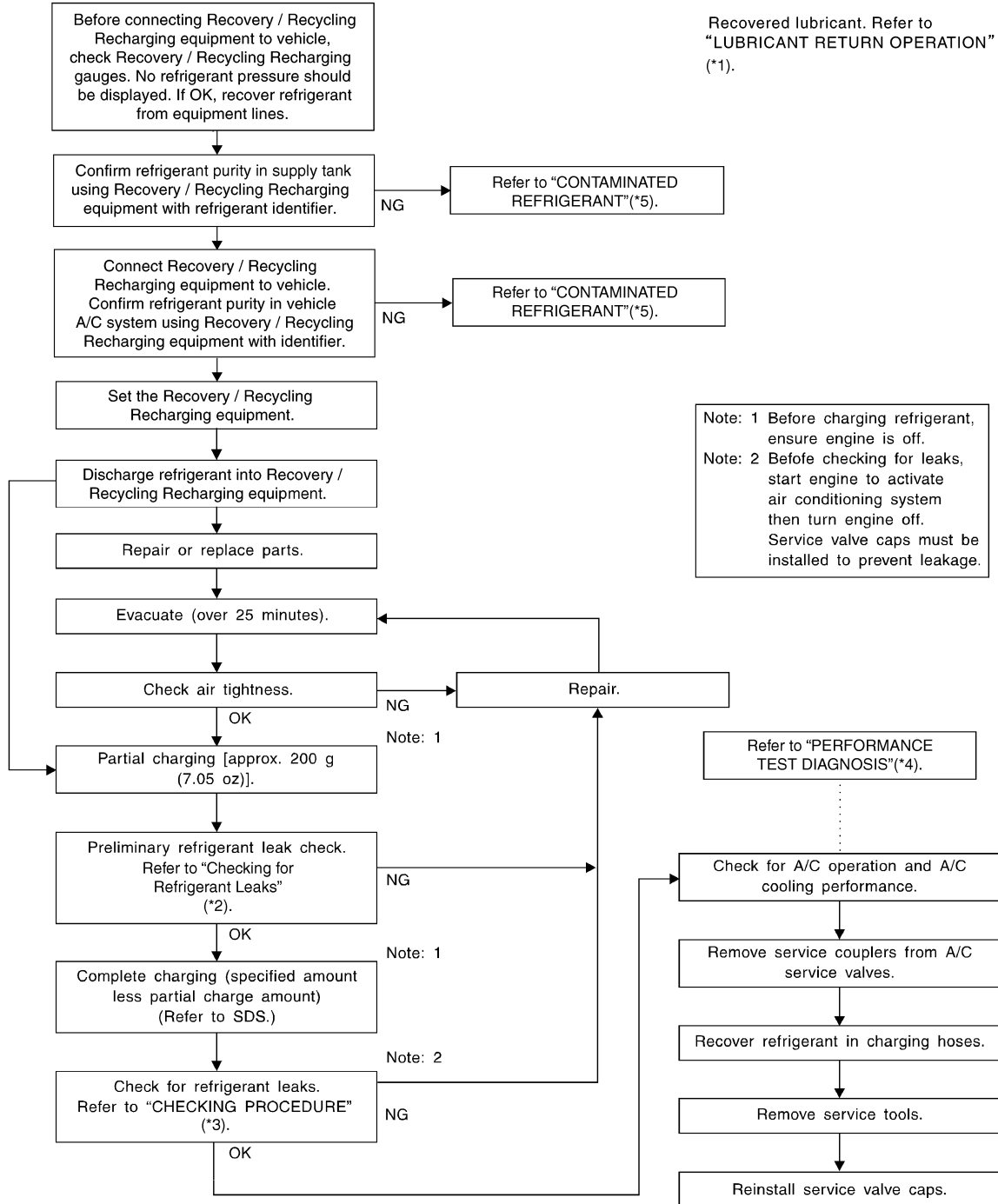
Evacuating System and Charging Refrigerant



- 1. Shut-off valve
- 2. A/C service valve
- 3. Recovery/Recycling/Recharging equipment
- 4. Refrigerant container (HFC-134a)
- 5. Weight scale (J-39650)
- 6. Vacuum pump (J-39649)
- 7. Manifold gauge set (J-39183)
- A. Preferred (best) method
- B. Alternative method
- C. For charging

REFRIGERATION SYSTEM

< ON-VEHICLE REPAIR >



SJIA1275E

*1 [HA-30. "Adjustment"](#)

*2 "REFRIGERANT LEAKS" in [HA-34. "Refrigerant Leaks"](#).

*3 "CHECKING PROCEDURE" in [HA-32. "Inspection"](#).

*4 "PERFORMANCE TEST DIAGNOSIS" in [HA-32. "Inspection"](#).

*5 "CONTAMINATED REFRIGERANT" in [HAC-129. "Working with HFC-134a \(R-134a\)"](#).

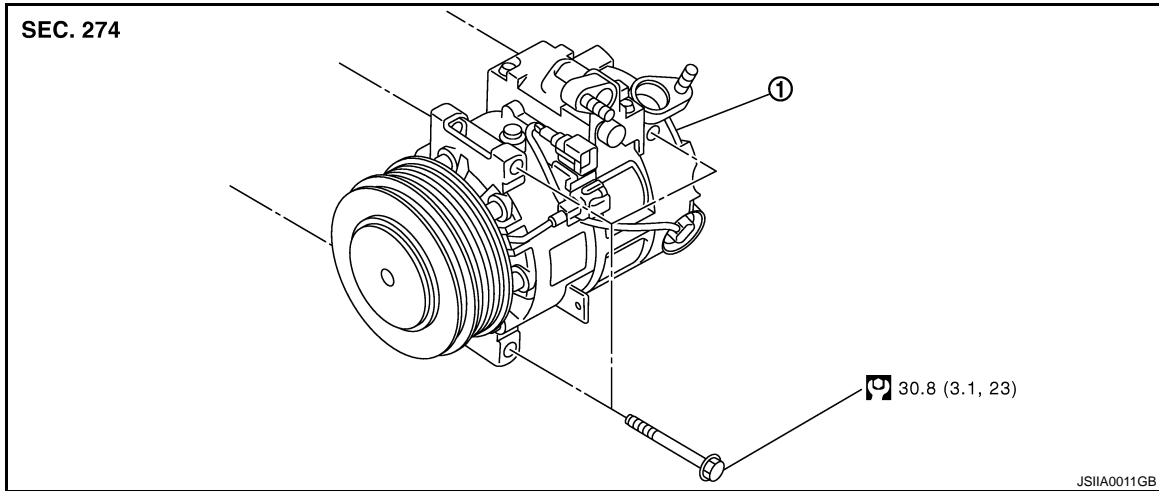
COMPRESSOR

< ON-VEHICLE REPAIR >

COMPRESSOR

Exploded View

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1. Compressor

Removal and Installation

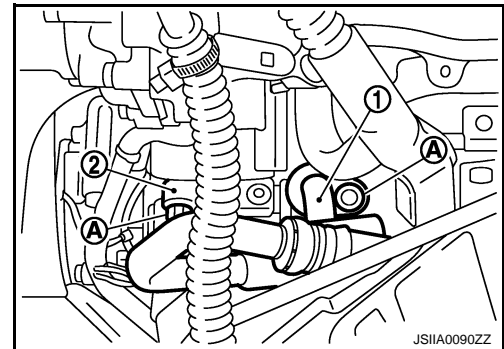
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REMOVAL

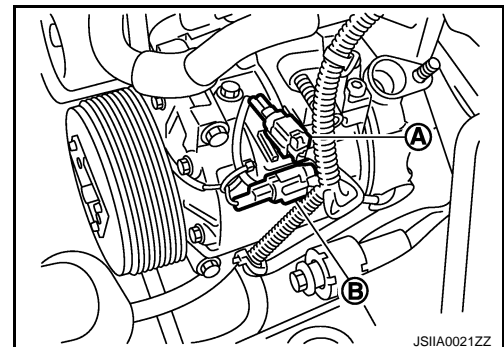
1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove air cleaner case (LH) and air duct (LH). Refer to [EM-25, "Removal and Installation"](#).
3. Remove engine undercover, using power tools.
4. Drain engine coolant from radiator. Refer to [CO-8, "Draining"](#).
5. Remove cooling fan assembly. Refer to [CO-17, "Removal and Installation"](#).
6. Remove drive belt. Refer to [EM-12, "Removal and Installation"](#).
7. Remove radiator hose (lower). Refer to [CO-14, "Removal and Installation"](#).
8. Remove mounting nuts (A) from low-pressure flexible hose (1) and high-pressure flexible hose (2).

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.



9. Disconnect compressor (ECV) connector (A).
10. Disconnect compressor (magnet clutch) connector (B).

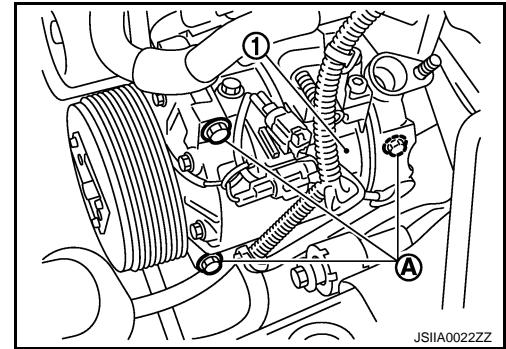


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COMPRESSOR

< ON-VEHICLE REPAIR >

11. Remove mounting bolts (A) from compressor (1), using power tools.
12. Remove the compressor from top of the vehicle.



INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

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

Inspection

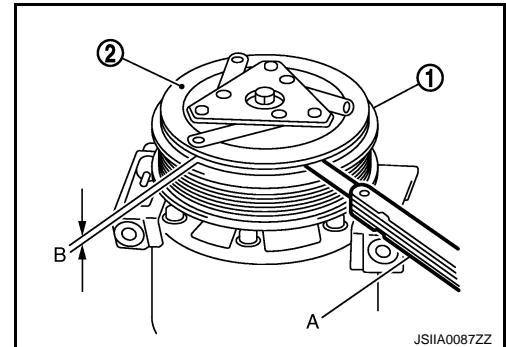
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CHECK DISC TO PULLEY CLEARANCE

Check the clearance (B) between pulley assembly (1) and clutch disc (2) along the entire periphery with a feeler gauge (A).

Standard : Refer to [HA-62, "Compressor"](#)

If specified clearance is not obtained, replace compressor.



LOW-PRESSURE FLEXIBLE HOSE AND PIPE 2

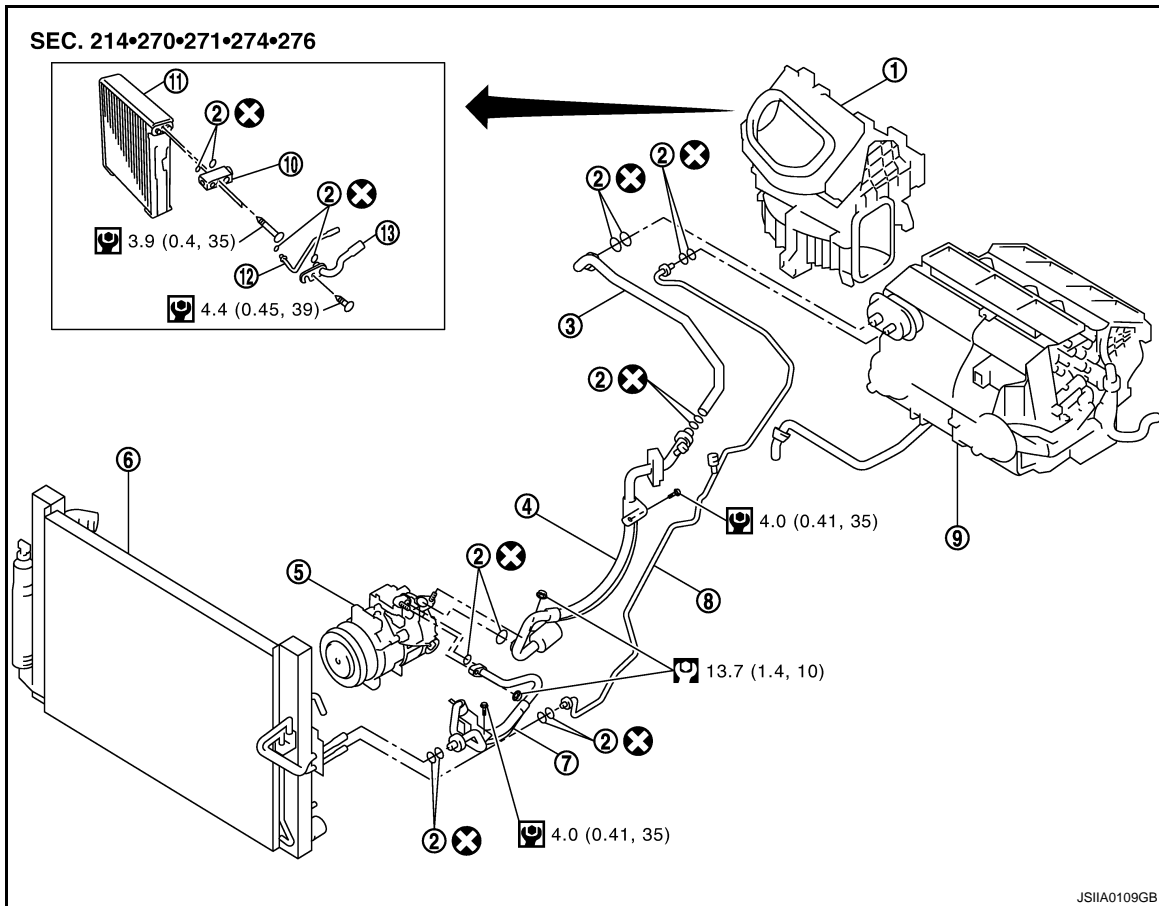
< ON-VEHICLE REPAIR >

LOW-PRESSURE FLEXIBLE HOSE AND PIPE 2

Exploded View

INFOID:000000000959872

Refer to [HA-17, "Refrigerant Connection"](#).



- | | | |
|--------------------------------|-------------------------|-----------------------------------|
| 1. Blower unit | 2. O-ring | 3. Low-pressure pipe 2 |
| 4. Low-pressure flexible hose | 5. Compressor | 6. Radiator & condenser assembly |
| 7. High-pressure flexible hose | 8. High-pressure pipe 1 | 9. Heater & cooling unit assembly |
| 10. Expansion valve | 11. Evaporator | 12. High-pressure pipe 2 |
| 13. Low-pressure pipe 1 | | |

Removal and Installation

INFOID:000000000959873

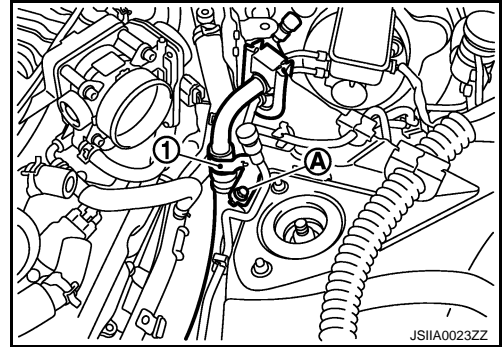
REMOVAL

1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove engine cover. Refer to [EM-27, "Removal and Installation"](#).
3. Remove air cleaner case (LH) and air duct (LH). Refer to [EM-25, "Removal and Installation"](#).
4. Remove cowl top cover. Refer to [EXT-18, "Removal and Installation"](#).

LOW-PRESSURE FLEXIBLE HOSE AND PIPE 2

< ON-VEHICLE REPAIR >

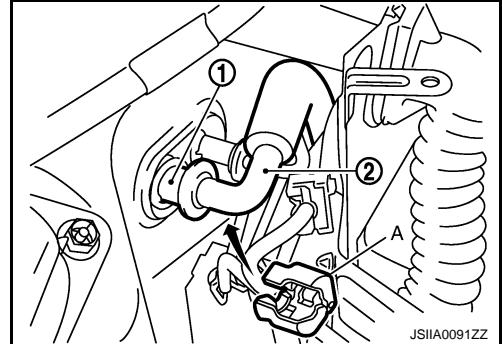
5. Remove mounting bolt (A) from low-pressure flexible hose bracket (1).



6. Disconnect the one-touch joint between low-pressure pipe 1 (1) and low-pressure pipe 2 (2) with disconnecter (A) (SST: 9253089916).

CAUTION:

Cap or wrap the joint of low-pressure pipe 1 and 2 with suitable material such as vinyl tape to avoid the entry of air.

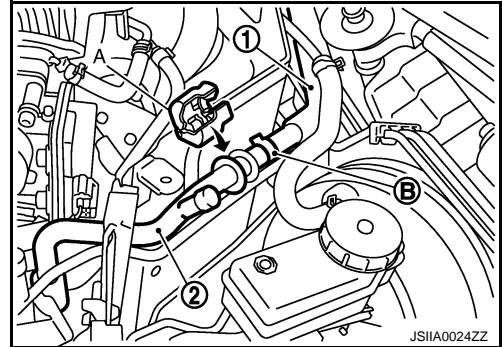


7. Disconnect the one-touch joint between low-pressure pipe 2 (1) and low-pressure flexible hose (2) with disconnecter (A) (SST: 9253089916).

CAUTION:

Cap or wrap the joint of low-pressure pipe 2 and low-pressure flexible hose with suitable material such as vinyl tape to avoid the entry of air.

8. Remove the low-pressure pipe 2 clip (B).
9. Remove low-pressure pipe 2.

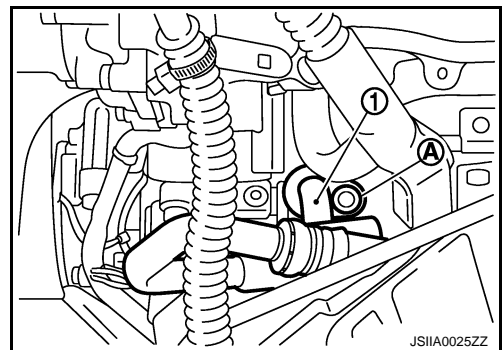


10. Remove mounting nut (A) from low-pressure flexible hose (1).

CAUTION:

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

11. Remove low-pressure flexible hose.



INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

- Replace O-rings of low-pressure flexible hose and low-pressure pipe 2 with new ones, and then apply compressor oil to it when installing it.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- When recharging refrigerant, check for leaks.

HIGH-PRESSURE FLEXIBLE HOSE

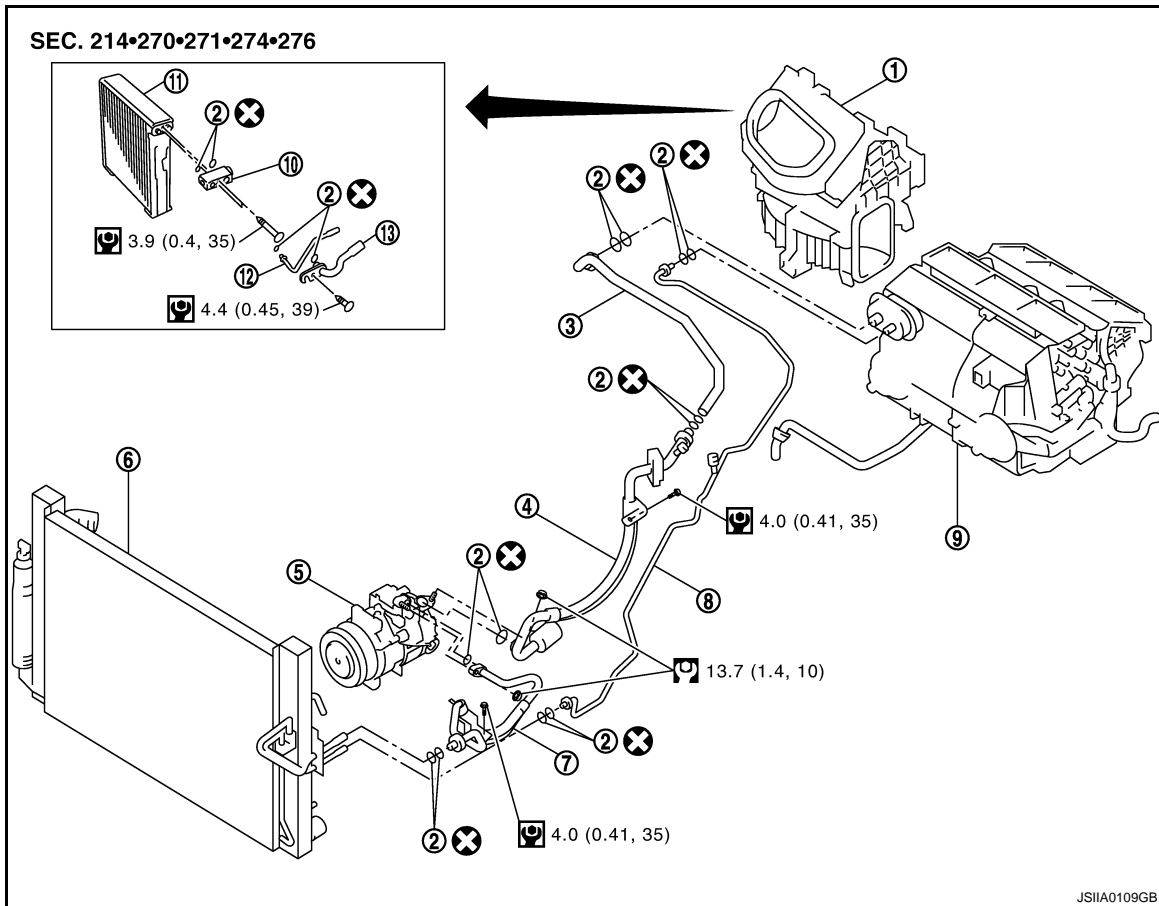
< ON-VEHICLE REPAIR >

HIGH-PRESSURE FLEXIBLE HOSE

Exploded View

INFOID:000000000959874

Refer to [HA-17, "Refrigerant Connection"](#).



- | | | |
|--------------------------------|-------------------------|-----------------------------------|
| 1. Blower unit | 2. O-ring | 3. Low-pressure pipe 2 |
| 4. Low-pressure flexible hose | 5. Compressor | 6. Radiator & condenser assembly |
| 7. High-pressure flexible hose | 8. High-pressure pipe 1 | 9. Heater & cooling unit assembly |
| 10. Expansion valve | 11. Evaporator | 12. High-pressure pipe 2 |
| 13. Low-pressure pipe 1 | | |

Removal and Installation

INFOID:000000000959875

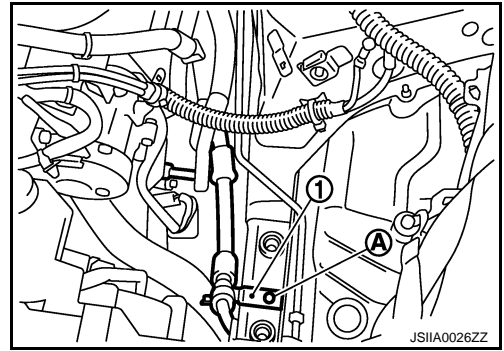
REMOVAL

1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove engine cover. Refer to [EM-27, "Removal and Installation"](#).
3. Remove air cleaner case (LH) and air duct (LH). Refer to [EM-25, "Removal and Installation"](#).

HIGH-PRESSURE FLEXIBLE HOSE

< ON-VEHICLE REPAIR >

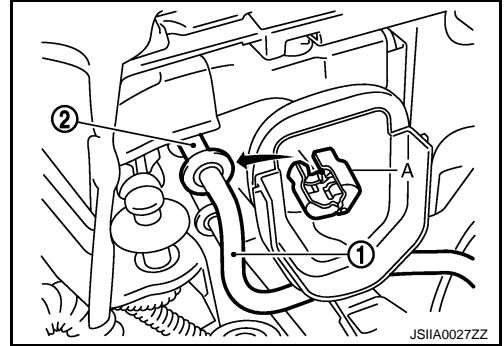
4. Remove mounting bolt (A) from high-pressure flexible hose bracket (1).



5. Disconnect the one-touch joint between high-pressure flexible hose (1) and condenser pipe assembly (2) with disconnecter (A) (SST: 9253089912).

CAUTION:

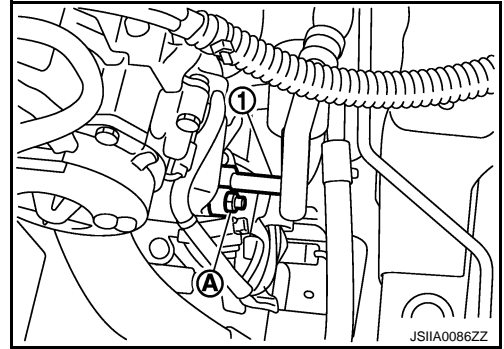
Cap or wrap the joint of high-pressure flexible hose and condenser pipe assembly with suitable material such as vinyl tape to avoid the entry of air.



6. Remove mounting nut (A) from high-pressure flexible hose (1), and then remove high-pressure flexible hose.

CAUTION:

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



INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

- Replace O-rings of high-pressure flexible hose with new ones, and then apply compressor oil to it when installing it.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- When recharging refrigerant, check for leaks.

HIGH-PRESSURE PIPE 1(ENGINE COMPARTMENT)

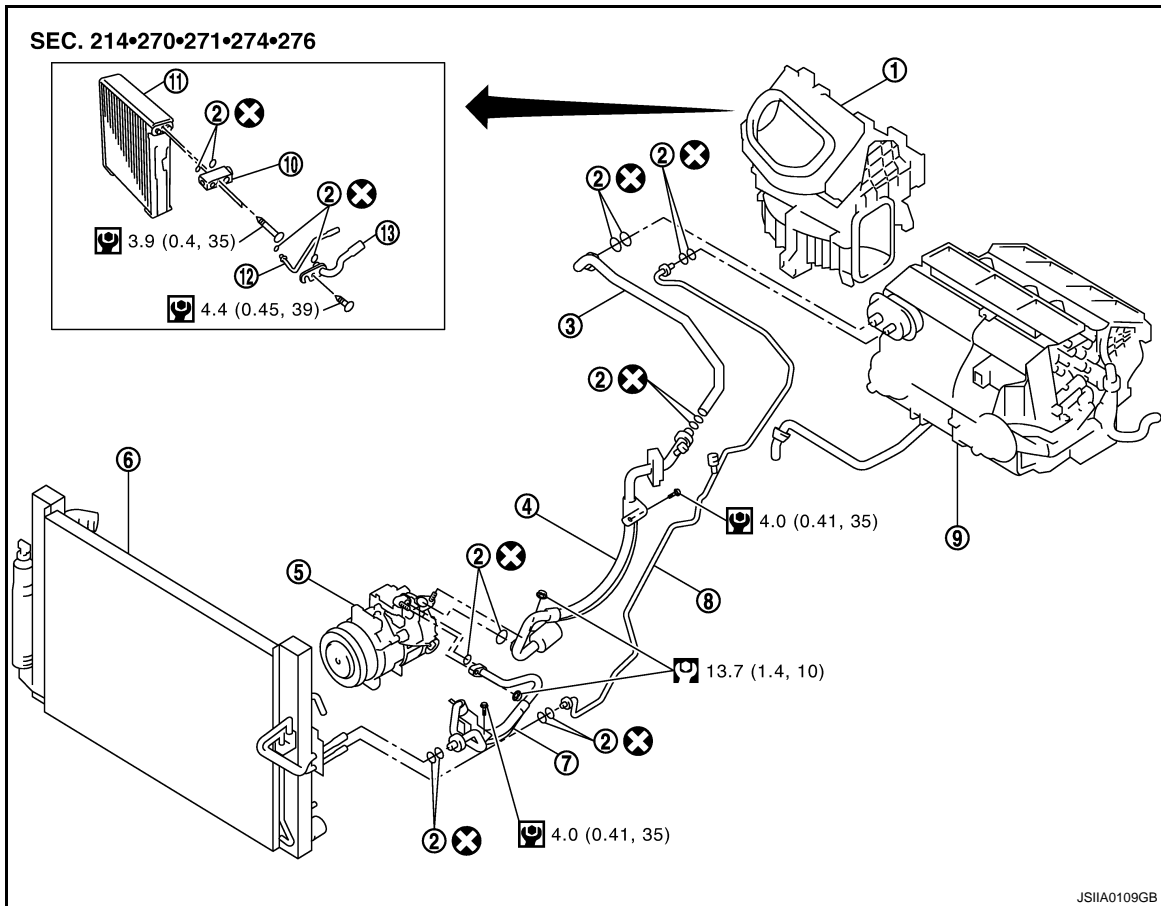
< ON-VEHICLE REPAIR >

HIGH-PRESSURE PIPE 1(ENGINE COMPARTMENT)

Exploded View

INFOID:000000000959876

Refer to [HA-17. "Refrigerant Connection"](#).



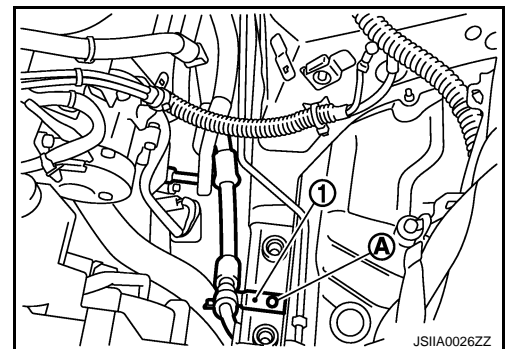
- | | | |
|--------------------------------|-------------------------|-----------------------------------|
| 1. Blower unit | 2. O-ring | 3. Low-pressure pipe 2 |
| 4. Low-pressure flexible hose | 5. Compressor | 6. Radiator & condenser assembly |
| 7. High-pressure flexible hose | 8. High-pressure pipe 1 | 9. Heater & cooling unit assembly |
| 10. Expansion valve | 11. Evaporator | 12. High-pressure pipe 2 |
| 13. Low-pressure pipe 1 | | |

Removal and Installation

INFOID:000000000959877

REMOVAL

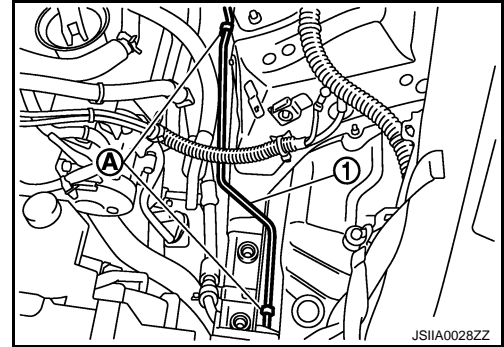
1. Remove low-pressure flexible hose and pipe 2. Refer to [HA-45. "Removal and Installation"](#).
2. Remove mounting bolt (A) from high-pressure flexible hose bracket (1).



HIGH-PRESSURE PIPE 1(ENGINE COMPARTMENT)

< ON-VEHICLE REPAIR >

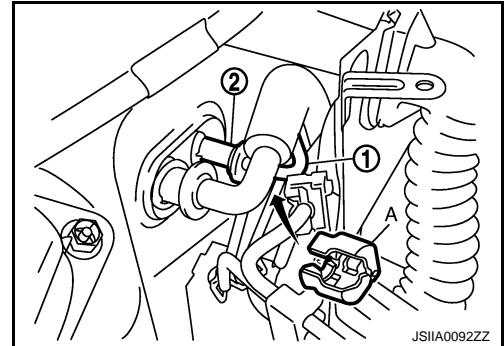
3. Remove high-pressure pipe 1 (1) from vehicle clips (A).



4. Disconnect one-touch joint between high-pressure pipe 1 (1) and high-pressure pipe 2 (2) with disconnecter (A) (SST: 9253089908).

CAUTION:

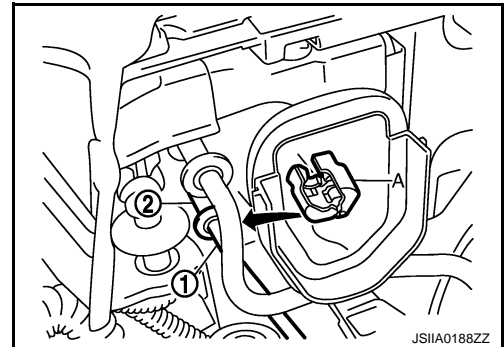
Cap or wrap the joint of high-pressure pipe 1, 2 with suitable material such as vinyl tape to avoid the entry of air.



5. Disconnect one-touch joint between high-pressure pipe 1 and condenser pipe assembly with disconnecter (A) (SST: 9253089908).

CAUTION:

Cap or wrap the joint of high-pressure pipe 1 and condenser pipe assembly with suitable material such as vinyl tape to avoid the entry of air.



6. Remove vacuum hose. Refer to [BR-37, "Removal and Installation"](#).
7. Remove high-pressure pipe 1.

INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

- Replace O-rings of high-pressure pipe 1 with new ones, and then apply compressor oil to it when installing it.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- When recharging refrigerant, check for leaks.

LOW-PRESSURE PIPE 1 AND HIGH-PRESSURE PIPE 2

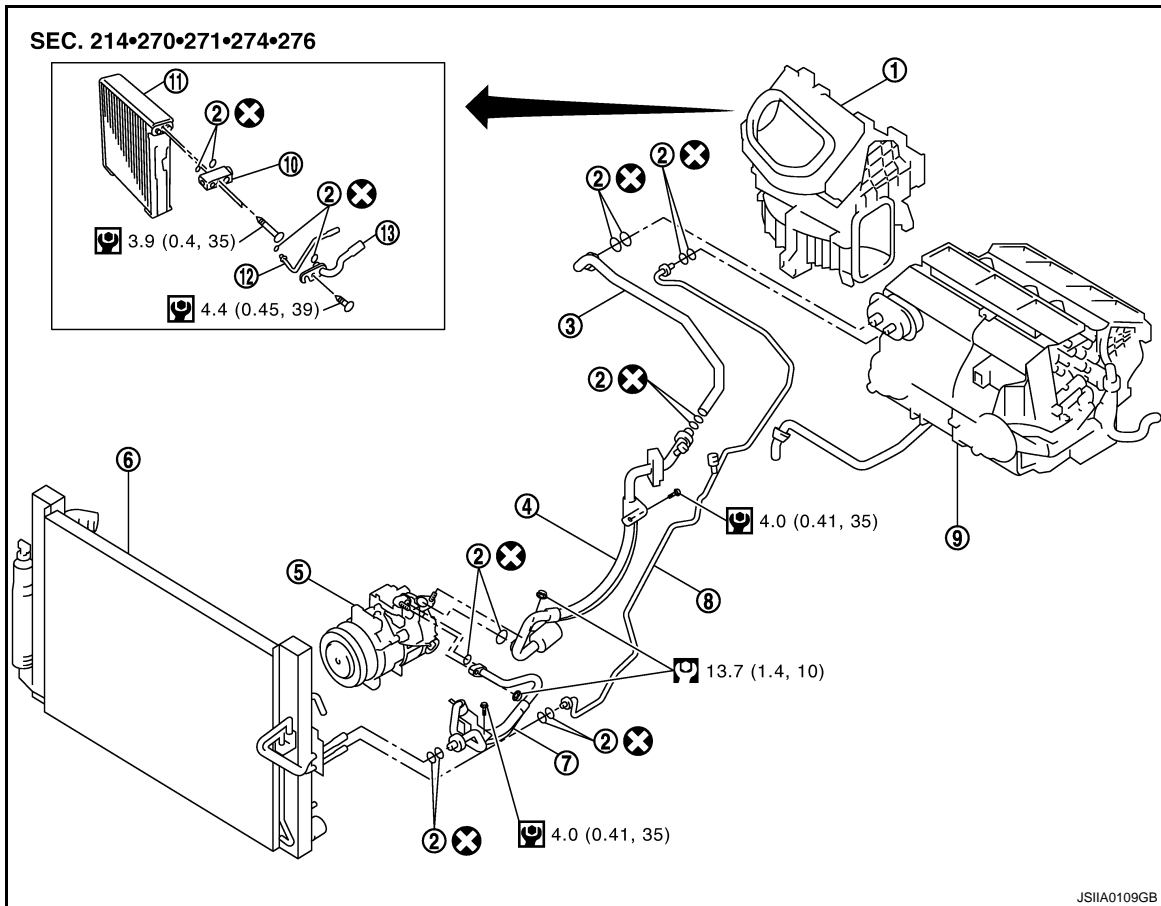
< ON-VEHICLE REPAIR >

LOW-PRESSURE PIPE 1 AND HIGH-PRESSURE PIPE 2

Exploded View

INFOID:000000000959878

Refer to [HA-17, "Refrigerant Connection"](#).



- | | | |
|--------------------------------|-------------------------|-----------------------------------|
| 1. Blower unit | 2. O-ring | 3. Low-pressure pipe 2 |
| 4. Low-pressure flexible hose | 5. Compressor | 6. Radiator & condenser assembly |
| 7. High-pressure flexible hose | 8. High-pressure pipe 1 | 9. Heater & cooling unit assembly |
| 10. Expansion valve | 11. Evaporator | 12. High-pressure pipe 2 |
| 13. Low-pressure pipe 1 | | |

Removal and Installation

INFOID:000000000959879

REMOVAL

1. Set the temperature at 18°C (60°F), and then disconnect the battery cable from the negative terminal.
2. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
3. Remove cowl top cover. Refer to [EXT-18, "Removal and Installation"](#).

LOW-PRESSURE PIPE 1 AND HIGH-PRESSURE PIPE 2

< ON-VEHICLE REPAIR >

4. Disconnect the one-touch joint between low-pressure pipe 1 (1) and low-pressure pipe 2 (2) with disconnecter (A) (SST: 9253089916).

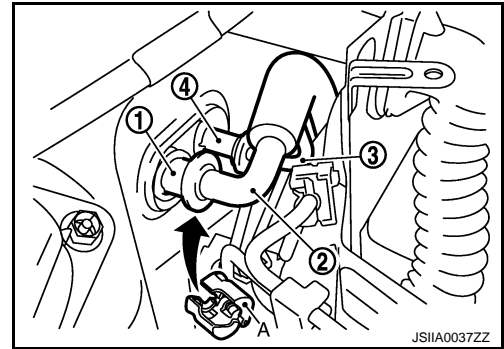
CAUTION:

Cap or wrap the joint of low-pressure pipe 1 and 2 with suitable material such as vinyl tape to avoid the entry of air.

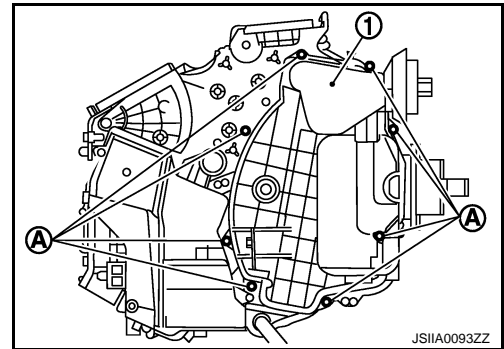
5. Disconnect the one-touch joints between high-pressure pipe 1 (3) and high-pressure pipe 2 (4) with disconnecter (SST: 9253089908).

CAUTION:

Cap or wrap the joint of high-pressure pipe 1 and 2 with suitable material such as vinyl tape to avoid the entry of air.



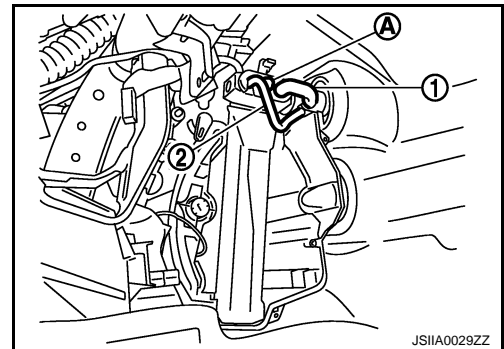
6. Remove foot grille (right). Refer to [VTL-50, "FOOT GRILLES : Removal and Installation"](#).
7. Remove blower unit. Refer to [VTL-30, "Removal and Installation"](#).
8. Remove air mix door motor (passenger side). Refer to [VTL-41, "Removal and Installation"](#).
9. Remove mode door motor. Refer to [VTL-39, "Removal and Installation"](#).
10. Remove main link (right) and max. cool door link (right). Refer to [VTL-34, "Exploded View"](#).
11. Remove mounting screws (A), and then remove evaporator cover (1).



12. Remove mounting bolt (A), and then remove low-pressure pipe 1 (1) and high-pressure pipe 2 (2).

CAUTION:

Cap or wrap the joint of expansion valve, high-pressure pipe 2 and low-pressure pipe 1 with suitable material such as vinyl tape to avoid the entry of air.



INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

- Replace O-rings of high-pressure pipe 1, 2 and low-pressure pipe 1, 2 with new ones, and then apply compressor oil to it when installing it.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- When recharging refrigerant, check for leaks.

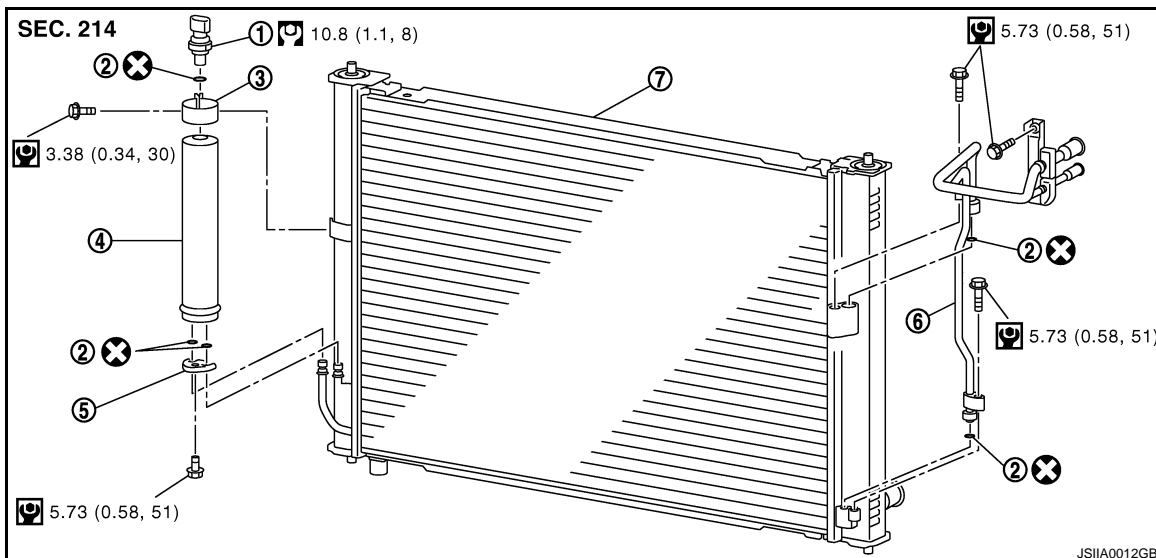
CONDENSER

< ON-VEHICLE REPAIR >

CONDENSER

Exploded View

INFOID:000000000959880



- | | | |
|----------------------------------|------------|----------------------------|
| 1. Refrigerant pressure sensor | 2. O-ring | 3. Liquid tank bracket |
| 4. Liquid tank | 5. Bracket | 6. Condenser pipe assembly |
| 7. Radiator & condenser assembly | | |

Removal and Installation

INFOID:000000000959881

REMOVAL

1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove radiator & condenser assembly. Refer to [CO-14, "Removal and Installation"](#).

INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

- Replace O-rings of high-pressure flexible hose and high-pressure pipe 1 with new ones, and then apply compressor oil to it when installing it.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- When recharging refrigerant, check for leaks.

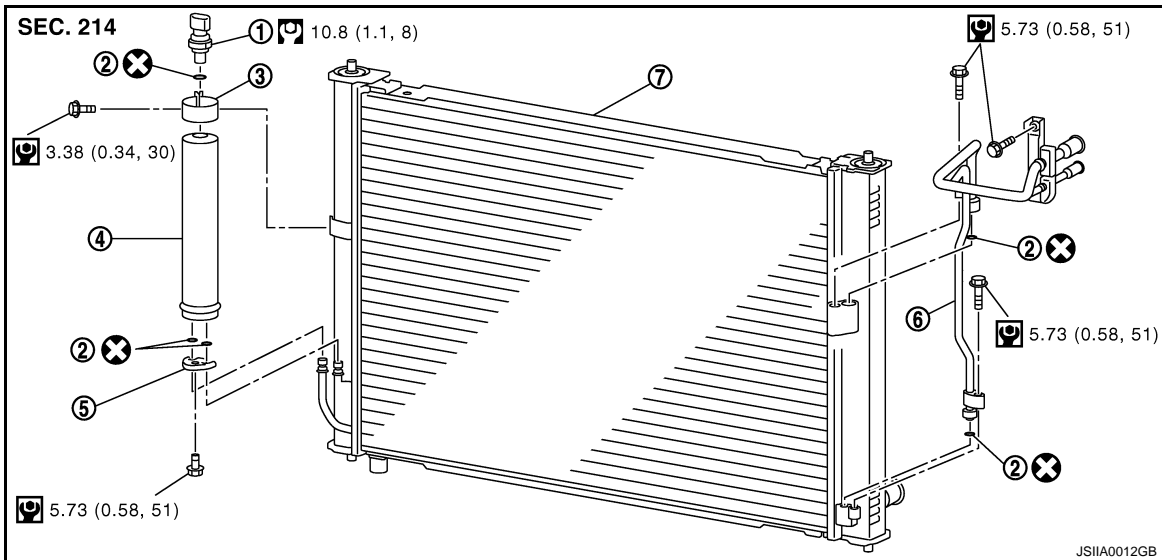
CONDENSER PIPE ASSEMBLY

< ON-VEHICLE REPAIR >

CONDENSER PIPE ASSEMBLY

Exploded View

INFOID:000000000959882



- | | | |
|----------------------------------|------------|----------------------------|
| 1. Refrigerant pressure sensor | 2. O-ring | 3. Liquid tank bracket |
| 4. Liquid tank | 5. Bracket | 6. Condenser pipe assembly |
| 7. Radiator & condenser assembly | | |

Removal and Installation

INFOID:000000000959883

REMOVAL

1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove front bumper. [EXT-11, "Removal and Installation"](#).
3. Remove air cleaner case (LH) and air duct (LH). Refer to [EM-25, "Removal and Installation"](#).
4. Disconnect the one-touch joint between high-pressure flexible hose (1) and condenser pipe assembly (2) with disconnecter (A) (SST: 9253089912).

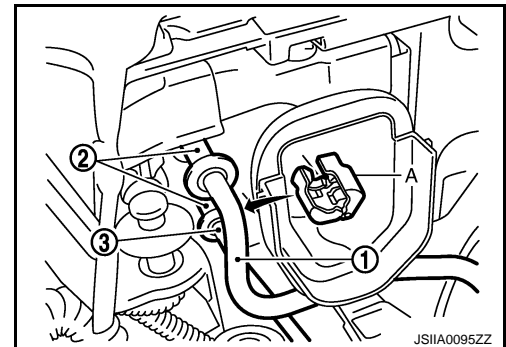
CAUTION:

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

5. Disconnect the one-touch joints between high-pressure pipe 1 (3) and condenser pipe assembly with disconnecter (A) (SST: 9253089908).

CAUTION:

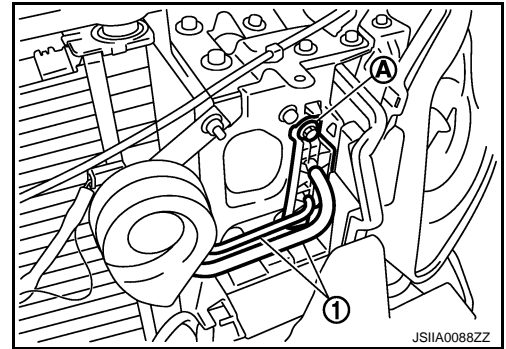
Cap or wrap the joint of high-pressure pipe 1 and condenser pipe assembly with suitable material such as vinyl tape to avoid the entry of air.



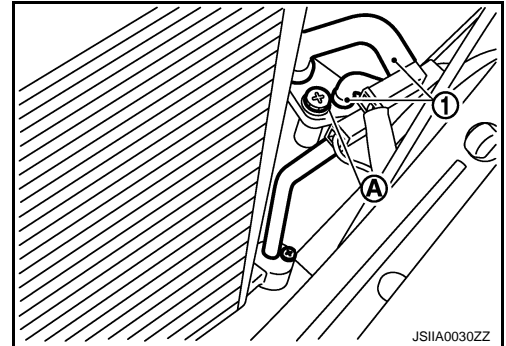
CONDENSER PIPE ASSEMBLY

< ON-VEHICLE REPAIR >

6. Remove mounting bolt (A) from condenser pipe assembly (1).



7. Remove mounting bolt (A) from condenser pipe assembly (1).
8. Remove condenser pipe assembly.



INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

- Replace O-rings of condenser pipe assembly, high-pressure flexible hose and high-pressure pipe 1 with new ones, and then apply compressor oil to it when installing it.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- When recharging refrigerant, check for leaks.

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

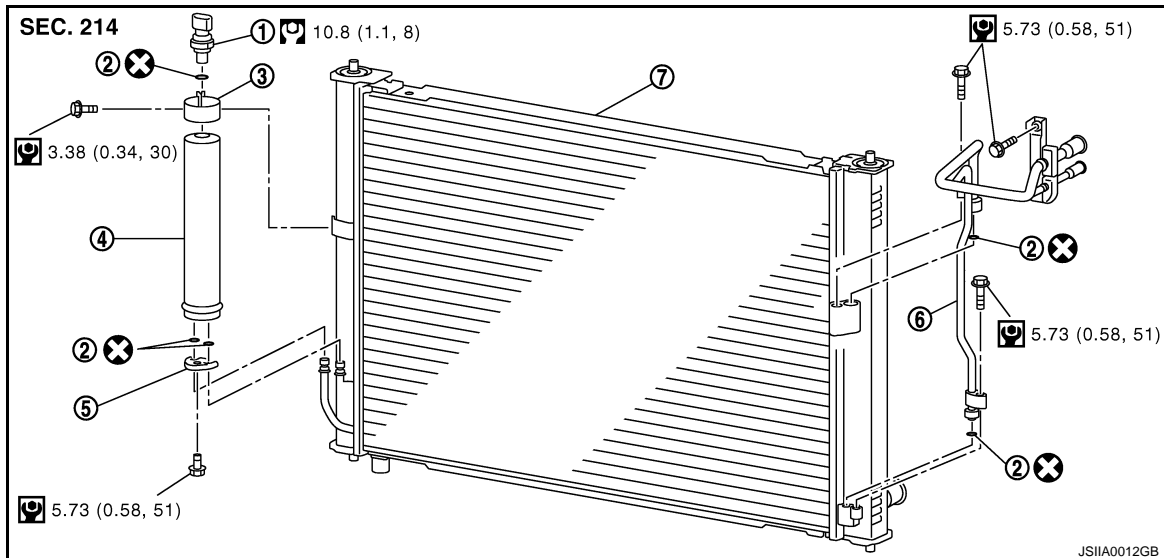
LIQUID TANK

< ON-VEHICLE REPAIR >

LIQUID TANK

Exploded View

INFOID:000000000959884



- | | | |
|----------------------------------|------------|----------------------------|
| 1. Refrigerant pressure sensor | 2. O-ring | 3. Liquid tank bracket |
| 4. Liquid tank | 5. Bracket | 6. Condenser pipe assembly |
| 7. Radiator & condenser assembly | | |

Removal and Installation

INFOID:000000000959885

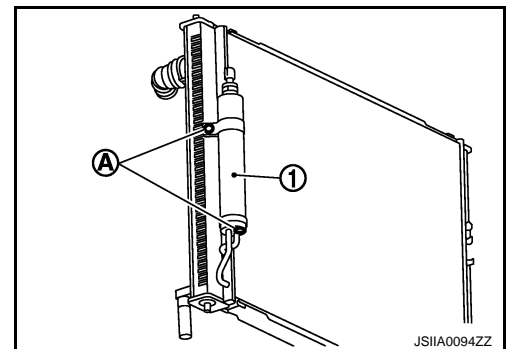
REMOVAL

1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove front grille. Refer to [EXT-16, "Removal and Installation"](#).
3. Clean liquid tank and its surrounding area, and remove dust and rust from liquid tank.

CAUTION:

Be sure to clean carefully.

4. Remove mounting bolts (A) from liquid tank (1).
5. Remove liquid tank.



INSTALLATION

Install liquid tank, and then install liquid tank bracket on condenser.

CAUTION:

- Make sure liquid tank bracket is securely installed at protrusion of condenser. (Make sure liquid tank bracket does not move to a position below center of liquid tank.)
- Replace O-rings of A/C piping with new ones, and then apply compressor oil to it when installing it.
- When recharging refrigerant, check for leaks.

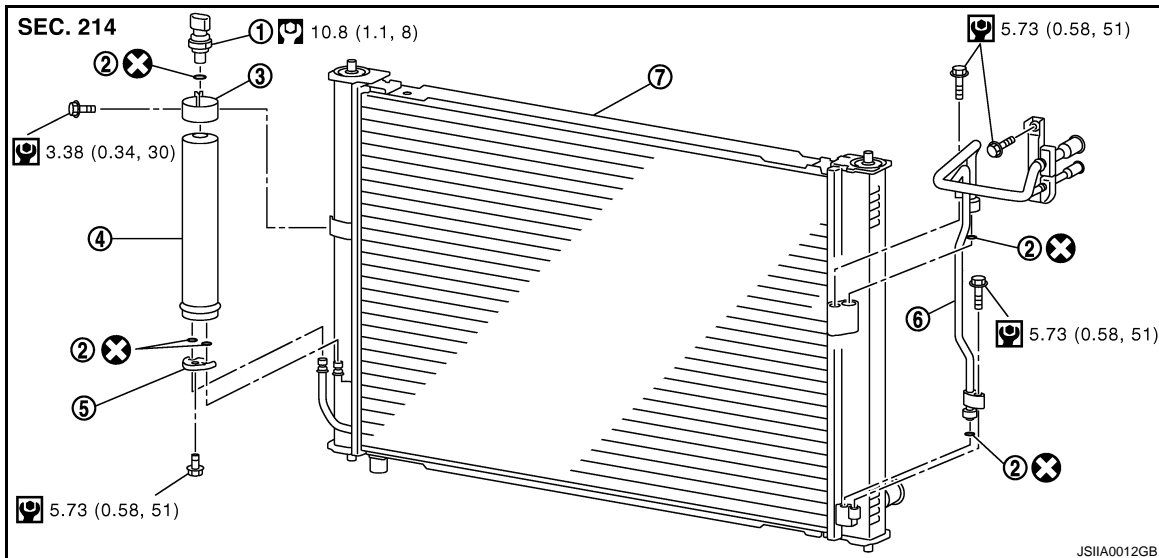
REFRIGERANT PRESSURE SENSOR

< ON-VEHICLE REPAIR >

REFRIGERANT PRESSURE SENSOR

Exploded View

INFOID:000000000959886



- | | | |
|----------------------------------|------------|----------------------------|
| 1. Refrigerant pressure sensor | 2. O-ring | 3. Liquid tank bracket |
| 4. Liquid tank | 5. Bracket | 6. Condenser pipe assembly |
| 7. Radiator & condenser assembly | | |

Removal and Installation

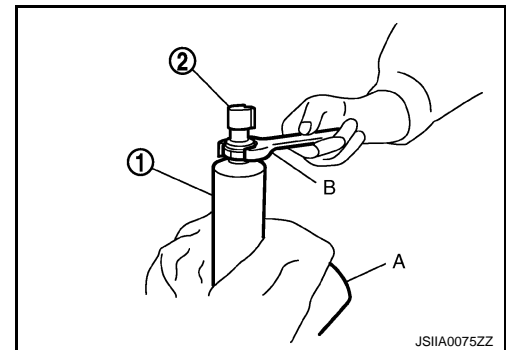
INFOID:000000000959887

REMOVAL

1. Remove liquid tank. Refer to [HA-56, "Removal and Installation"](#).
2. Fix the liquid tank (1) with a vise (A). Remove the refrigerant pressure sensor (2) with a wrench (B).

CAUTION:

Be careful not to damage liquid tank.



INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

- Apply compressor oil to O-ring of refrigerant pressure sensor when installing it.
- When recharging refrigerant, check for leaks.

EVAPORATOR

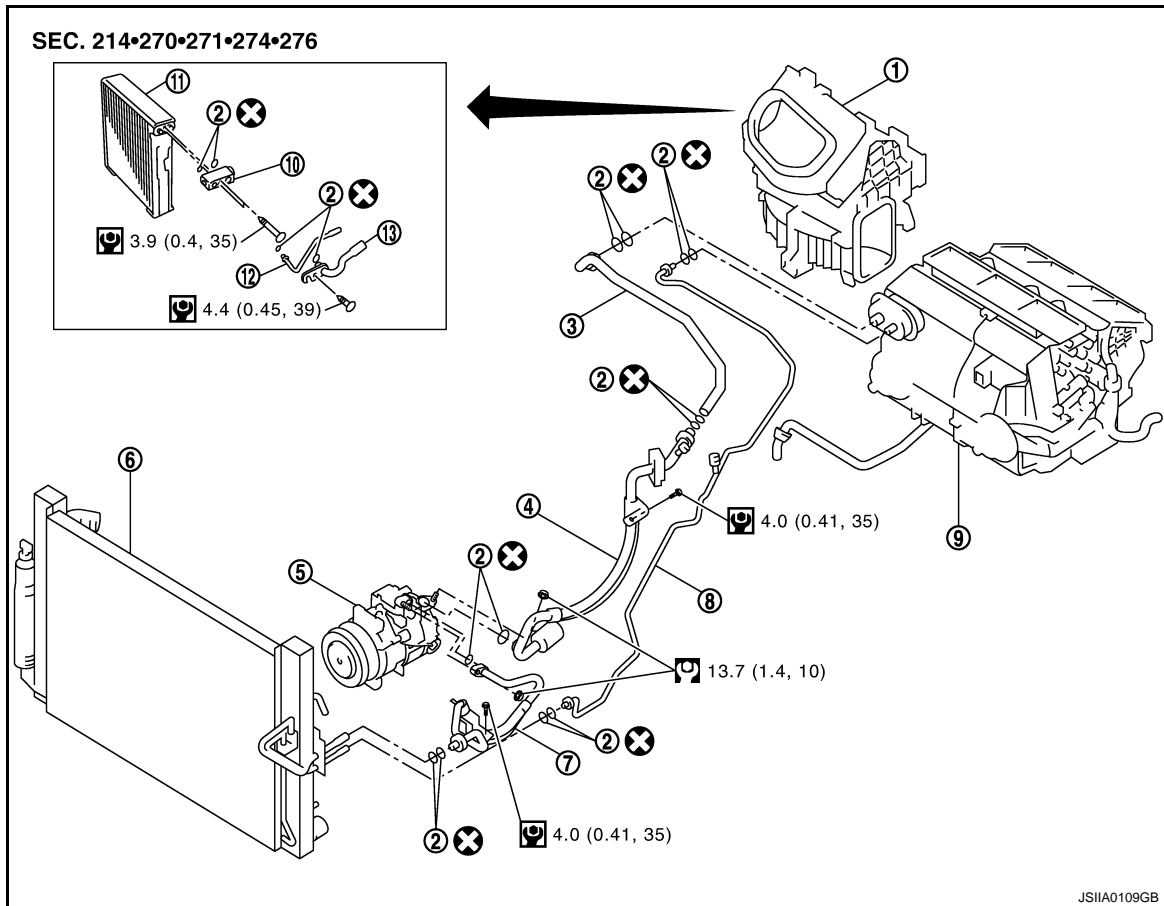
< ON-VEHICLE REPAIR >

EVAPORATOR

Exploded View

INFOID:000000000959888

Refer to [HA-17. "Refrigerant Connection"](#).



- | | | |
|--------------------------------|-------------------------|-----------------------------------|
| 1. Blower unit | 2. O-ring | 3. Low-pressure pipe 2 |
| 4. Low-pressure flexible hose | 5. Compressor | 6. Radiator & condenser assembly |
| 7. High-pressure flexible hose | 8. High-pressure pipe 1 | 9. Heater & cooling unit assembly |
| 10. Expansion valve | 11. Evaporator | 12. High-pressure pipe 2 |
| 13. Low-pressure pipe 1 | | |

Removal and Installation

INFOID:000000000959889

REMOVAL

1. Remove low-pressure pipe 1 and high-pressure pipe 2. Refer to [HA-51. "Removal and Installation"](#).

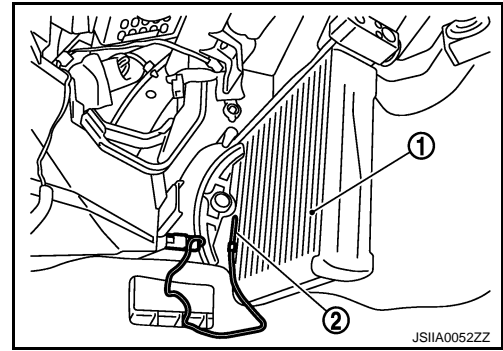
CAUTION:

Cap or wrap the joint of expansion valve, low-pressure pipe 1 and high-pressure pipe 2 with suitable material such as vinyl tape to avoid the entry of air.

EVAPORATOR

< ON-VEHICLE REPAIR >

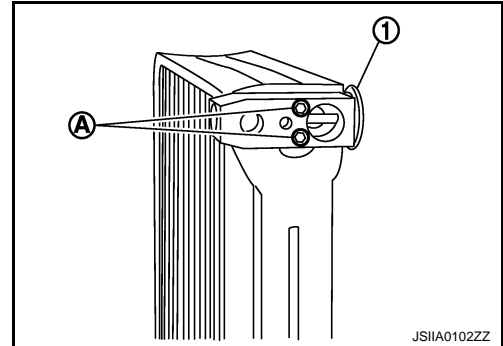
- Slide evaporator (1) from heater & cooling unit assembly.
- Remove intake sensor (2) from evaporator, and then remove evaporator.



- Remove mounting bolts (A), and then remove expansion valve (1).

CAUTION:

Cap or wrap the joint of evaporator and expansion valve with suitable material such as vinyl tape to avoid the entry of air.



INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

- Replace O-rings of low-pressure pipe 1 and high-pressure pipe 2 with new ones, and then apply compressor oil to it when installing it.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- O-rings are different from low-pressure flexible hose (high-pressure pipe 1) and low-pressure pipe 1 (high-pressure pipe 2).
- Mark the mounting position of intake sensor bracket prior to removal so that the reinstalled sensor can be located in the same position.
- When recharging refrigerant, check for leaks.

EXPANSION VALVE

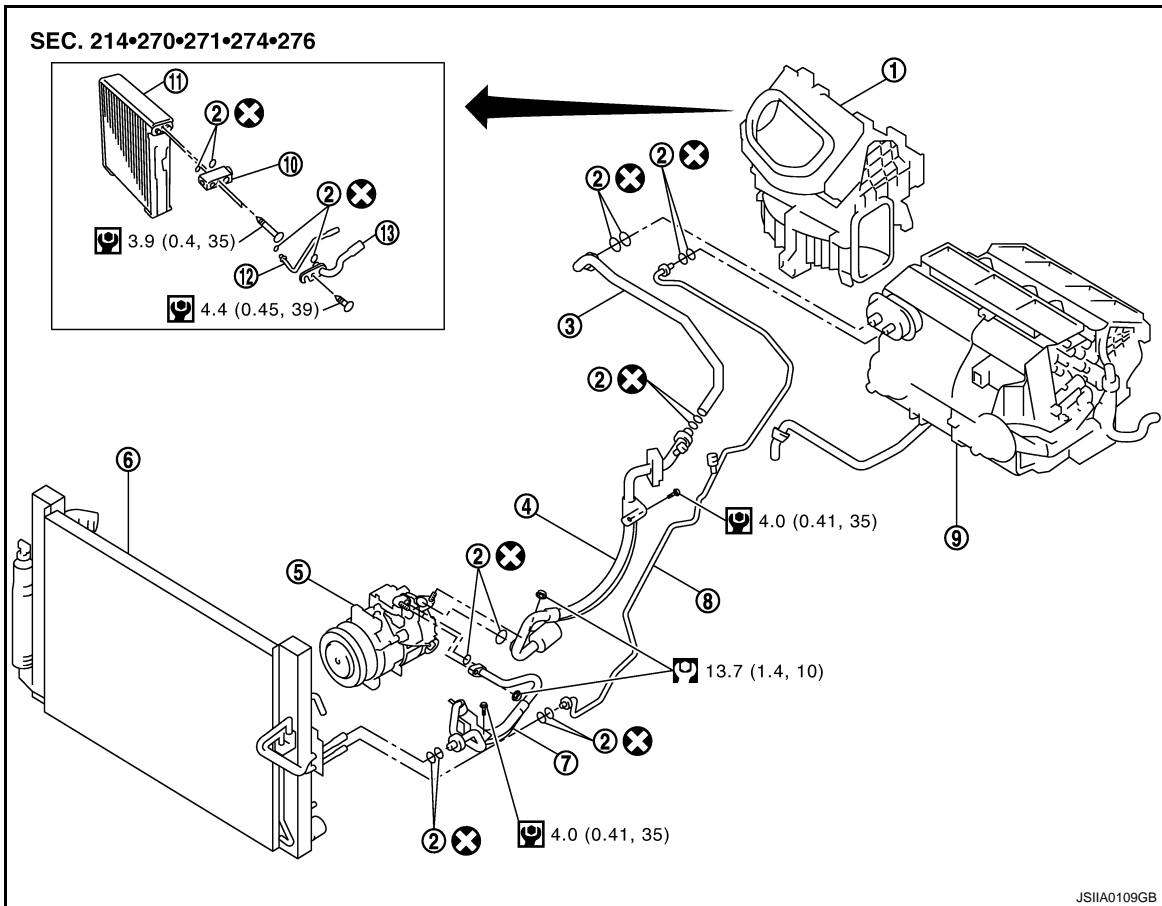
< ON-VEHICLE REPAIR >

EXPANSION VALVE

Exploded View

INFOID:000000000959890

Refer to [HA-17. "Refrigerant Connection"](#).



- | | | |
|--------------------------------|-------------------------|-----------------------------------|
| 1. Blower unit | 2. O-ring | 3. Low-pressure pipe 2 |
| 4. Low-pressure flexible hose | 5. Compressor | 6. Radiator & condenser assembly |
| 7. High-pressure flexible hose | 8. High-pressure pipe 1 | 9. Heater & cooling unit assembly |
| 10. Expansion valve | 11. Evaporator | 12. High-pressure pipe 2 |
| 13. Low-pressure pipe 1 | | |

Removal and Installation

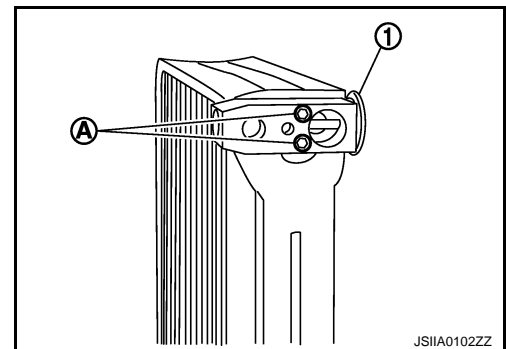
INFOID:000000000959891

REMOVAL

1. Remove low-pressure pipe 1 and high-pressure pipe 2. Refer to [HA-51. "Removal and Installation"](#).
2. Remove mounting bolts (A), and then remove expansion valve (1).

CAUTION:

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



INSTALLATION

EXPANSION VALVE

< ON-VEHICLE REPAIR >

Installation is basically the reverse order of removal.

CAUTION:

- Replace O-rings of evaporator with new ones, and then apply compressor oil to it when installing it.
- O-rings are different from low-pressure pipe 1 (high-pressure pipe 1) and low-pressure pipe 2 (high-pressure pipe 2).
- When recharging refrigerant, check for leaks.

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)

Compressor

INFOID:000000000959892

Model	VALEO THERMAL SYSTEMS JAPAN make DCS-17EC	
Type	Variable displacement swash plate	
Displacement cm ³ (cu in)/rev	Max.	171 (10.4)
Cylinder bore × stroke (Max.) mm (in.)	32 (1.26) × 30.5 (1.20)	
Direction of rotation	Clockwise (viewed from clutch)	
Drive belt	Poly V	
Disc to pulley clearance	Standard	0.3 - 0.6 mm (0.012 - 0.024 in)

Lubricant

INFOID:000000000959893

Model	VALEO THERMAL SYSTEMS JAPAN make DCS-17EC	
Name	Nissan A/C System Oil Type S (DH-PS)	
Capacity mℓ (US fl oz, Imp fl oz)	Total in system	150 (5.03, 5.3)
	Compressor (Service part) charging amount	150 (5.03, 5.3)

Refrigerant

INFOID:000000000959894

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

Engine Idling Speed

INFOID:000000000959895

Refer to [EC-16. "IDLE SPEED : Description"](#).

Belt Tension

INFOID:000000000959896

Refer to [EM-12. "Tension Adjustment"](#).