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B

SECTION HA

HEATER & AIR CONDITIONING SYSTEM

C

CONTENTS

D
E

BASIC INSPECTION	3	General Precautions	19	F
DIAGNOSIS AND REPAIR WORK FLOW	3	LEAK DETECTION DYE	20	
Work Flow	3	General Precautions	20	G
SYSTEM DESCRIPTION	5	PREPARATION	21	
REFRIGERATION SYSTEM	5	PREPARATION	21	H
System Diagram	5	Special Service Tool	21	
System Description	5	Commercial Service Tool	24	
Component Parts Location	6	Sealant or/and Lubricant	24	HA
Component Description	7	PERIODIC MAINTENANCE	25	
SYMPTOM DIAGNOSIS	8	LUBRICANT	25	J
REFRIGERATION SYSTEM SYMPTOMS	8	Maintenance of Lubricant Quantity	25	
Trouble Diagnosis For Unusual Pressure	8	Lubricant Adjusting Procedure for Components		
Symptom Table	8	Replacement Except Compressor	25	K
COMPRESSOR SYSTEM SYMPTOMS	11	Lubricant Adjusting Procedure for Compressor		
Symptom Table	11	Replacement	26	
PRECAUTION	12	REFRIGERATION SYSTEM	28	L
PRECAUTIONS	12	Inspection	28	
FOR USA AND CANADA	12	Performance Chart	28	
FOR USA AND CANADA : Precaution for Supple-		Refrigerant Leakages	29	M
mental Restraint System (SRS) "AIR BAG" and		FLUORESCENT LEAK DETECTOR	30	
"SEAT BELT PRE-TENSIONER"	12	Inspection	30	N
FOR MEXICO	12	ELECTRICAL LEAK DETECTOR	31	
FOR MEXICO : Precaution for Supplemental Re-		Inspection	31	O
straint System (SRS) "AIR BAG" and "SEAT BELT		REMOVAL AND INSTALLATION	34	
PRE-TENSIONER"	12	REFRIGERATION SYSTEM	34	P
Precautions for Removing of Battery Terminal	13	Exploded View	34	
Precaution for Procedure without Cowl Top Cover...	13	Inspection After Installation	34	
Working with HFC-134a (R-134a)	13	COMPRESSOR	37	
General Refrigerant Precaution	14	Exploded View	37	
Refrigerant Connection	14	COMPRESSOR	37	
Service Equipment	16	COMPRESSOR : Removal and Installation	37	
COMPRESSOR	19			

MAGNET CLUTCH	38	Removal and Installation	52
MAGNET CLUTCH : Removal and Installation	38		
Inspection	39		
LOW-PRESSURE FLEXIBLE HOSE	40	REFRIGERANT PRESSURE SENSOR	54
Exploded View	40	Exploded View	54
Removal and Installation	40	Removal and Installation	54
HIGH-PRESSURE FLEXIBLE HOSE	42	EVAPORATOR PIPE ASSEMBLY	55
Exploded View	42	Exploded View	55
Removal and Installation	42	Removal and Installation	55
LOW-PRESSURE PIPE	44	EVAPORATOR	58
Exploded View	44	Exploded View	58
Removal and Installation	44	Removal and Installation	59
HIGH-PRESSURE PIPE	46	EXPANSION VALVE	60
Exploded View	46	Exploded View	60
Removal and Installation	46	Removal and Installation	61
CONDENSER PIPE ASSEMBLY	48	SERVICE DATA AND SPECIFICATIONS	
Exploded View	48	(SDS)	62
Removal and Installation	48	SERVICE DATA AND SPECIFICATIONS	
CONDENSER	50	(SDS)	62
Exploded View	50	Compressor	62
Removal and Installation	50	Lubricant	62
LIQUID TANK	52	Refrigerant	62
Exploded View	52	Engine Idling Speed	62
		Belt Tension	62

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

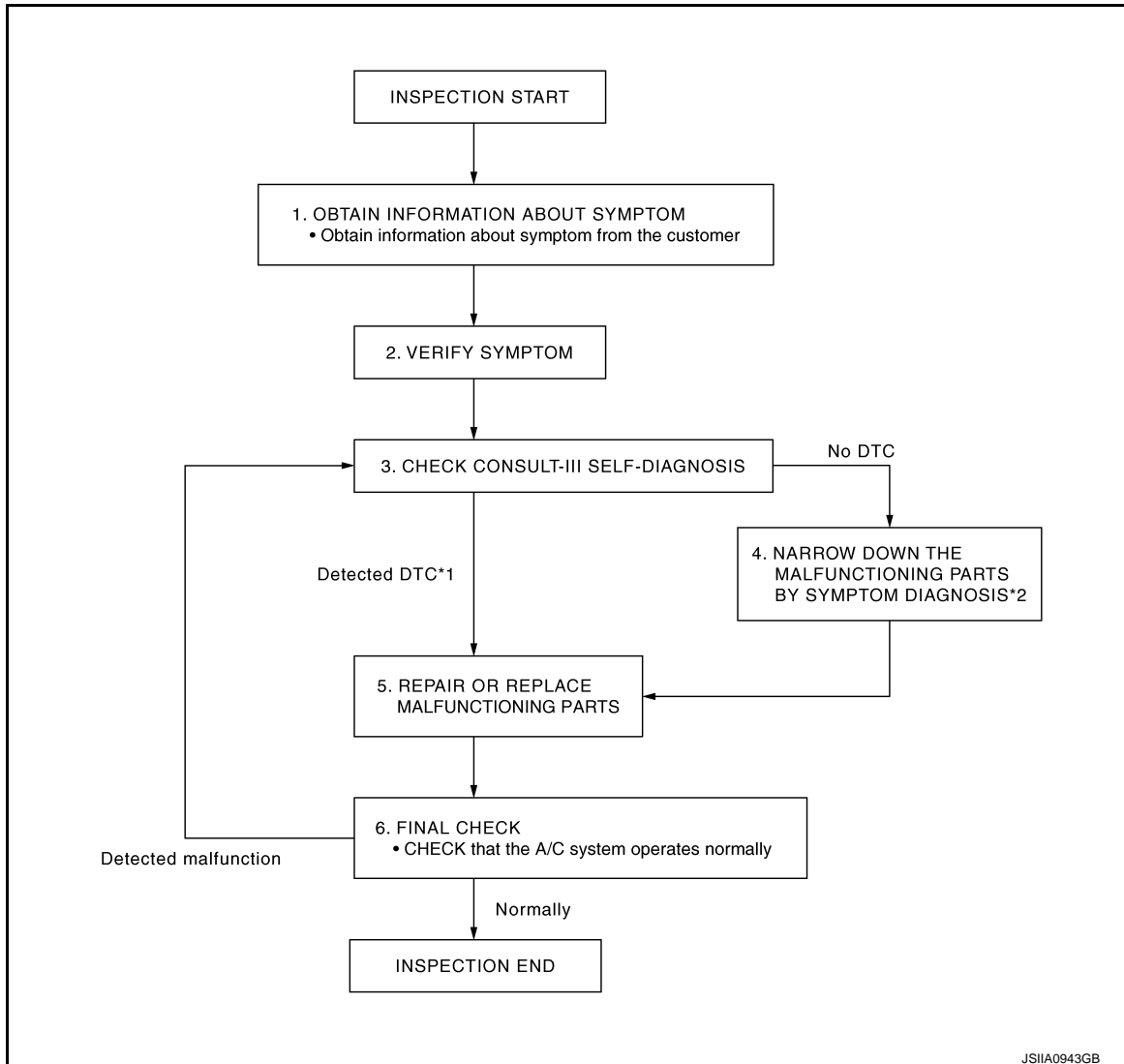
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:000000009718608

OVERALL SEQUENCE



*1: Refer to [HAC-106. "DTC Index"](#) (WITHOUT 7 INCH DISPLAY) or [HAC-230. "DTC Index"](#) (WITH 7 INCH DISPLAY).

*2: Refer to [HAC-108. "Diagnosis Chart By Symptom"](#) (WITHOUT 7 INCH DISPLAY) or [HAC-232. "Diagnosis Chart By Symptom"](#) (WITH 7 INCH DISPLAY).

DETAILED FLOW

1. OBTAIN INFORMATION ABOUT SYMPTOM

Interview the customer to obtain as much information as possible about the conditions and environment under which the malfunction occurred.

>> GO TO 2.

2. VERIFY SYMPTOM

Verify the symptom with operational check based on the information obtained from the customer. Refer to [HAC-134. "Description & Inspection"](#) (WITHOUT 7 INCH DISPLAY) or [HAC-232. "Diagnosis Chart By Symptom"](#) (WITH 7 INCH DISPLAY).

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

>> GO TO 3.

3. CHECK WITH SELF-DIAGNOSIS FUNCTION OF CONSULT-III

Using CONSULT, perform "SELF-DIAGNOSIS RESULTS" of HVAC. Refer to [HAC-106. "DTC Index"](#) (WITHOUT 7 INCH DISPLAY) or [HAC-230. "DTC Index"](#) (WITH 7 INCH DISPLAY).

Are self-diagnosis results normal?

YES >> GO TO 4.

NO >> GO TO 5.

4. NARROW DOWN THE MALFUNCTIONING PARTS BY SYMPTOM DIAGNOSIS

Perform symptom diagnosis and narrow down the malfunctioning parts. Refer to [HAC-108. "Diagnosis Chart By Symptom"](#) (WITHOUT 7 INCH DISPLAY) or [HAC-232. "Diagnosis Chart By Symptom"](#) (WITH 7 INCH DISPLAY).

>> GO TO 5.

5. REPAIR OR REPLACE

Repair or replace malfunctioning parts.

NOTE:

If DTC is displayed, erase DTC after repairing or replacing malfunctioning parts.

>> GO TO 6.

6. FINAL CHECK

Check that the A/C system operates normally.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

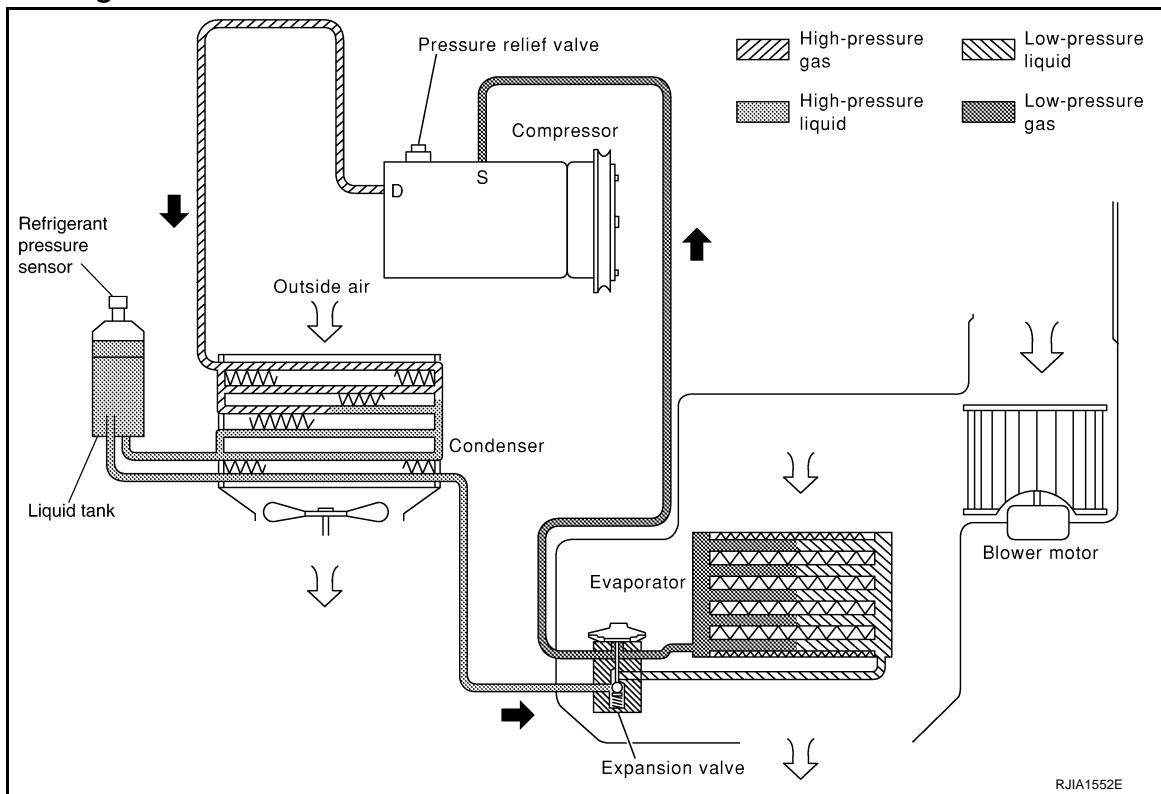
REFRIGERATION SYSTEM

< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION

REFRIGERATION SYSTEM

System Diagram



System Description

INFOID:000000009718610

REFRIGERANT CYCLE

Refrigerant Flow

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

Freeze Protection

To prevent the evaporator from freezing up, the evaporator air temperature is monitored, and the voltage signal to the A/C auto amp. turns the A/C relay OFF and stops 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 liquid tank. The refrigerant pressure sensor detects the pressure inside the refrigerant line and sends the voltage signal to the ECM if the system pressure rises above, or falls below the specifications. ECM turns the A/C relay OFF and stops the compressor when pressure on the high-pressure side detected by the refrigerant pressure sensor is over approximately 3,119 kPa (31.8 kg/cm², 452 psi) or below approximately 118 kPa (1.2 kg/cm², 17 psi).

Pressure Relief Valve

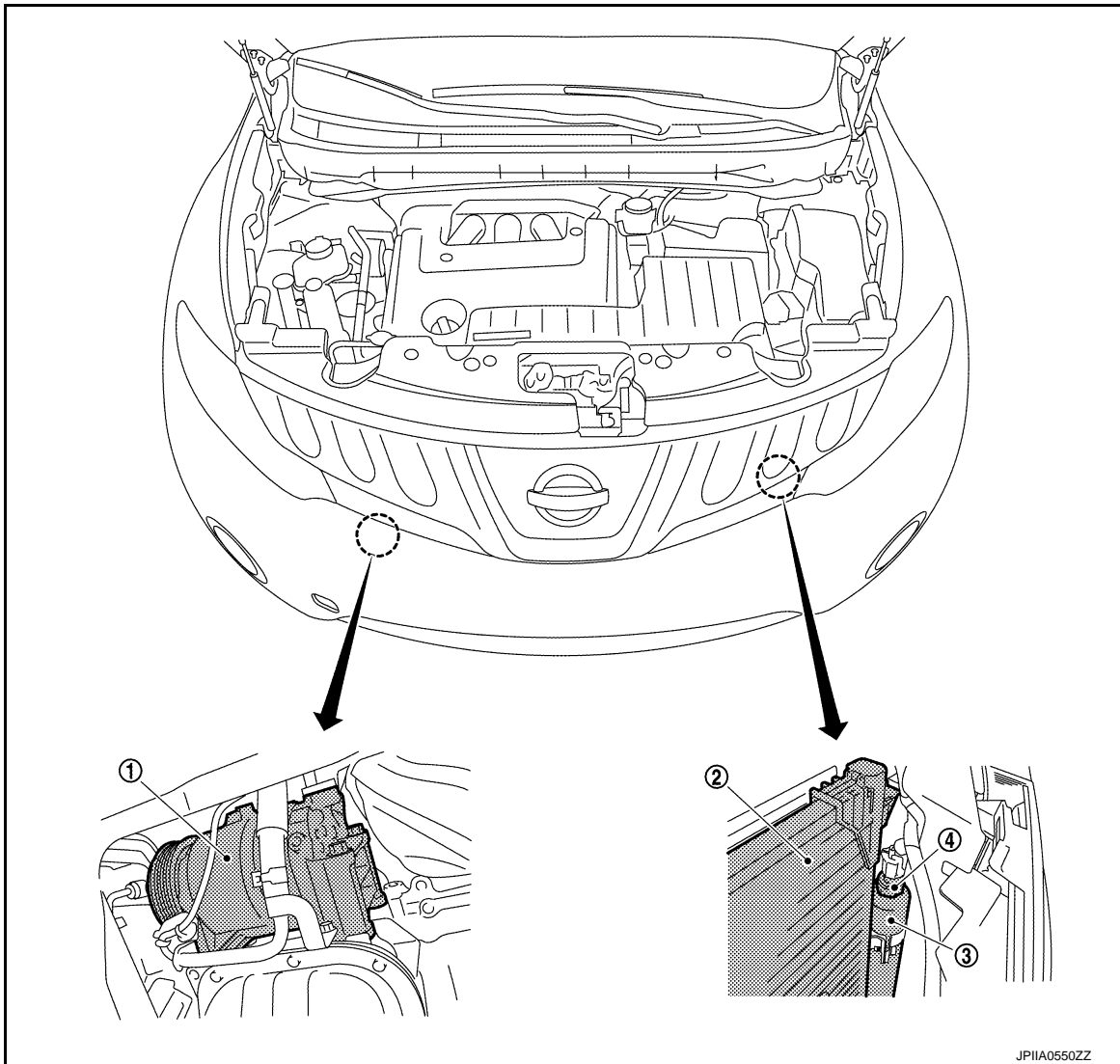
The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. The release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere when the pressure of the refrigerant in the system increases to an unusual level [more than 3,600 kPa (36.7 kg/cm², 522 psi)].

REFRIGERATION SYSTEM

< SYSTEM DESCRIPTION >

Component Parts Location

INFOID:000000009718611

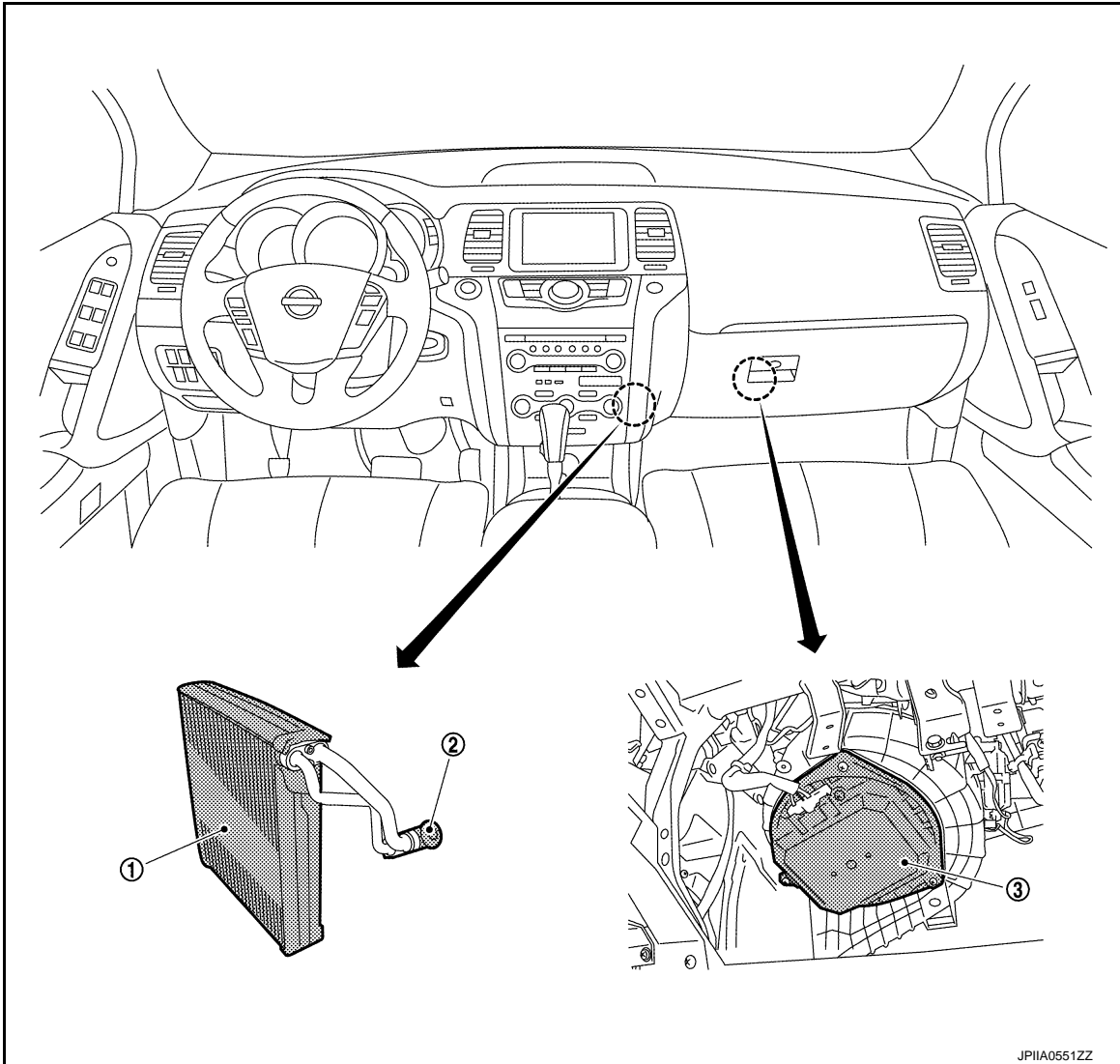


JPIIA0550ZZ

1. Compressor
2. Condenser
3. Liquid tank
4. Refrigerant pressure sensor

REFRIGERATION SYSTEM

< SYSTEM DESCRIPTION >



1. Evaporator

2. Expansion valve

3. Blower motor

Component Description

INFOID:000000009718612

Component	Description
Compressor	Intakes, compresses, and discharges refrigerant, to circulate refrigerant inside the refrigerant cycle.
Condenser	Cools refrigerant discharged from compressor, and transforms it to liquid refrigerant.
Liquid tank	Eliminates foreign material in refrigerant, and temporarily stores liquid refrigerant.
Refrigerant pressure sensor	Refer to HAC-74, "Description" (WITHOUT 7 INCH DISPLAY) or HAC-200, "Description" (WITH 7 INCH DISPLAY).
Evaporator	The mist form liquid refrigerant transforms to gas through evaporation by the air conveyed from the blower motor. The air is cooled by the heat from evaporation.
Expansion valve	Transforms high-pressure liquid refrigerant to mist form from low-pressure liquid refrigerant by the drawing function.
Blower motor	Takes in air from the vehicle or fresh outside air, provides it forcedly pushes it into to the air conditioner, and circulates it inside the vehicle.

REFRIGERATION SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

REFRIGERATION SYSTEM SYMPTOMS

Trouble Diagnosis For Unusual Pressure

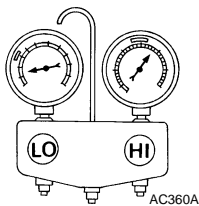
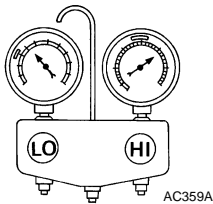
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Diagnose using a manifold gauge whenever the system's high and/or low side pressure(s) is/are unusual. The marker above the gauge scale in the following tables indicates the standard pressure range. Refer to the above table (Ambient air temperature-to-operating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

Symptom Table

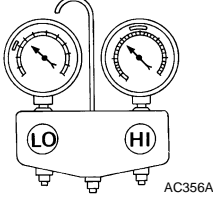
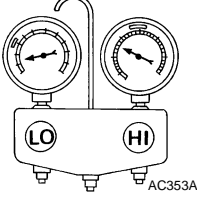
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Gauge indication	Refrigerant cycle	Probable cause	Corrective action
	The pressure returns to normal and is reduced soon after water is splashed on condenser.	Excessive refrigerant charge in refrigeration cycle.	Reduce refrigerant until specified pressure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



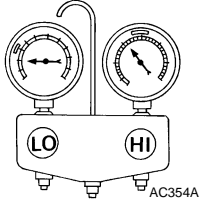
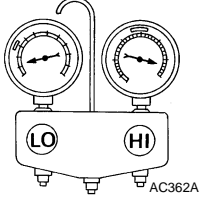
REFRIGERATION SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Gauge indication	Refrigerant cycle	Probable cause	Corrective action	A
High-pressure side is too low and low-pressure side is too high. 	High- and low-pressure sides become equal soon after compressor operation stops.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.	B
	No temperature difference between high- and low-pressure sides.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.	C
Both high and low-pressure sides are too low. 	<ul style="list-style-type: none"> There is a big temperature difference between the 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. 	D
	<ul style="list-style-type: none"> Expansion valve inlet temperature is extremely low compared with areas near the 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. 	E
	Expansion valve and liquid tank are warm or slightly cool when touched.	Low refrigerant charge. ↓ Leaking fittings or components.	Check refrigerant for leakages. Refer to HA-29. "Refrigerant Leakages" .	F
	There is a big temperature difference between the expansion valve inlet and outlet while the valve itself is frosted.	Expansion valve slightly closes 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 materials by using compressed air. Replace expansion valve. Check lubricant for contamination. 	G
	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. 	H
	Air flow volume is not sufficient or is too low.	Evaporator is frozen.	<ul style="list-style-type: none"> Check intake sensor circuit. Refer to HAC-52. "Diagnosis Procedure" (without 7 inch display) or HAC-178. "Diagnosis Procedure" (with 7 inch display). Replace compressor. Repair evaporator fins. Replace evaporator. Check blower motor circuit. Refer to HAC-70. "Diagnosis Procedure" (without 7 inch display) or HAC-196. "Diagnosis Procedure" (with 7 inch display). 	HA
				J
			K	
			L	
			M	
			N	
			O	
			P	

REFRIGERATION SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Low-pressure side sometimes becomes negative.</p> 	<ul style="list-style-type: none"> • Air conditioning system does not function and does not cyclically cool the compartment air. • The system constantly functions for a period of time after compressor is stopped and restarted. 	<p>Refrigerant does not discharge cyclically. ↓ Moisture is frozen at expansion valve outlet and inlet. ↓ Water is mixed with refrigerant.</p>	<ul style="list-style-type: none"> • Drain water from refrigerant or replace refrigerant. • Replace liquid tank.
<p>Low-pressure side becomes negative.</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. ↓ 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 materials.</p> <ul style="list-style-type: none"> • Cooling is initially okay if water is the cause. Then the water freezes, which causes a blockage. Drain water from refrigerant or replace refrigerant. • Remove expansion valve and remove the particles with dry and compressed air (not shop air) if due to foreign particles. • Replace expansion valve if either of the above methods cannot correct the malfunction. • Replace liquid tank. • Check lubricant for contamination.

COMPRESSOR SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

COMPRESSOR SYSTEM SYMPTOMS

Symptom Table

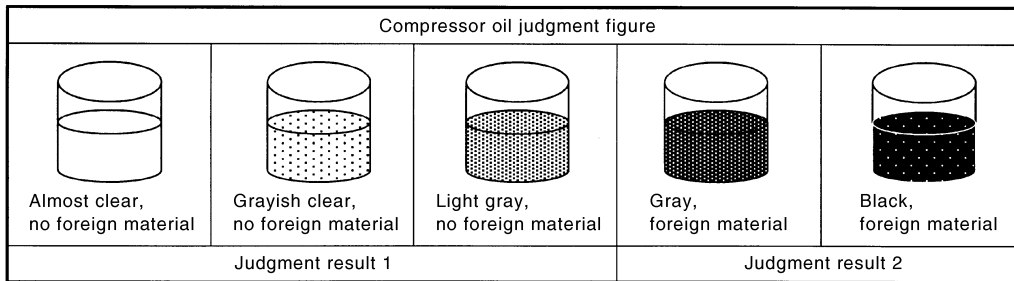
INFOID:000000009718615

Follow the next table and perform trouble diagnosis if there is a compressor unit malfunction (internal noise, insufficient cooling).

Symptom	Inspection method	Check list	Result	Action
Noise from compressor unit When A/C is ON. (rattling or rolling sound)	Cooler system internal pressure	Check with manifold gauge	Both high- and low-pressure sides are high.*2	Recharge with proper amount of refrigerant.
			High/low-pressures hunt.*2	Replace compressor only.
	Check compressor oil condition.	Sample compressor oil and judge.		
Insufficient cooling*1	Compressor body	Check rotation of compressor. If sized or stuck, sample compressor oil and judge.	Refer to the criteria shown in compressor lubricant.	Judgment result 1: Replace compressor only.
	Cooler system internal pressure	Check with a manifold gauge. Sample compressor oil and judge if the difference between high-pressure and low-pressure is small or if they are almost the same.		Judgement result 2: Replace compressor and liquid tank.
Outlet air temperature rises temporarily while driving.*2	—	—	—	Replace compressor only.

*1: First conduct inspection according to trouble diagnosis for each malfunction.

*2: Applicable to variable capacity compressor only.



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PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

FOR USA AND CANADA

FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:000000009718616

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 AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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 "SRS AIR BAG".**
- **Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

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

WARNING:

Always observe the following items for preventing accidental activation.

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.**

FOR MEXICO

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

INFOID:000000009718617

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. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

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

WARNING:

PRECAUTIONS

< PRECAUTION >

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precautions for Removing of Battery Terminal

INFOID:000000009949359

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.

NOTE:

ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

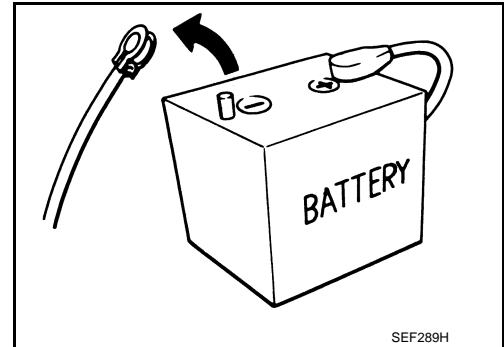
NOTE:

If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

NOTE:

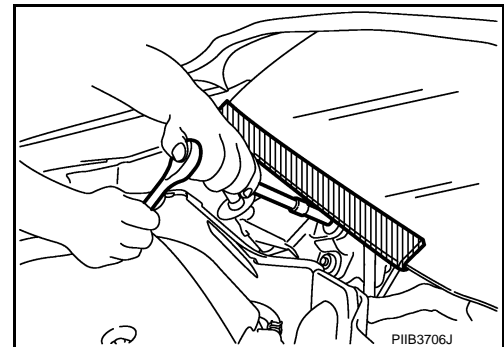
The removal of 12V battery may cause a DTC detection error.



Precaution for Procedure without Cowl Top Cover

INFOID:000000009718618

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



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

INFOID:000000009718619

CAUTION:

- CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. Compressor malfunction is likely to occur if the refrigerants are mixed, 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. Compressor malfunction is likely to occur if lubricant other than that specified is used.
- The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:
 - Immediately cap (seal) the component to minimize the entry of moisture from the atmosphere when removing refrigerant components from a vehicle.
 - Never remove the caps (unseal) until just before connecting the components when installing refrigerant components to a vehicle. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.
 - Use only the specified lubricant from a sealed container. Immediately reseal containers of lubricant. Lubricant becomes saturated with moisture and should not be used without proper sealing.
 - Never allow lubricant (A/C System Oil Type S) to come in to contact with styrene foam parts. Damage may result.

PRECAUTIONS

< PRECAUTION >

CONTAMINATED REFRIGERANT

Take the appropriate steps shown below if a refrigerant other than pure HFC-134a (R-134a) is identified in a vehicle:

- 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.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- If repairing, recover the refrigerant using only **dedicated equipment and containers. Never reintroduce contaminated refrigerant into the existing service equipment.** Contact a local refrigerant product retailer for available service if the facility does not have dedicated recovery equipment. 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.
- The air conditioner warranty is void if the vehicle is within the warranty period. Please contact Nissan Customer Affairs for further assistance.

General Refrigerant Precaution

INFOID:000000009718620

WARNING:

- **Never breathe A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose or 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]. Ventilate the work area before resuming service if accidental system discharge occurs. 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 each 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. Place the bottom of the container in a warm pail of water if container warming is required.**
- **Never intentionally drop, puncture, or incinerate refrigerant containers.**
- **Keep refrigerant away from open flames. Poisonous gas is produced if refrigerant burns.**
- **Refrigerant displaces oxygen, therefore be certain to work in well ventilated areas to prevent suffocation.**
- **Never pressure test or leakage 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 proven 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:000000009718621

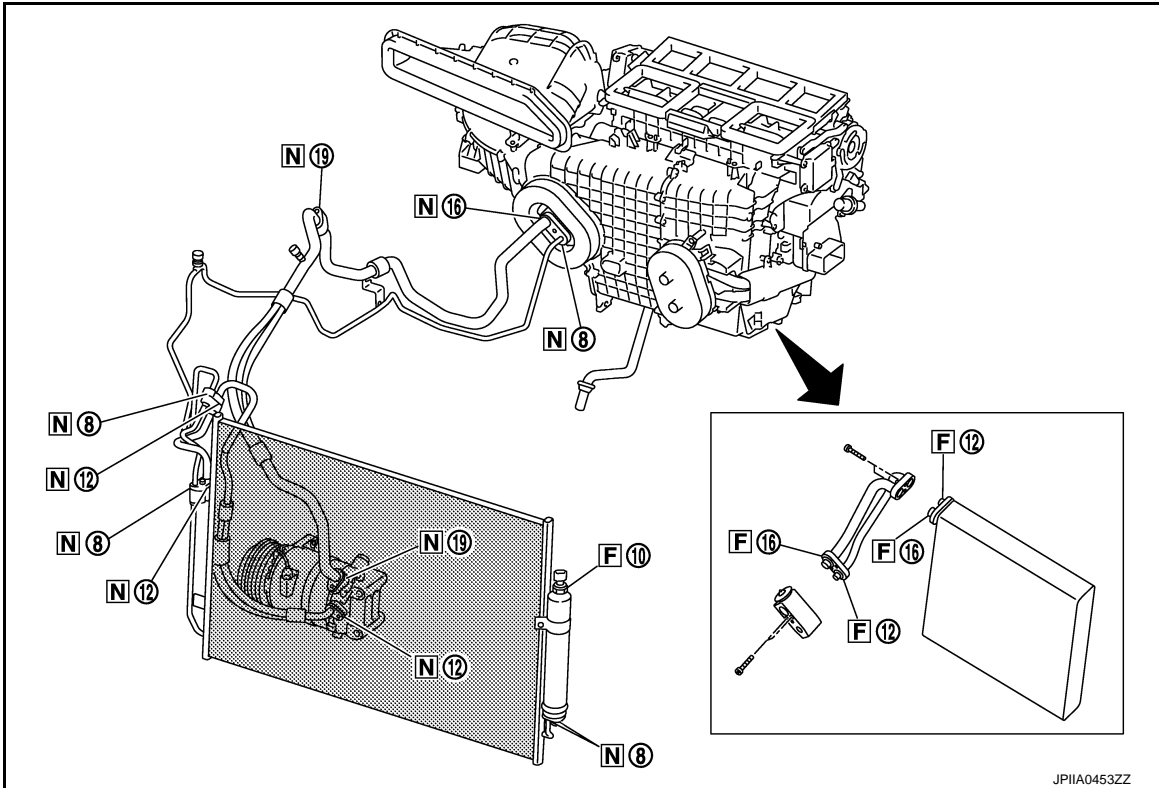
A new type refrigerant connection has been introduced to all refrigerant lines except the following locations.

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

O-RING AND REFRIGERANT CONNECTION

PRECAUTIONS

< PRECAUTION >



F. Former type refrigerant connection N. New type refrigerant connection
 ○ : O-ring size

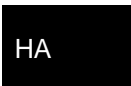
CAUTION:

The new and former refrigerant connections use different O-ring configurations. Never confuse O-rings since they are not interchangeable. Refrigerant may leak at the connection if an incorrect O-ring is installed.

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		92474 N8210	1	φ19
	High-pressure pipe to condenser pipe assembly (Outlet)		92471 N8210	1	φ8
	Condenser pipe assembly (Inlet) to high-pressure flexible hose		92472 N8210	1	φ12
	Condenser assembly to condenser pipe assembly	Inlet	92472 N8210	1	φ12
		Outlet	92471 N8210	1	φ8
	Low-pressure pipe to expansion valve		92473 N8210	1	φ16
	High-pressure pipe to expansion valve		92471 N8210	1	φ8
	Compressor to low-pressure flexible hose		92474 N8210	1	φ19
	Compressor to high-pressure flexible hose		92472 N8210	1	φ12
Liquid tank to condenser assembly	Inlet	92471 N8210	1	φ8	
	Outlet		1		
Former	Refrigerant pressure sensor to liquid tank		J2476 89956	1	φ10
	Expansion valve to evaporator pipe assembly	Inlet	92475 71L00	1	φ12
		Outlet	92475 72L00	1	φ16
	Evaporator to evaporator pipe assembly	Inlet	92475 71L00	1	φ12
Outlet		92475 72L00	1	φ16	

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PRECAUTIONS

< PRECAUTION >

WARNING:

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

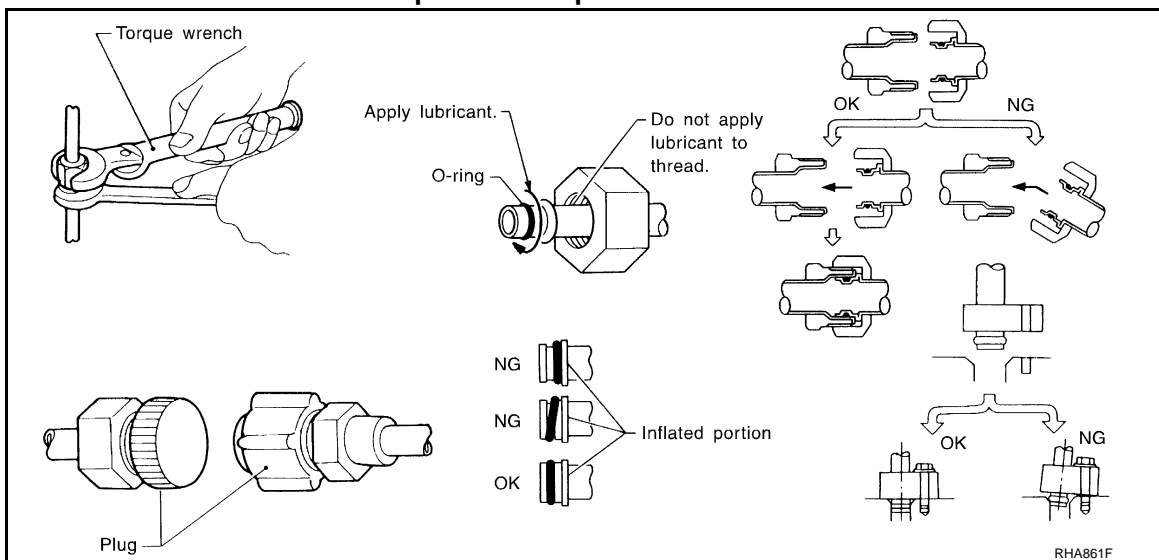
CAUTION:

Observe the following items when replacing or cleaning refrigerant cycle components.

- Store it in the same way as it is when mounted on the car when the compressor is removed. Failure to do so will cause lubricant to enter the low-pressure chamber.
- Always use a torque wrench and a back-up wrench when connecting tubes.
- Immediately plug all openings to prevent the entry of dust and moisture after disconnecting tubes.
- Connect the pipes at the final stage of the operation when installing an air conditioner in the vehicle. Never remove the seal caps of pipes and other components until just before they are 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.
- Apply lubricant to the circle of the O-rings shown in illustration when connecting a tube. Never apply lubricant to the threaded portion.

Name : A/C System Oil Type S

- O-ring must be closely attached to the groove portion of tube.
- Never damage O-ring and tube when replacing the O-ring.
- Connect tube until a click can be heard. Then tighten the nut or bolt by hand. Check that the O-ring is installed to the tube correctly.
- Perform a leakage test and check that there is no leakage from connections after connecting the line. Disconnect the line and replace the O-ring when the refrigerant leakage point is found. Then tighten the connections of seal seat to the specified torque.



Service Equipment

INFOID:000000009718622

RECOVERY/RECYCLING EQUIPMENT

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

VACUUM PUMP

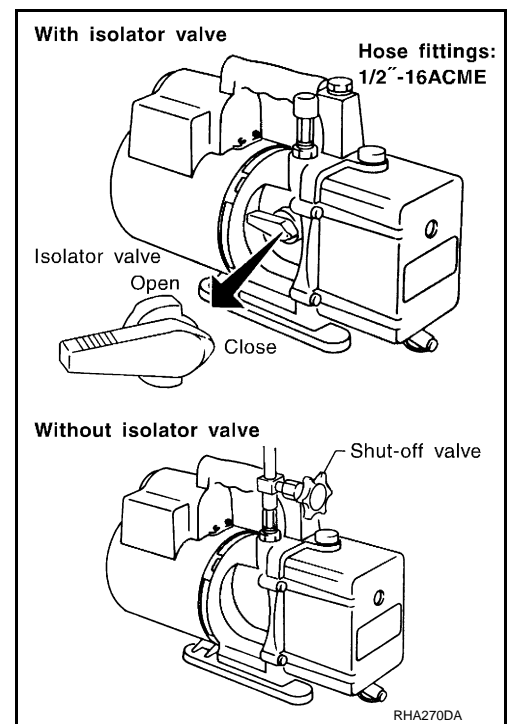
PRECAUTIONS

< PRECAUTION >

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 the hose is connected to it. To prevent this migration, use a manual valve placed near the hose-to-pump connection, as per the following procedure.

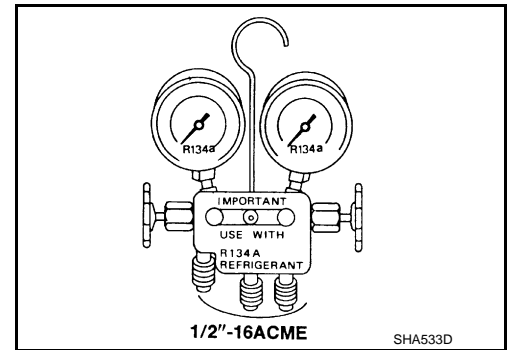
- Vacuum pumps usually have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- Use a hose equipped with a manual shut-off valve near the pump end for pumps without an isolator. Close the valve to isolate the hose from the pump.
- Disconnect the hose from the pump if the hose has an automatic shut-off valve. 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 ability of the pump to create a deep vacuum and are not recommended.



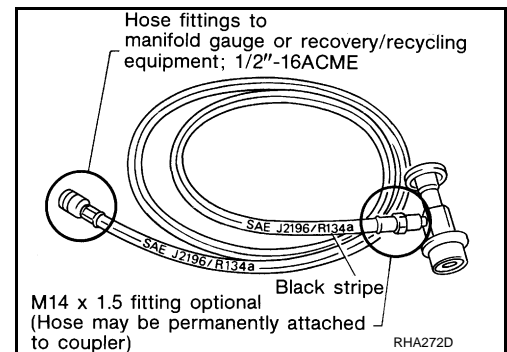
MANIFOLD GAUGE SET

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 a black stripe). All hoses must equip positive shut-off devices (either manual or automatic) near the end of the hoses opposite to the manifold gauge.



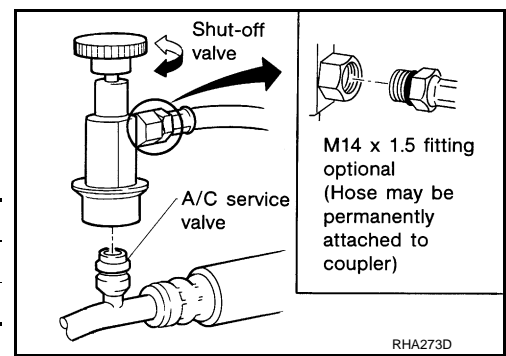
SERVICE COUPLERS

PRECAUTIONS

< PRECAUTION >

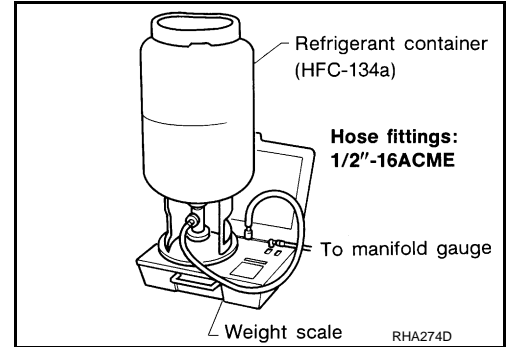
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers do not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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. The hose fitting must be 1/2"-16 ACME if the scale controls refrigerant flow electronically.



CHARGING CYLINDER

Use of a charging cylinder is not recommended. Refrigerant may be vented into the air from the top valve of the cylinder 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.

COMPRESSOR

< PRECAUTION >

COMPRESSOR

General Precautions

INFOID:000000009718623

CAUTION:

- Plug all openings to prevent moisture and foreign material from entering.
- Store it in the same way as it is when mounted on the car when the compressor is removed.
- Follow “Maintenance of Lubricant Quantity in Compressor” exactly when replacing or repairing the compressor. Refer to [HA-25, "Maintenance of Lubricant Quantity"](#).
- Keep friction surfaces between clutch and pulley clean. Wipe it off by using a waste moistened with thinner if the surface is contaminated with lubricant.
- Turn the compressor shaft by hand more than five turns in both directions after compressor service operation. This equally distributes lubricant inside the compressor. Let the engine idle and operate the compressor for one hour after the compressor is installed.
- Apply voltage to the new compressor and check for normal operation after replacing the compressor magnet clutch.

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LEAK DETECTION DYE

< PRECAUTION >

LEAK DETECTION DYE

General Precautions

INFOID:00000009718624

CAUTION:

- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leakages. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leakages.
- Always wear fluorescence enhancing UV safety goggles to protect the 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 leakages.
- Read and follow all manufacturer operating instructions and precautions prior to performing work for safety and customer satisfaction.
- A compressor shaft seal should not necessarily be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leakage with an electrical leak detector (SST: J-41995).
- Always remove any remaining dye from the leakage area after repairs are completed to avoid a misdiagnosis during future service.
- Never allow dye to come into contact with painted body panels or interior components. Immediately clean with the approved dye cleaner if dye is spilled. Fluorescent dye left on a surface for an extended period of time cannot be removed.
- Never spray 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, otherwise A/C system damage may result.
- The fluorescent properties of the dye remains for three or more years 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 an identification label on the front side of hood.

PREPARATION

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PREPARATION

PREPARATION

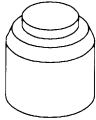

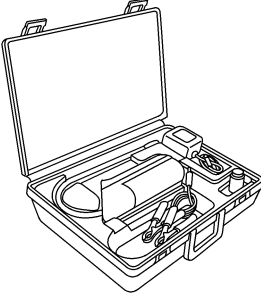
Special Service Tool

INFOID:000000009718625

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

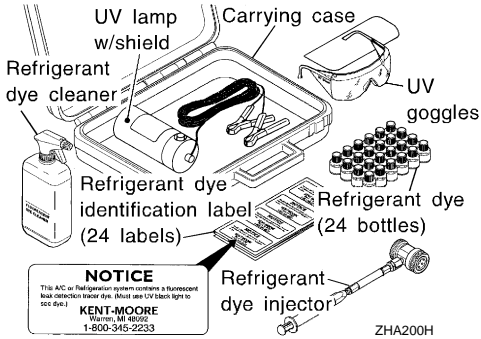
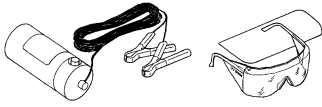

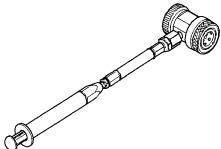

HFC-134a (R-134a) Service Tool and Equipment

- 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 that 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
KV99106200 (J-41260) Pulley installer	 S-NT235	Installing pulley
(ACR2005-NI) ACR5 A/C Service Center	 WJIA0293E	Function: Refrigerant recovery, recycling and recharging
(J-41995) Electrical leak detector	 AHA281A	Power supply: DC 12 V (Battery terminal)

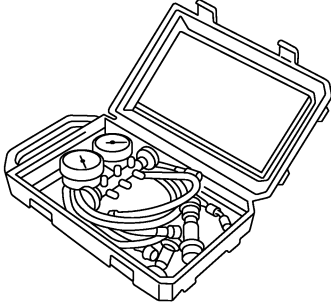
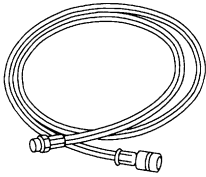
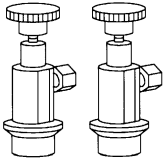
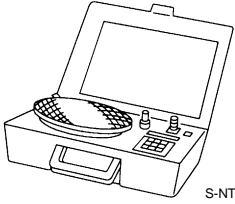
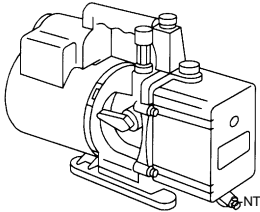
PREPARATION

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Tool number (Kent-Moore No.) Tool name	Description
<p>(J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) 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: right;">Power supply: DC 12 V (Battery terminal)</p>
<p>(J-42220) UV lamp and UV safety goggles</p>	 <p style="text-align: right;">Power supply: DC 12 V (Battery terminal) For checking refrigerant leakage when fluorescent dye is equipped 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: right;">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: right;">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: right;">For cleaning dye spills</p>

PREPARATION

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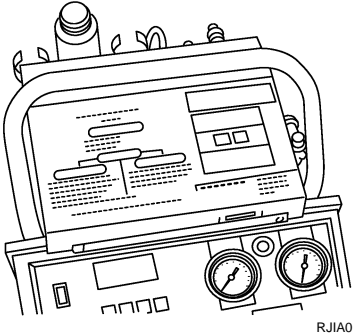
Tool number (Kent-Moore No.) Tool name	Description	A
<p>(J-39183) Manifold gauge set (with hoses and couplers)</p>  <p style="text-align: right; font-size: small;">RJIA0196E</p>	<p>Identification:</p> <ul style="list-style-type: none"> The gauge face indicates HFC-134a (R-134a). <p>Fitting size: Thread size</p> <ul style="list-style-type: none"> 1/2"-16 ACME 	B C D
<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 	E F G
<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>	H HA
<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>	J K L
<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 	M N O P

PREPARATION

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Commercial Service Tool

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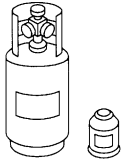
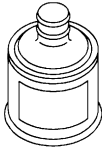
Tool name	Description
<p>Refrigerant identifier equipment</p>  <p style="text-align: right;">RJA0197E</p>	<p>Checking for refrigerant purity and system contamination</p>

Sealant or/and Lubricant

INFOID:000000009718627

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 that 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
<p>HFC-134a (R-134a) refrigerant</p>  <p style="text-align: right;">S-NT196</p>	<p>Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size</p> <ul style="list-style-type: none"> • Large container 1/2"-16 ACME
<p>A/C System Oil Type S (DH-PS)</p>  <p style="text-align: right;">JMIIA1759ZZ</p>	<p>Type: Polyalkylene glycol oil (PAG), type S (DH-PS) Application: HFC-134a (R-134a) swash plate compressors Capacity: 40 mℓ (1.4 US fl oz, 1.4 Imp fl oz)</p>

LUBRICANT

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE

LUBRICANT

Maintenance of Lubricant Quantity

INFOID:000000009718628

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

The following malfunctions may result if lubricant quantity is not maintained normally:

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

LUBRICANT

Name : A/C System Oil Type S

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 normally.
- There is no evidence of a large amount of lubricant leakage.

CAUTION:

Never perform the lubricant return operation if excessive lubricant leakage is noted.

Is it successful?

YES >> GO TO 2.

NO >> GO TO 3.

2.PERFORM LUBRICANT RETURN OPERATION, PROCEEDING ACCORDING TO THE FOLLOWING PROCEDURE

1. Start the engine, and set to the following conditions:
 - Engine speed: Idling to 1,200 rpm
 - A/C switch: ON
 - Fan (blower) speed: Maximum speed set
 - Intake door position: Recirculation (REC)
 - Temperature setting: Full cold
2. Perform lubricant return operation for approximately 10 minutes.
3. Stop the engine.

>> GO TO 3.

3.CHECK REPLACEMENT PART

Should the compressor be replaced?

YES >> Refer to [HA-26, "Lubricant Adjusting Procedure for Compressor Replacement"](#).

NO >> Refer to [HA-25, "Lubricant Adjusting Procedure for Components Replacement Except Compressor"](#).

Lubricant Adjusting Procedure for Components Replacement Except Compressor

INFOID:000000009718629

Add the correct amount of lubricant to the system after replacing any of the following major components.
Amount of lubricant to be added:

LUBRICANT

< PERIODIC MAINTENANCE >

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 leakage	30 (1.0, 1.1)	Large leakage
	—	Small leakage *1

*1: No addition of lubricant is needed if the refrigerant leakage is small.

Lubricant Adjusting Procedure for Compressor Replacement

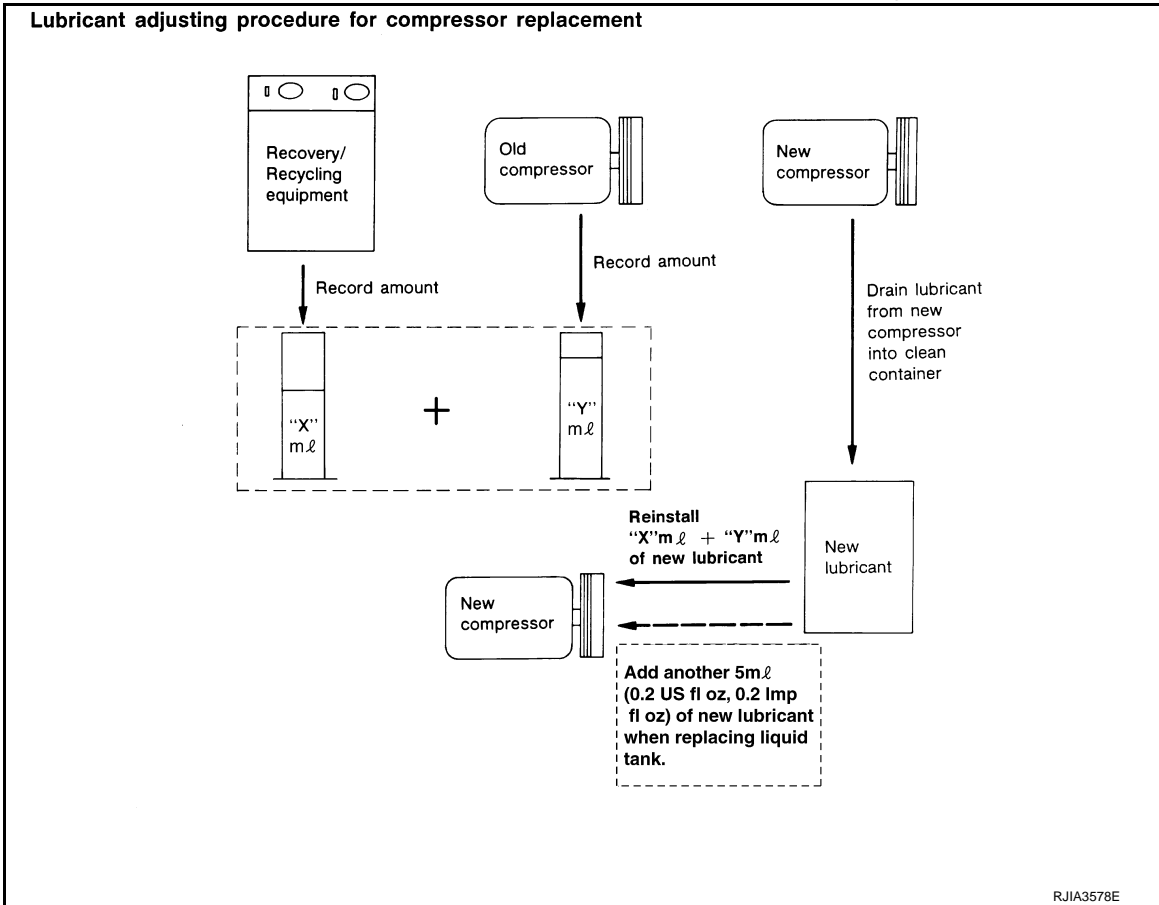
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1. Check recovery/recycling recharging equipment gauges before connecting recovery/recycling recharging equipment to vehicle. No refrigerant pressure should be displayed. Recover refrigerant from equipment lines if NG.
2. Connect recovery/recycling recharging equipment to vehicle. Confirm refrigerant purity in supply tank using recovery/recycling recharging equipment and refrigerant identifier. Refer to [HA-13, "Working with HFC-134a \(R-134a\)"](#) if NG.
3. Confirm refrigerant purity in vehicle A/C system using recovery/recycling recharging equipment and refrigerant identifier. If NG, refer to [HA-13, "Working with HFC-134a \(R-134a\)"](#).
4. Discharge refrigerant into the recovery/recycling equipment. Measure lubricant that is 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 that was drained.
6. Drain the lubricant from the new compressor into a separate. Then clean container.
7. Measure an amount of new lubricant installed equal to the amount that was drained from the old compressor. Add this lubricant to the new compressor through the suction port opening.
8. Measure an amount of new lubricant equal to the amount that was recovered during discharging. Add this lubricant to the new compressor through the suction port opening.
9. Add another 5 m ℓ (0.2 US fl oz, 0.2 Imp fl oz) of lubricant at this time if the liquid tank also needs to be replaced.

LUBRICANT

< PERIODIC MAINTENANCE >

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



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REFRIGERATION SYSTEM

< PERIODIC MAINTENANCE >

REFRIGERATION SYSTEM

Inspection

INFOID:000000009718631

1. CHECK BLOWER MOTOR OPERATION

Check blower motor operation. Refer to [HAC-70, "Component Function Check"](#) (WITHOUT 7 INCH DISPLAY) or [HAC-196, "Component Function Check"](#) (WITH 7 INCH DISPLAY).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace the parts according to the inspection results.

2. CHECK COMPRESSOR OPERATION

Check compressor operation. Refer to [HAC-74, "Component Function Check"](#) (WITHOUT 7 INCH DISPLAY) or [HAC-200, "Component Function Check"](#) (WITH 7 INCH DISPLAY).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace the parts according to the inspection results.

3. CHECK REFRIGERANT CYCLE PRESSURE

Connect recovery/recycling/recharging equipment to the vehicle and perform the diagnosis with the gauge pressure. Refer to [HA-8, "Trouble Diagnosis For Unusual Pressure"](#).

Is the inspection result normal?

YES >> Perform the performance test. Refer to [HA-28, "Performance Chart"](#).




NO >> Repair or replace the parts according to the inspection results.

Performance Chart

INFOID:000000009718632

TEST CONDITION

Testing must be performed under the following conditions:

Vehicle condition	Indoors or in the shade (in a well-ventilated place)
Doors	Closed
Door windows	Open
Hood	Open
Temperature control dial/switch	Full cold
Mode switch	 (Ventilation) set
Intake switch	 (Recirculation) set
 Fan (blower) speed	Maximum 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)	5.9 - 7.9 (43 - 46)
	25 (77)	9.6 - 12.1 (49 - 54)
	30 (86)	12.8 - 15.9 (55 - 61)
60 - 70	20 (68)	7.9 - 10.0 (46 - 50)
	25 (77)	12.1 - 14.6 (54 - 58)
	30 (86)	15.9 - 18.9 (61 - 66)

REFRIGERATION SYSTEM

< PERIODIC MAINTENANCE >

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)	1,100 - 1,350 ^{*1} (11.2 - 13.8, 159.5 - 195.8)	390 - 480 ^{*1} (4.0 - 4.9, 56.6 - 69.6)
	25 (77)	880 - 1,190 ^{*2} (9.0 - 12.1, 127.6 - 172.6)	427 - 533 ^{*2} (4.4 - 5.4, 61.9 - 77.3)
	30 (86)	1,120 - 1,370 ^{*2} (11.4 - 14.0, 162.4 - 198.7)	478 - 590 ^{*2} (4.9 - 6.0, 69.3 - 85.6)
	35 (95)	1,235 - 1,515 ^{*2} (12.6 - 15.5, 179.1 - 219.7)	525 - 641 ^{*2} (5.4 - 6.5, 76.1 - 93.0)
	40 (104)	1,326 - 1,625 ^{*3} (13.5 - 16.6, 192.3 - 235.6)	570 - 693 ^{*3} (5.8 - 7.1, 82.7 - 100.5)

*1:With the cooling fan motor low-speed control

*2:With the cooling fan motor middle-speed control

*3:With the cooling fan motor high-speed control

Refrigerant Leakages

INFOID:000000009718633

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 [refrigerant dye leak detection kit (SST: J-43926)].

Confirm the leakage with an electrical leak detector if dye is observed. It is possible a prior leakage was repaired and not properly cleaned.

Do not stop when one leakage is found but continue checking for additional leakages at all system components and connections when searching for leakages.

Move the probe along the suspected leakage area at 1 to 2 inches per second and no further than 1/4 inch from the component when searching for refrigerant leakages using an electrical leak detector.

CAUTION:

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

FLUORESCENT LEAK DETECTOR

< PERIODIC MAINTENANCE >

FLUORESCENT LEAK DETECTOR

Inspection

INFOID:000000009718634

CHECKING SYSTEM FOR LEAKAGES USING THE FLUORESCENT LEAK DETECTOR

1. Check A/C system for leakages 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 appears 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) leakage.
2. Use an adjustable mirror or wipe the area with a waste, with the UV lamp for dye residue if the suspected area is difficult to see.
3. Remove any residual dye using dye cleaner (SST: J-43872) to prevent future misdiagnosis after the leakage is repaired.
4. Perform a system performance check and verify the leakage repair with an approved electrical leak detector.

NOTE:

Other gases in the work area or substances on the A/C components, for example, antifreeze, 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 may 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. Then switch A/C ON.
5. 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) when the A/C is operating (compressor is running).
6. Disconnect the injector tool from the service valve with the engine still running.

CAUTION:

Be careful when replacing the A/C system or 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 leakage size, operating conditions and location of the leakage, it may take from minutes to days for the dye to penetrate a point of leakage and become visible.
8. Attach a blue label if necessary.

ELECTRICAL LEAK DETECTOR

< PERIODIC MAINTENANCE >

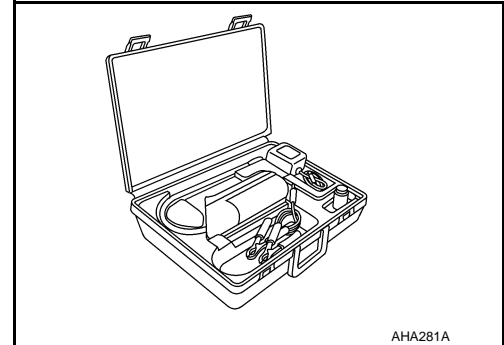
ELECTRICAL LEAK DETECTOR

Inspection

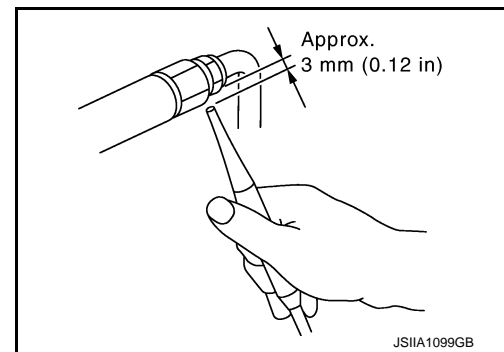
INFOID:000000009718635

PRECAUTIONS FOR HANDLING LEAK DETECTOR

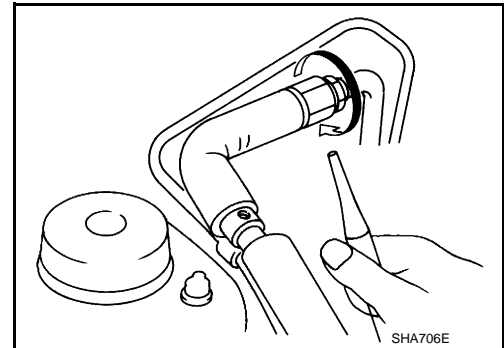
Use an electrical leak detector (SST: J-41995) or equivalent when performing a refrigerant leakage check. Ensure that the instrument is calibrated and set properly according to the operating instructions. The leak detector is a delicate device. Read the operating instructions and perform any specified maintenance for using the leak detector properly.



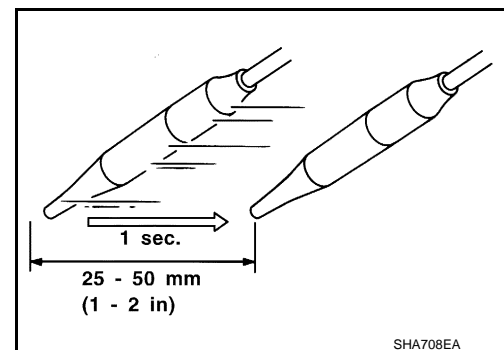
1. Position probe approximately 3 mm (0.12 in) away from point to be checked.



2. Circle each fitting completely with probe when testing.



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



CHECKING PROCEDURE

Check that there is no refrigerant vapor, shop chemicals, or cigarette smoke in the vicinity of the vehicle to prevent inaccurate or false readings. Perform the leakage 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

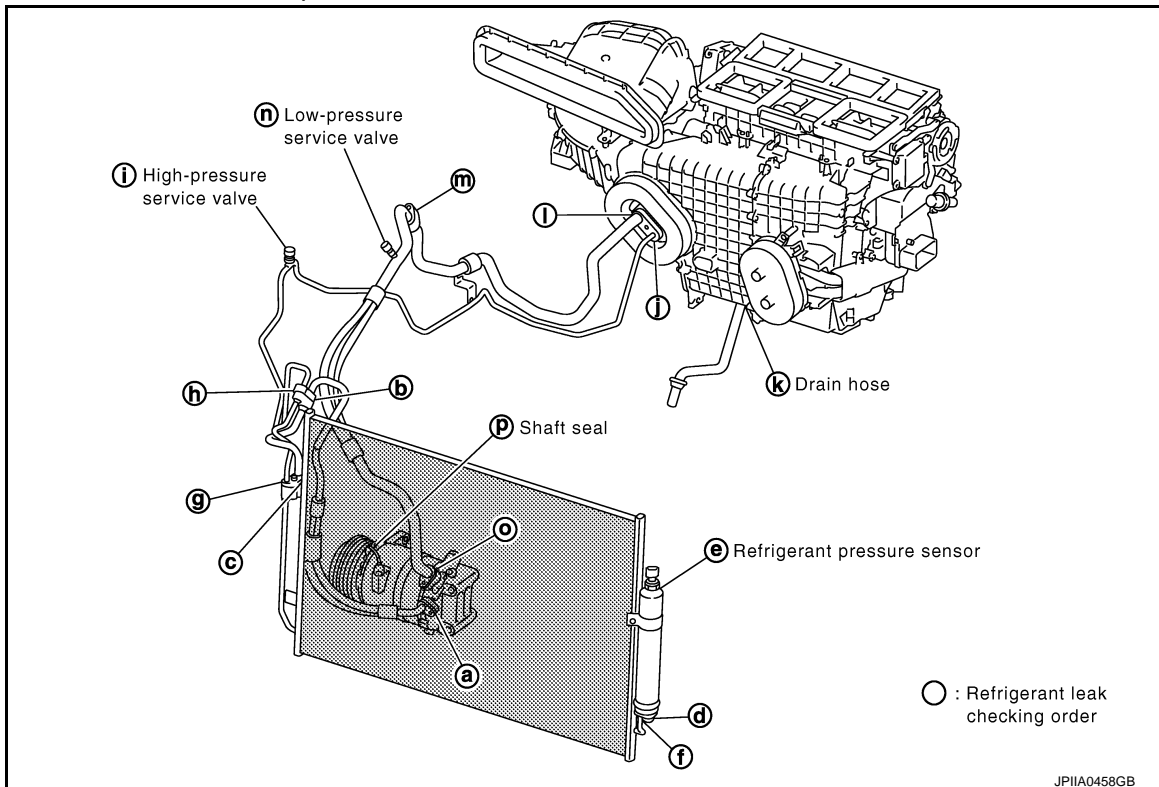
< PERIODIC MAINTENANCE >

2. Connect a suitable A/C manifold gauge set (SST: J-39183) to the A/C service valves.
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.52 kg/cm², 50 psi) above 16°C (61°F). Recover/evacuate and recharge the system with the specified amount of refrigerant if it is less than specification.

NOTE:

Leakages may not be detected since the system may not reach 345 kPa (3.52 kg/cm², 50 psi) at temperatures below 16°C (61°F).

4. Perform the leakage 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 leakage check for the following areas carefully. Clean the component to be checked and move the leakage 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 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 leakages).

NOTE:

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

Cooling unit (Evaporator)

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

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

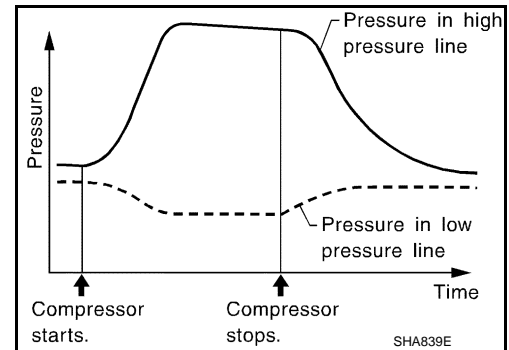
5. Verify at least once by blowing compressed air into area of suspected leakage, then repeat the check as outlined above if a leak detector detects a leakage.
6. Do not stop when one leakage is found. Continue checking for additional leakages at all system components.
If no leakages are found, perform steps 7 - 10.

ELECTRICAL LEAK DETECTOR

< PERIODIC MAINTENANCE >

7. Start the engine.
8. Set the A/C control under the following conditions.
 - a. A/C switch: ON
 - b. Air flow: VENT (Ventilation)
 - c. Intake door position: Recirculation
 - d. Temperature setting: Full cold
 - e. Fan (blower) speed: Maximum speed set
9. Run engine at 1,500 rpm for at least 2 minutes.
10. Stop the engine and perform leakage check again following steps 4 through 6 above.

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



11. Check recovery/recycling recharging equipment gauges before connecting recovery/recycling recharging equipment to vehicle. No refrigerant pressure should be displayed. Recover refrigerant from equipment lines if pressure is displayed, 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 leakage test to confirm that there are no refrigerant leakages.
16. Perform A/C performance test to ensure that the system works normally.

REFRIGERATION SYSTEM

< REMOVAL AND INSTALLATION >

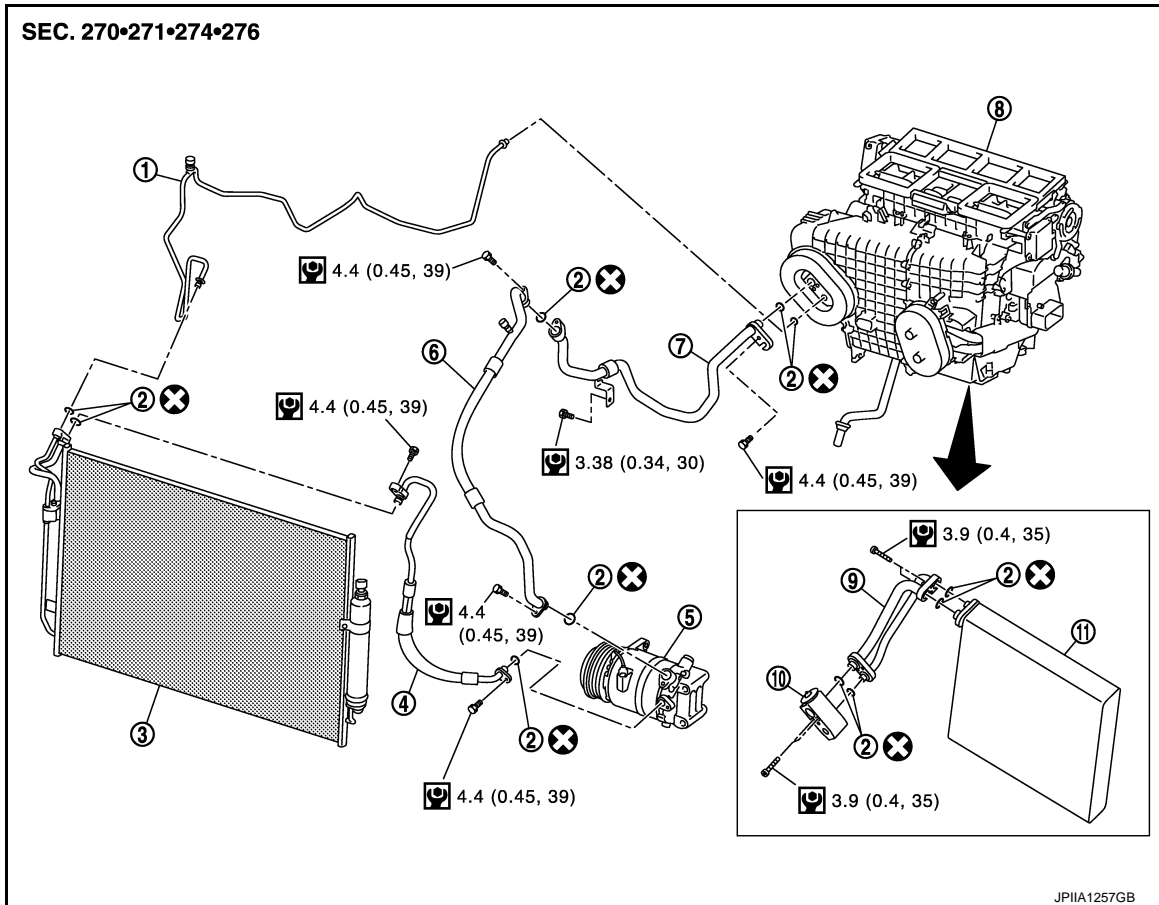
REMOVAL AND INSTALLATION

REFRIGERATION SYSTEM

Exploded View

INFOID:000000009718636

Refer to [HA-14, "Refrigerant Connection"](#).



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

⊗ : Always replace after every disassembly.

Ⓜ : N·m (kg·m, in·lb)

Inspection After Installation

INFOID:000000009718637

SETTING OF SERVICE TOOLS AND EQUIPMENT

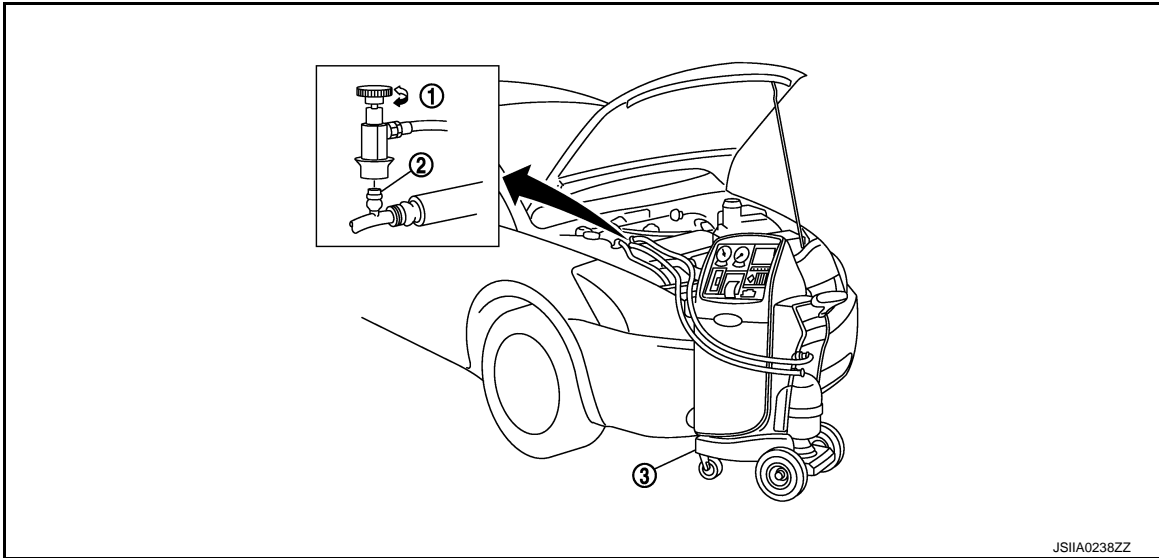
Discharging Refrigerant

WARNING:

Never breathe A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose or 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]. Ventilate work area before resuming service if accidental system discharge occurs. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.

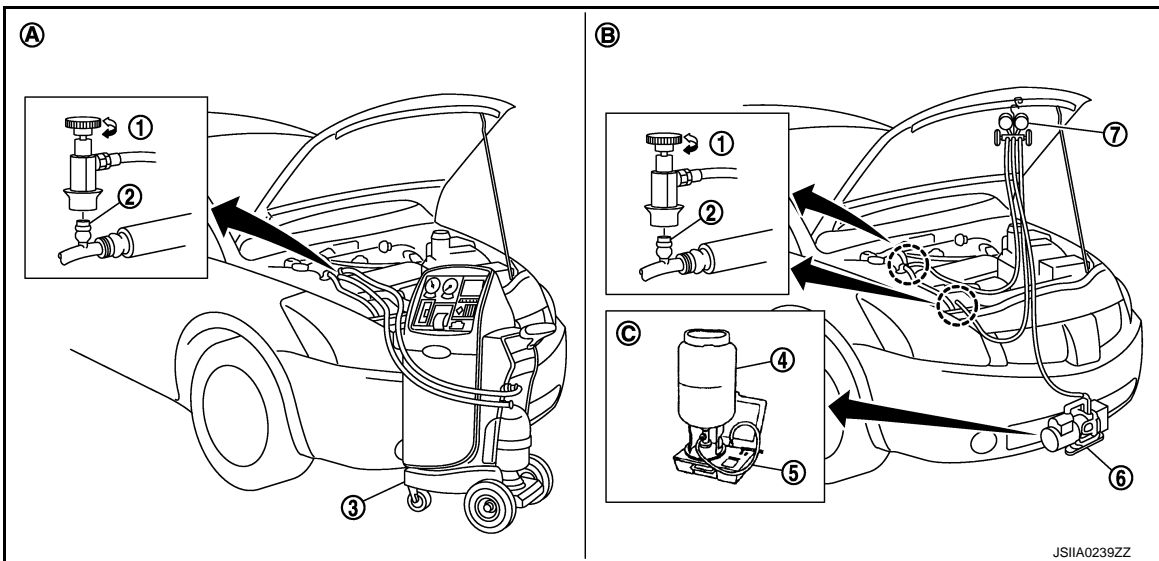
REFRIGERATION SYSTEM

< REMOVAL AND INSTALLATION >



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

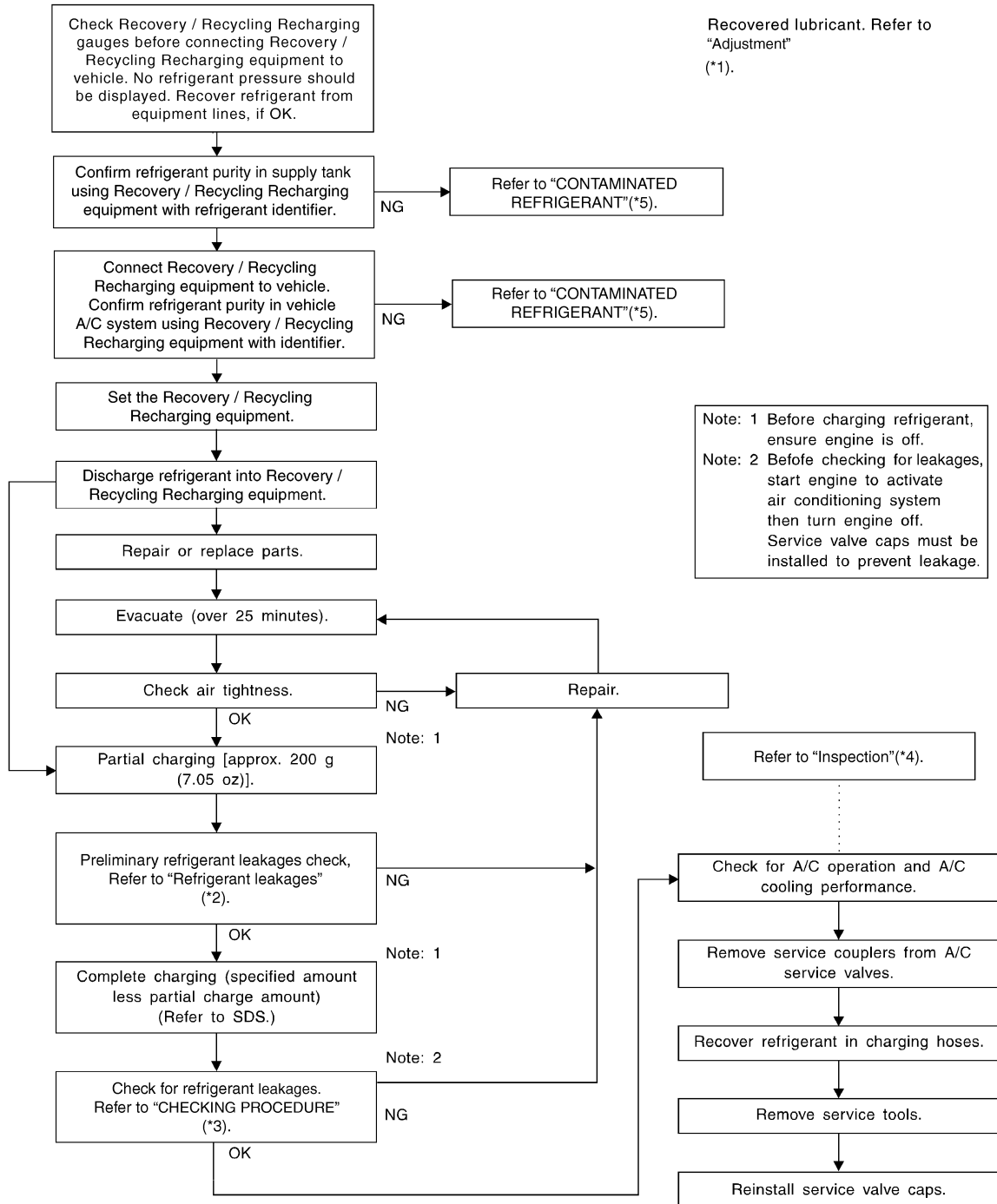
Evacuating System and Charging Refrigerant



- 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

< REMOVAL AND INSTALLATION >



JSIIA0607GB

*1 [HA-25. "Maintenance of Lubricant Quantity"](#)

*2 [HA-29. "Refrigerant Leakages"](#).

*3 [HA-31. "Inspection"](#).

*4 [HA-28. "Inspection"](#).

*5 [HA-13. "Working with HFC-134a \(R-134a\)"](#).

COMPRESSOR

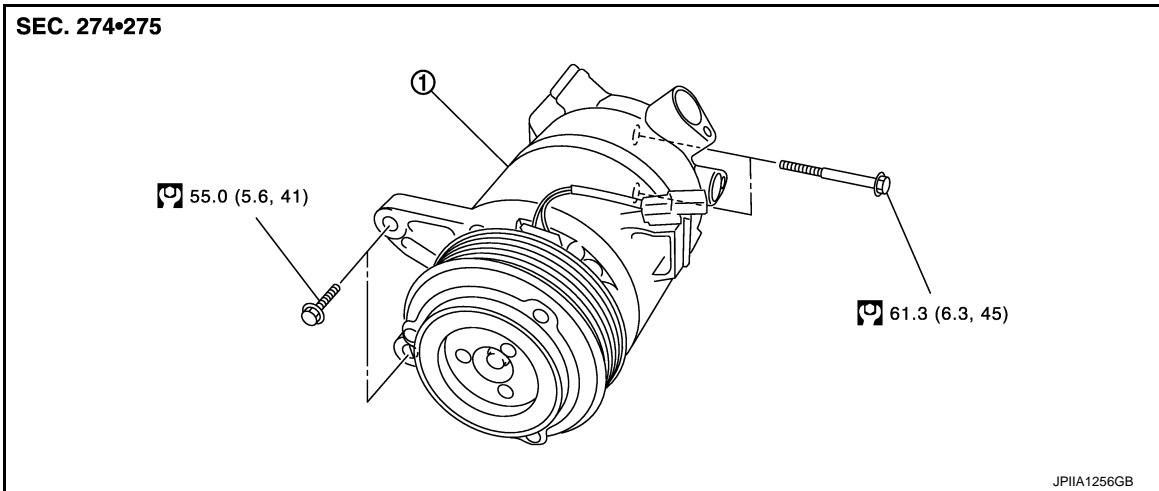
< REMOVAL AND INSTALLATION >

COMPRESSOR

Exploded View

INFOID:000000009718638

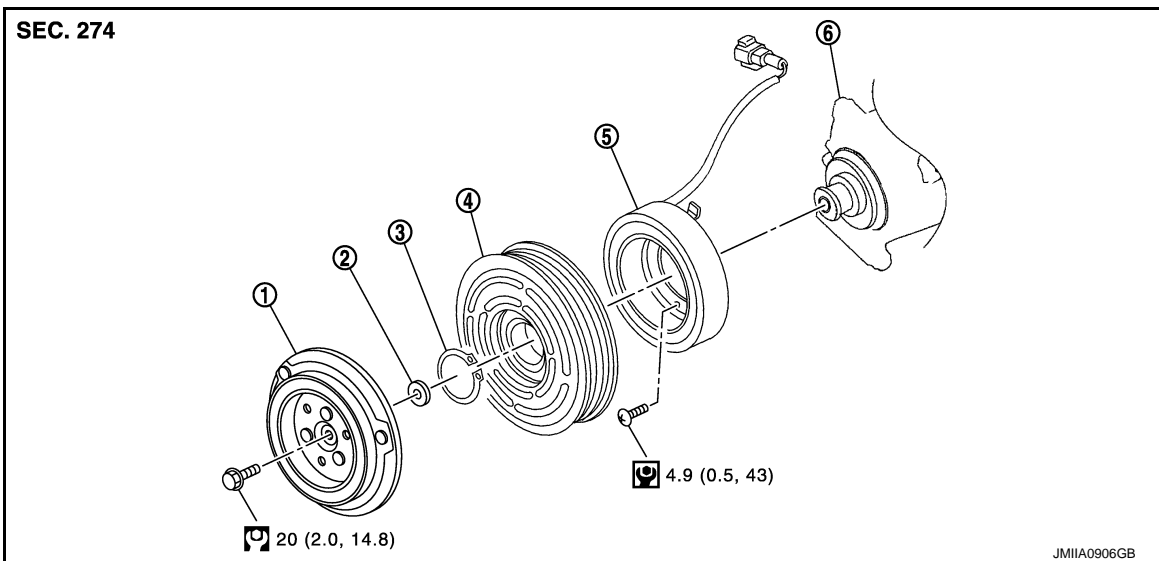
REMOVAL



1. Compressor

: N·m (kg-m, ft-lb)

DISASSEMBLY



1. Clutch disc

2. Shim

3. Snap ring

4. Pulley assembly

5. Field coil

6. Compressor unit

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

COMPRESSOR

COMPRESSOR : Removal and Installation

INFOID:000000009718639

REMOVAL

1. Use refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.

COMPRESSOR

< REMOVAL AND INSTALLATION >

2. Remove front under cover. Refer to [EXT-29, "Exploded View"](#).
3. Remove splash guard. Refer to [EXT-26, "FENDER PROTECTOR : Exploded View"](#).
4. Remove drive belt. Refer to [EM-17, "Exploded View"](#).
5. Remove mounting bolt (A) and then disconnect low-pressure flexible hose (1) from compressor.

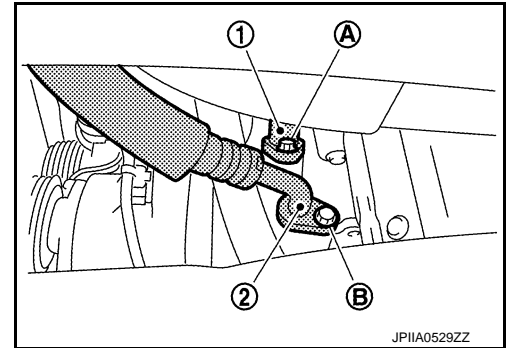
CAUTION:

Cap or wrap the joint of the A/C piping and compressor with suitable material such as vinyl tape to avoid the entry of air.

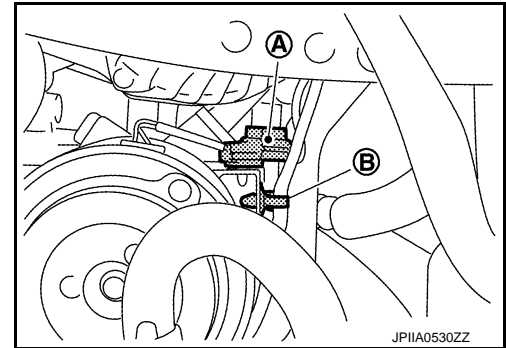
6. Remove mounting bolt (B) and then disconnect high-pressure flexible hose (2) from compressor.

CAUTION:

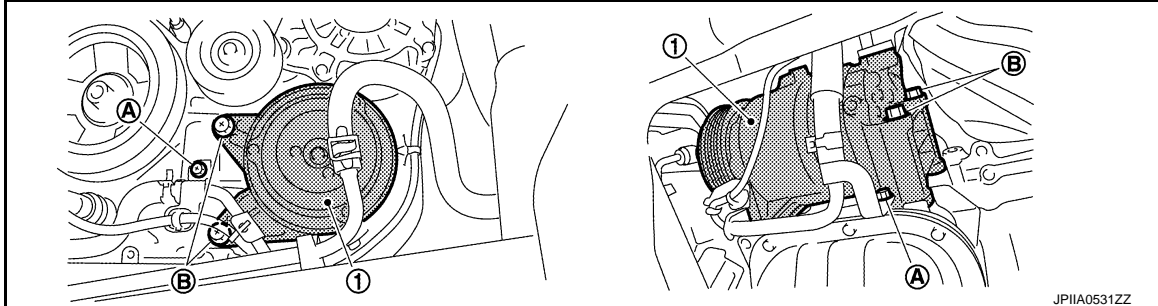
Cap or wrap the joint of the A/C piping and compressor with suitable material such as vinyl tape to avoid the entry of air.



7. Remove connector (A) and the harness clip (B) of the magnet clutch.



8. Remove mounting bolts (A) and then move oil cooler to a position where it does not get inhibited work.



9. Remove mounting bolts (B) and then remove compressor (1) from the lower side of the vehicle.

INSTALLATION

Note the following items and then install in the reverse order of removal.

CAUTION:

- Replace O-rings with new ones. Then apply compressor oil to them when installing.
- Check for leakages when recharging refrigerant.
- Check tension of the drive belt after installing compressor. Refer to [EM-17, "Checking"](#).

MAGNET CLUTCH

MAGNET CLUTCH : Removal and Installation

INFOID:000000009718640

REMOVAL

Overhaul

1. Fix clutch disc.
2. Remove center bolt, and then remove clutch disc.
3. Remove snap ring using external snap ring pliers.
4. Position center pulley puller on the end of the drive shaft, and remove pulley assembly using any commercially available pulley puller.

COMPRESSOR

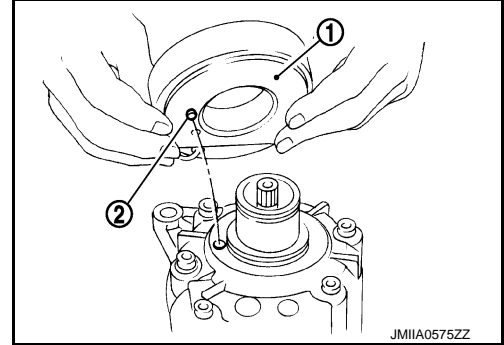
< REMOVAL AND INSTALLATION >

To prevent pulley groove from being deformed, puller claws should be positioned into the edge of the pulley assembly.

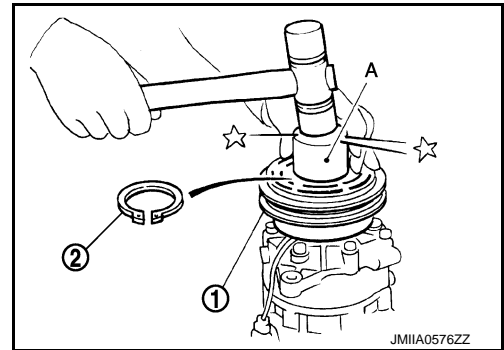
5. Disconnect field coil harness connector from compressor unit.
6. Remove screws and then remove field coil.

INSTALLATION

1. Install field coil (1).
Be sure to align the coil's pin (2) with the hole in the compressor's front head.
2. Connect field coil harness connector to compressor unit.



3. Install pulley assembly (1) using pulley installer (SST: J-41260) (A) and a hand press and then install snap ring (2) using snap ring pliers.



4. Install clutch disc on drive shaft, together with original shim(s). Press clutch disc down by hand.
5. Tighten center bolt to the specified torque while fixing clutch disc not to rotate.
After tightening the bolt, check that the pulley rotates smoothly.

Break-in Operation

When replacing compressor clutch assembly, always perform the break-in operation, by engaging and disengaging the clutch approximately 30-times. Break-in operation increases the level of transmitted torque.

Inspection

INFOID:000000009718641

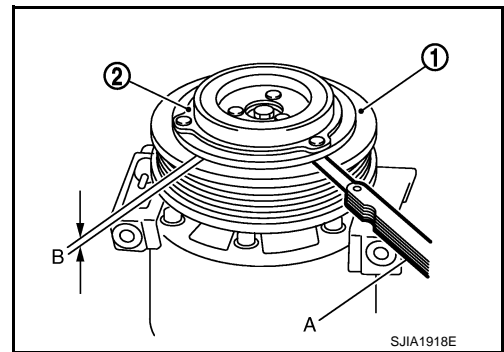
Measurement of clearance between clutch disc and pulley

Measure the clearance (B) between the pulley (1) and the circumference of the clutch disc (2) using a feeler gauge (A).

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

CAUTION:

Replace compressor if specified clearance is not obtained, replace adjusting spacer and readjust.



LOW-PRESSURE FLEXIBLE HOSE

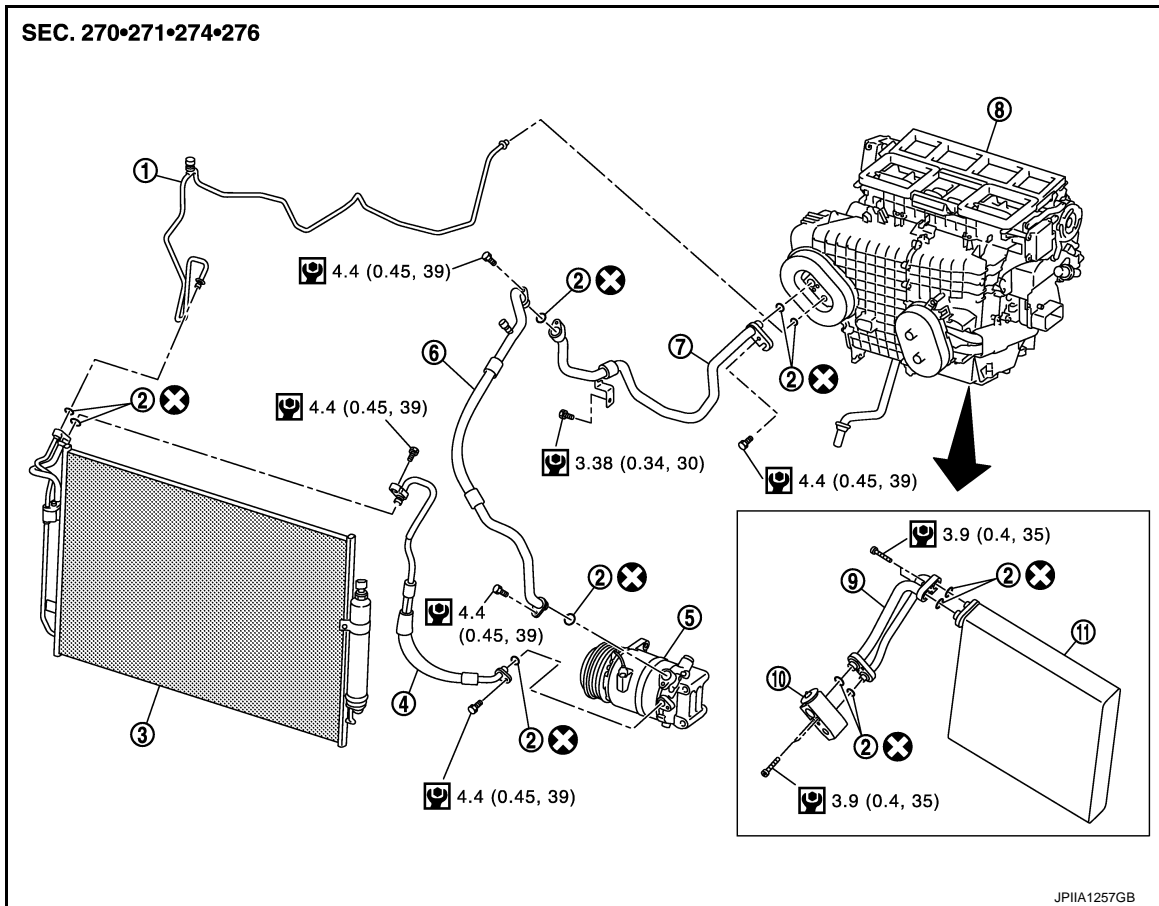
< REMOVAL AND INSTALLATION >

LOW-PRESSURE FLEXIBLE HOSE

Exploded View

INFOID:000000009718642

Refer to [HA-14. "Refrigerant Connection"](#).



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

⊗ : Always replace after every disassembly.

Ⓜ : N·m (kg·m, in·lb)

Removal and Installation

INFOID:000000009718643

REMOVAL

1. Use refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove front under cover. Refer to [EXT-29. "Exploded View"](#).

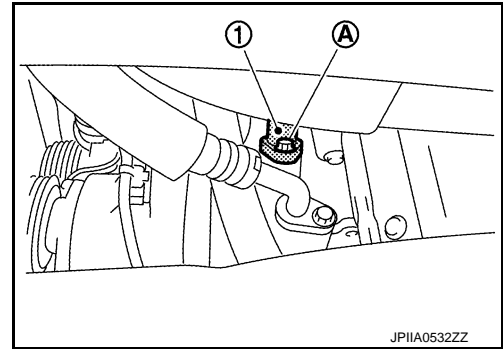
LOW-PRESSURE FLEXIBLE HOSE

< REMOVAL AND INSTALLATION >

3. Remove mounting bolt (A) and then disconnect low-pressure flexible hose (1) from compressor.

CAUTION:

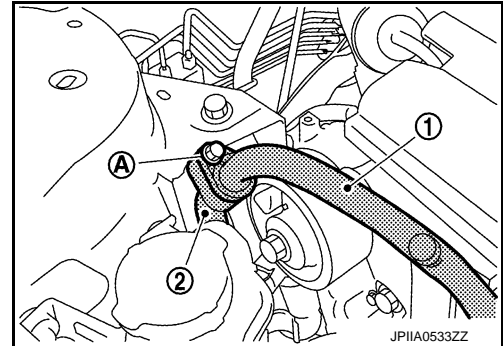
Cap or wrap the joint of the A/C piping and compressor with suitable material such as vinyl tape to avoid the entry of air.



4. Remove mounting bolt (A) and then remove low-pressure flexible hose (1) from low-pressure pipe (2).

CAUTION:

Cap or wrap the joint of the A/C piping with suitable material such as vinyl tape to avoid the entry of air.



INSTALLATION

Note the following items and then install in the reverse order of removal.

CAUTION:

- Replace O-rings with new ones. Then apply compressor oil to them when installing.
- Check for leakages when recharging refrigerant.

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HIGH-PRESSURE FLEXIBLE HOSE

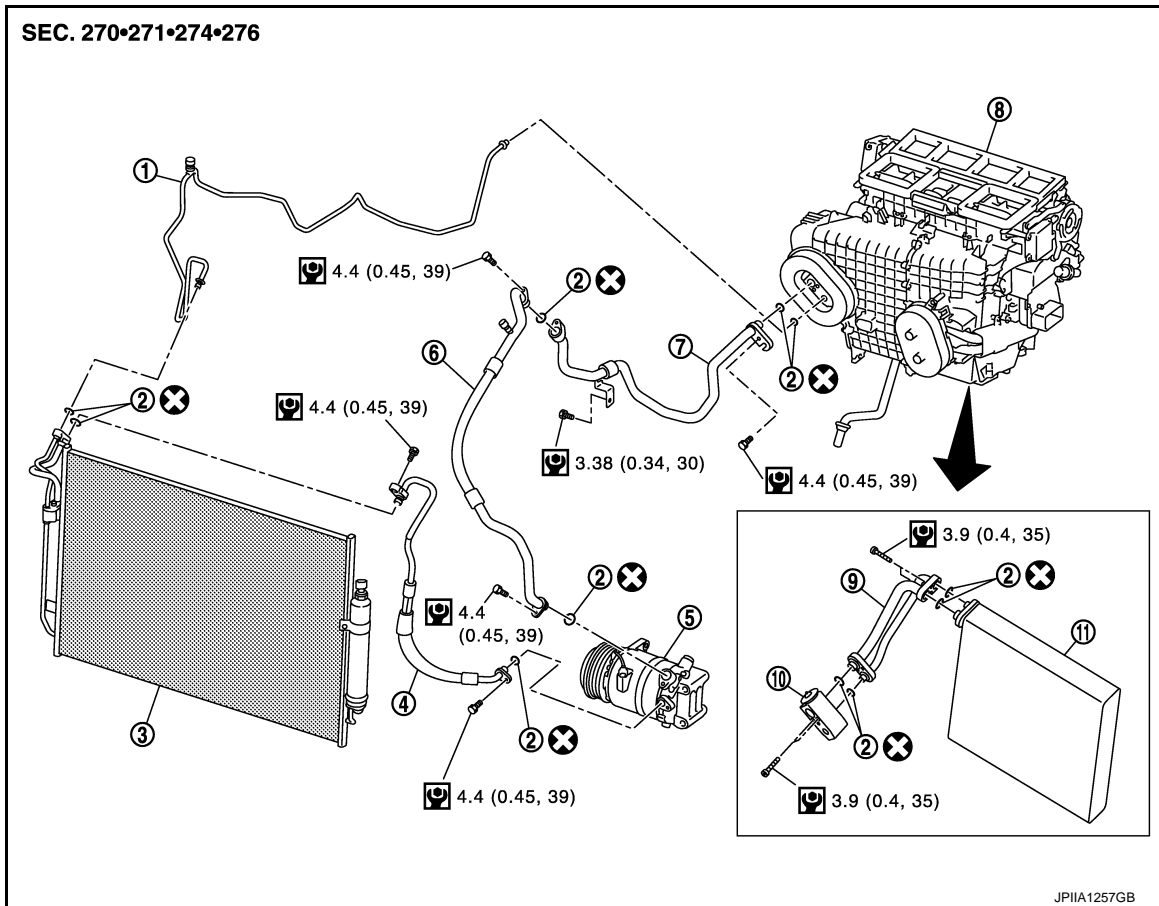
< REMOVAL AND INSTALLATION >

HIGH-PRESSURE FLEXIBLE HOSE

Exploded View

INFOID:000000009718644

Refer to [HA-14. "Refrigerant Connection"](#).



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

⊗ : Always replace after every disassembly.

Ⓜ : N·m (kg·m, in·lb)

Removal and Installation

INFOID:000000009718645

REMOVAL

1. Use refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove front under cover. Refer to [EXT-29. "Exploded View"](#).

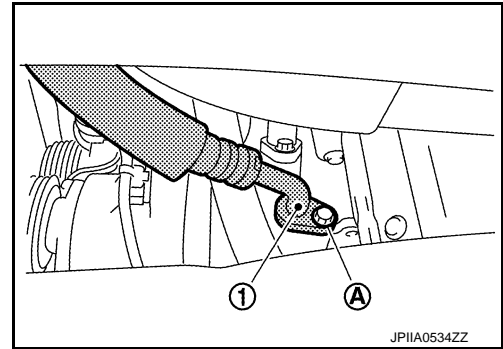
HIGH-PRESSURE FLEXIBLE HOSE

< REMOVAL AND INSTALLATION >

3. Remove mounting bolt (A) and then disconnect high-pressure flexible hose (1) from compressor.

CAUTION:

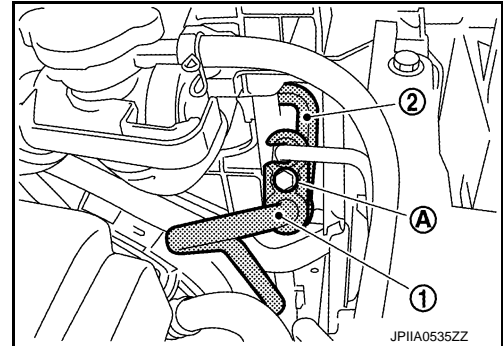
Cap or wrap the joint of the A/C piping and compressor with suitable material such as vinyl tape to avoid the entry of air.



4. Remove mounting bolt (A) and then remove high-pressure flexible hose (1) from condenser pipe assembly (2).

CAUTION:

Cap or wrap the joint of the A/C piping with suitable material such as vinyl tape to avoid the entry of air.



INSTALLATION

Note the following items and then install in the reverse order of removal.

CAUTION:

- Replace O-rings with new ones. Then apply compressor oil to them when installing.
- Check for leakages when recharging refrigerant.

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LOW-PRESSURE PIPE

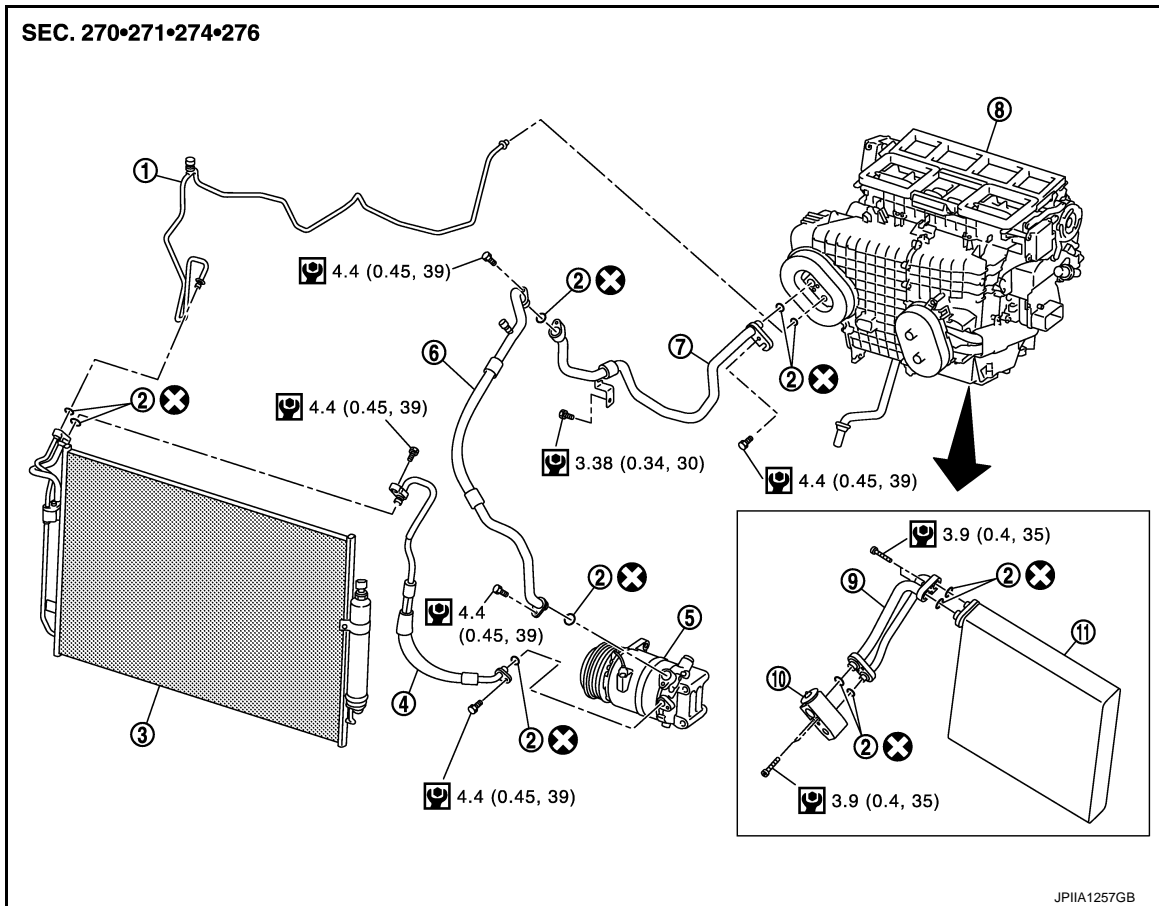
< REMOVAL AND INSTALLATION >

LOW-PRESSURE PIPE

Exploded View

INFOID:000000009718646

Refer to [HA-14. "Refrigerant Connection"](#).



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

⊗ : Always replace after every disassembly.

Ⓜ : N-m (kg-m, in-lb)

Removal and Installation

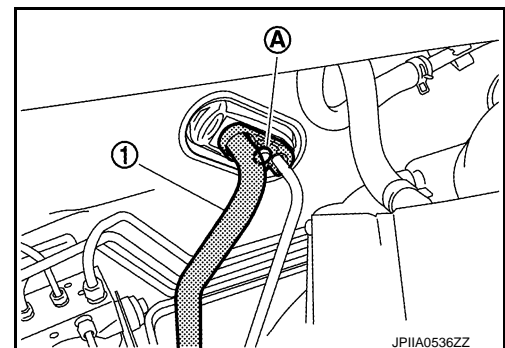
INFOID:000000009718647

REMOVAL

1. Use refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove mounting bolt (A) and then disconnect low-pressure pipe (1) from expansion valve.

CAUTION:

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



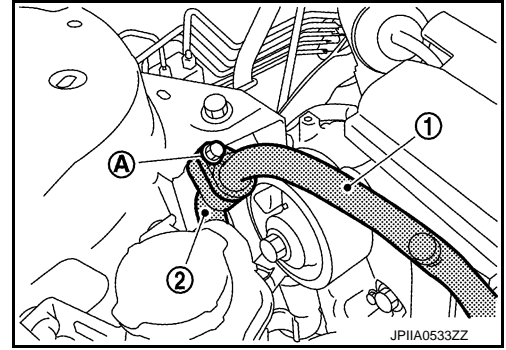
LOW-PRESSURE PIPE

< REMOVAL AND INSTALLATION >

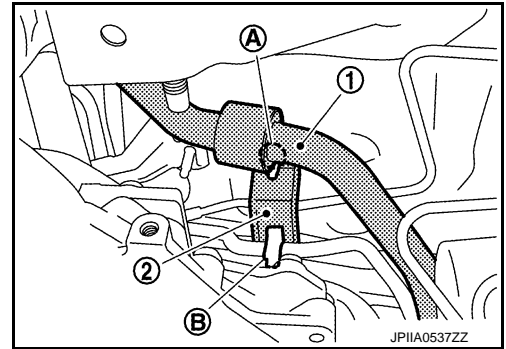
3. Remove mounting bolt (A) and then disconnect low-pressure flexible hose (1) from low-pressure pipe (2).

CAUTION:

Cap or wrap the joint of the A/C piping with suitable material such as vinyl tape to avoid the entry of air.



4. Move power steering reservoir tank to a position where it does not inhibit work. Refer to [ST-64. "Exploded View" \(WITH HEATED STEERING WHEEL\)](#) or [ST-106. "Exploded View" \(WITHOUT HEATED STEERING WHEEL\)](#).
5. Remove mounting nut (A) and clip (B), and then remove low-pressure pipe (1) together with the low-pressure pipe bracket (2).



INSTALLATION

Note the following items and then install in the reverse order of removal.

CAUTION:

- Replace O-rings with new ones. Then apply compressor oil to them when installing.
- Check for leakages when recharging refrigerant.

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HIGH-PRESSURE PIPE

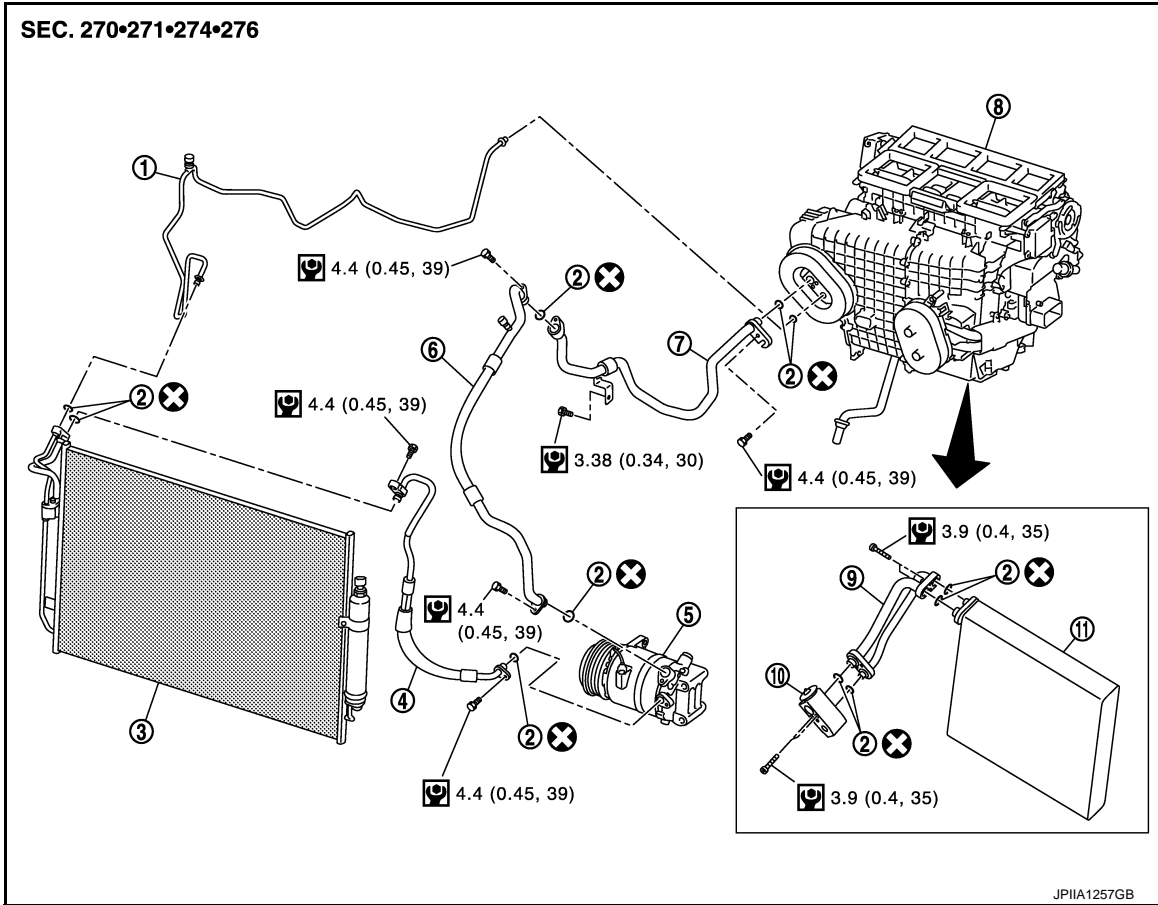
< REMOVAL AND INSTALLATION >

HIGH-PRESSURE PIPE

Exploded View

INFOID:000000009718648

Refer to [HA-14. "Refrigerant Connection"](#).



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

⊗ : Always replace after every disassembly.

Ⓜ : N-m (kg-m, in-lb)

Removal and Installation

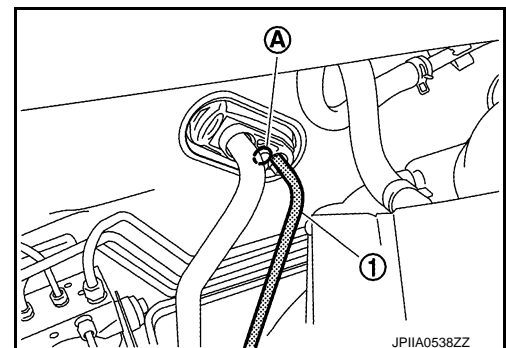
INFOID:000000009718649

REMOVAL

1. Use refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove mounting bolt (A) and then disconnect high-pressure pipe (1) from expansion valve.

CAUTION:

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



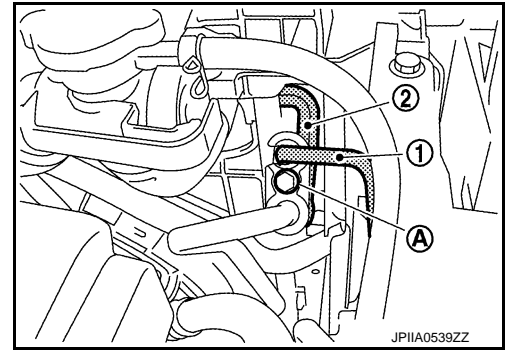
HIGH-PRESSURE PIPE

< REMOVAL AND INSTALLATION >

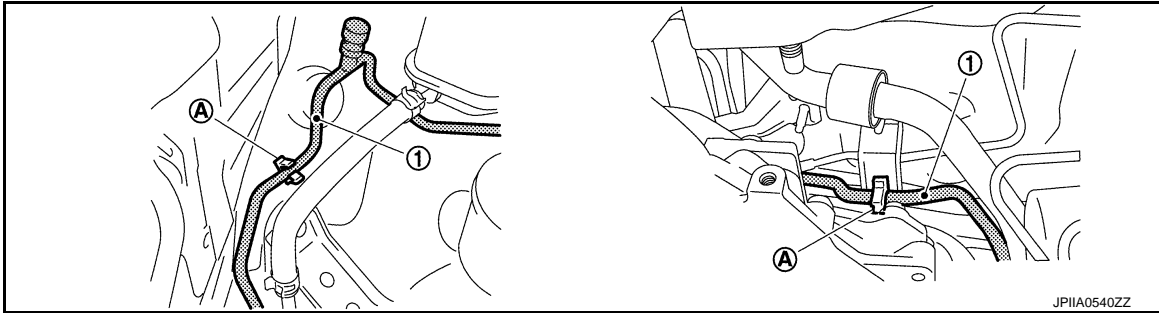
3. Remove mounting bolt (A) and then disconnect high-pressure pipe (1) from condenser pipe assembly (2).

CAUTION:

Cap or wrap the joint of the A/C piping with suitable material such as vinyl tape to avoid the entry of air.



4. Move power steering reservoir tank to a position where it does not inhibit work. Refer to [ST-64, "Exploded View" \(WITH HEATED STEERING WHEEL\)](#) or [ST-106, "Exploded View" \(WITHOUT HEATED STEERING WHEEL\)](#).
5. Remove reservoir tank. Refer to [CO-16, "Exploded View"](#).
6. Remove washer tank inlet. Refer to [WW-128, "Exploded View"](#).
7. Remove fixing clip (A), and then remove high-pressure pipe (1).



INSTALLATION

Note the following items, and then install in the reverse order of removal.

CAUTION:

- Replace O-rings with new ones. Then apply compressor oil to them when installing.
- Check for leakages when recharging refrigerant.

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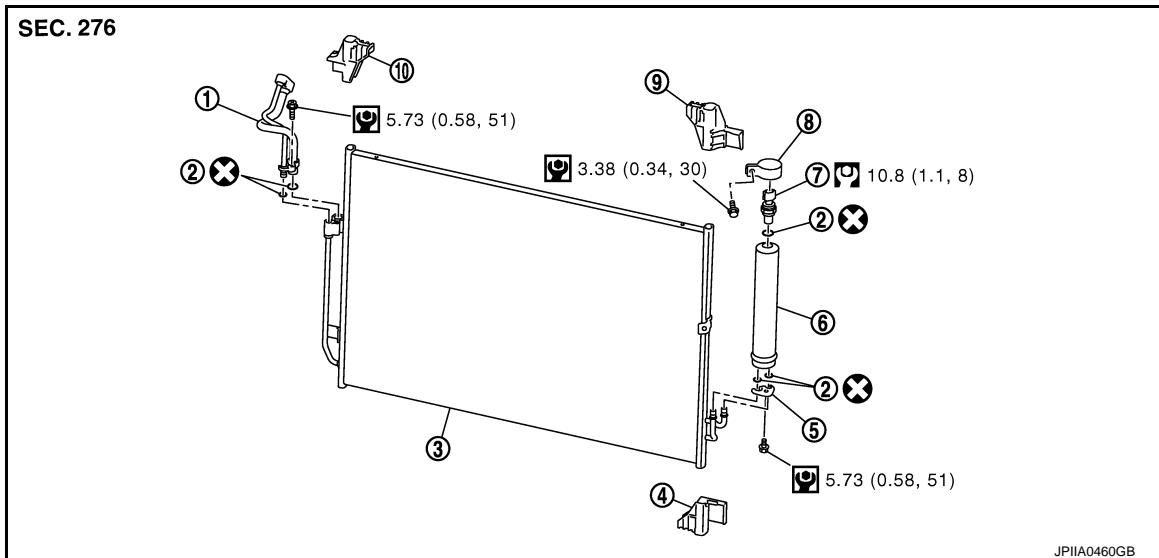
CONDENSER PIPE ASSEMBLY

< REMOVAL AND INSTALLATION >

CONDENSER PIPE ASSEMBLY

Exploded View

INFOID:000000009718650



- | | | |
|--------------------------------|------------------------|-------------------------------|
| 1. Condenser pipe assembly | 2. O-ring | 3. Condenser assembly |
| 4. Condenser lower bracket LH | 5. Bracket | 6. Liquid tank |
| 7. Refrigerant pressure sensor | 8. Liquid tank bracket | 9. Condenser upper bracket LH |
| 10. Condenser upper bracket RH | | |

⊗ : Always replace after every disassembly.

🔧 : N·m (kg-m, ft-lb)

🔧 : N·m (kg-m, in-lb)

Removal and Installation

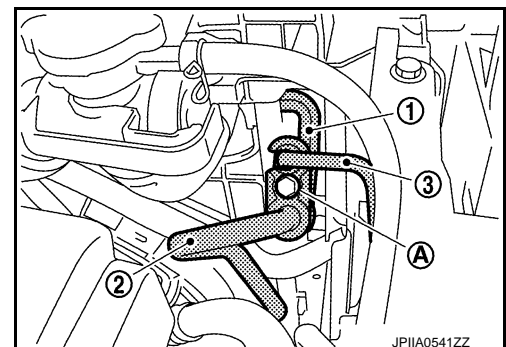
INFOID:000000009718651

REMOVAL

1. Use refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove front grille. Refer to [EXT-21, "Exploded View"](#).
3. Remove mounting bolt (A) and then disconnect high-pressure flexible hose (2) and high-pressure pipe (3) from condenser pipe assembly (1).

CAUTION:

Cap or wrap the joint of the A/C piping with suitable material such as vinyl tape to avoid the entry of air.



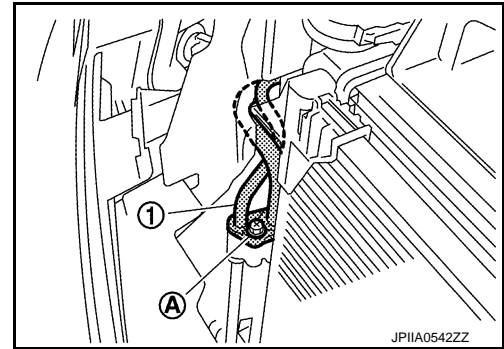
CONDENSER PIPE ASSEMBLY

< REMOVAL AND INSTALLATION >

4. Remove mounting bolt (A) and then remove condenser pipe assembly (1) from condenser.

CAUTION:

Cap or wrap the joint of the A/C piping and condenser with suitable material such as vinyl tape to avoid the entry of air.



INSTALLATION

Note the following items and then install in the reverse order of removal.

CAUTION:

- Replace O-rings with new ones. Then apply compressor oil to them when installing.
- Check for leakages when recharging refrigerant.

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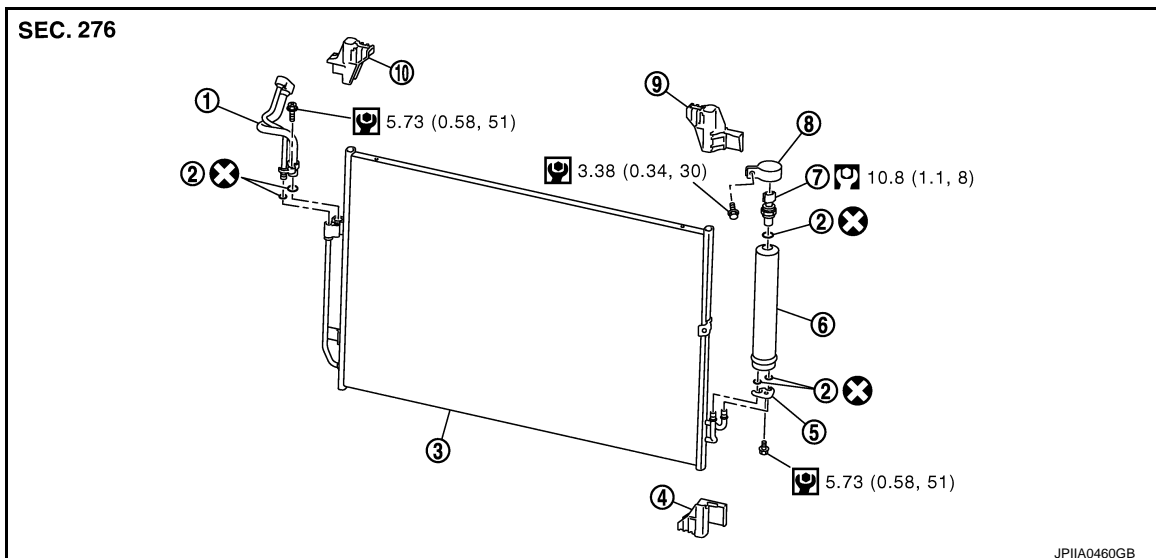
CONDENSER

< REMOVAL AND INSTALLATION >

CONDENSER

Exploded View

INFOID:000000009718652



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|--------------------------------|------------------------|-------------------------------|
| 1. Condenser pipe assembly | 2. O-ring | 3. Condenser assembly |
| 4. Condenser lower bracket LH | 5. Bracket | 6. Liquid tank |
| 7. Refrigerant pressure sensor | 8. Liquid tank bracket | 9. Condenser upper bracket LH |
| 10. Condenser upper bracket RH | | |

⊗ : Always replace after every disassembly.

⊙ : N·m (kg-m, ft-lb)

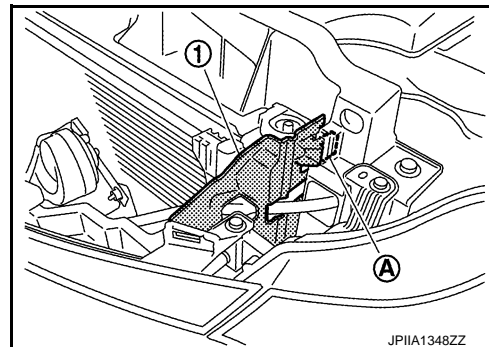
⊙ : N·m (kg-m, in-lb)

Removal and Installation

INFOID:000000009718653

REMOVAL

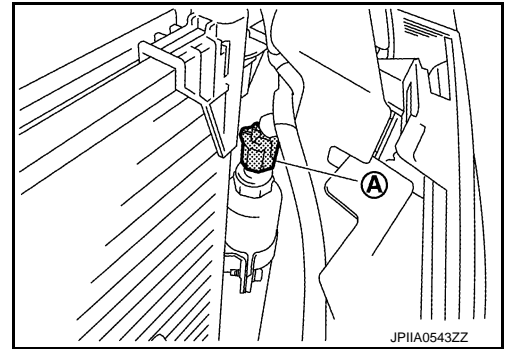
1. Remove condenser pipe assembly. Refer to [HA-48, "Exploded View"](#).
2. Remove air guide upper and air guide center. Refer to [DLK-314, "Exploded View"](#).
3. Remove hood lock assembly. Refer to [DLK-338, "Exploded View"](#).
4. Disengage the joints of the pawl (A) and then move air guide side LH (1) to the position without the hindrance for work.



CONDENSER

< REMOVAL AND INSTALLATION >

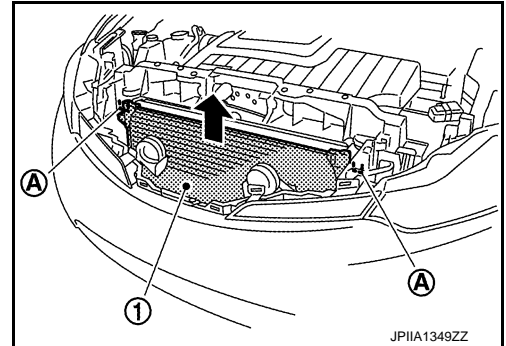
5. Disconnect refrigerant pressure sensor connector (A).



6. Remove tabs (A). Pull the condenser (1) in the direction shown by the arrow, and then remove it.

CAUTION:

Be careful not to damage core surface of condenser.



INSTALLATION

Note the following items and then install in the reverse order of removal.

CAUTION:

- Replace O-rings with new ones. Then apply compressor oil to them when installing.
- Check for leakages when recharging refrigerant.

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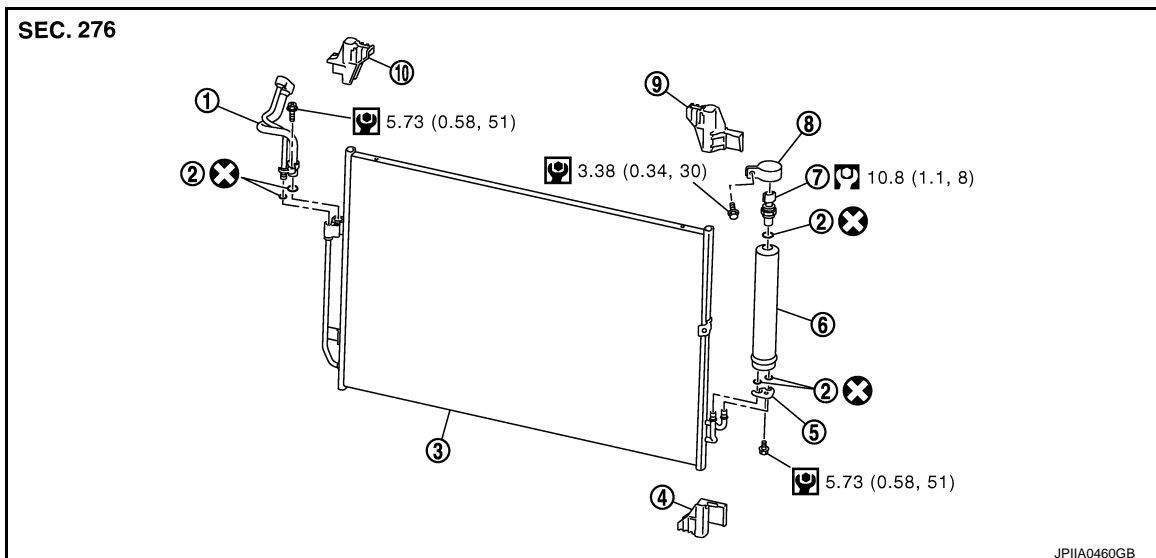
LIQUID TANK

< REMOVAL AND INSTALLATION >

LIQUID TANK

Exploded View

INFOID:000000009718654



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|--------------------------------|------------------------|-------------------------------|
| 1. Condenser pipe assembly | 2. O-ring | 3. Condenser assembly |
| 4. Condenser lower bracket LH | 5. Bracket | 6. Liquid tank |
| 7. Refrigerant pressure sensor | 8. Liquid tank bracket | 9. Condenser upper bracket LH |
| 10. Condenser upper bracket RH | | |

⊗ : Always replace after every disassembly.

⊙ : N·m (kg-m, ft-lb)

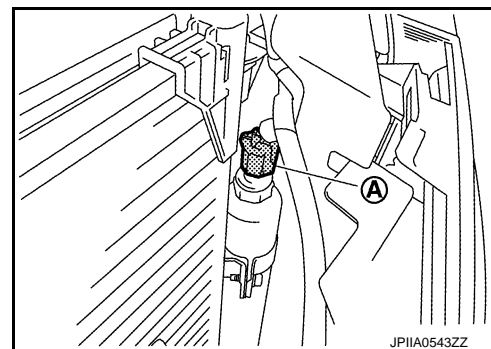
⊙ : N·m (kg-m, in-lb)

Removal and Installation

INFOID:000000009718655

REMOVAL

1. Use refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove front grille. Refer to [EXT-21, "Exploded View"](#).
3. Clean liquid tank and its surrounding area. Then remove dust and rust from liquid tank.
CAUTION:
Be sure to clean carefully.
4. Disconnect refrigerant pressure sensor connector (A).



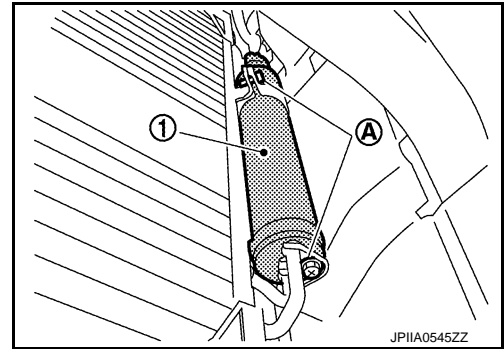
LIQUID TANK

< REMOVAL AND INSTALLATION >

5. Remove mounting bolts (A) and then remove liquid tank (1).

CAUTION:

Cap or wrap the joint of the A/C piping and liquid tank with suitable material such as vinyl tape to avoid the entry of air.



INSTALLATION

Note the following items and then install in the reverse order of removal.

CAUTION:

- Replace O-rings with new ones. Then apply compressor oil to them when installing.
- Check for leakages when recharging refrigerant.

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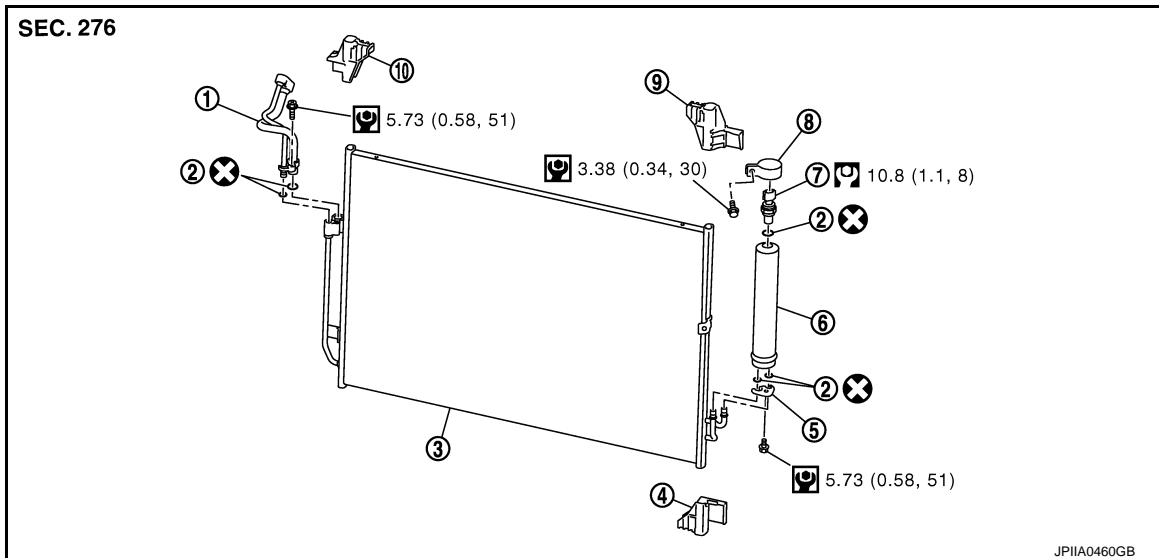
REFRIGERANT PRESSURE SENSOR

< REMOVAL AND INSTALLATION >

REFRIGERANT PRESSURE SENSOR

Exploded View

INFOID:000000009718656



- | | | |
|--------------------------------|------------------------|-------------------------------|
| 1. Condenser pipe assembly | 2. O-ring | 3. Condenser assembly |
| 4. Condenser lower bracket LH | 5. Bracket | 6. Liquid tank |
| 7. Refrigerant pressure sensor | 8. Liquid tank bracket | 9. Condenser upper bracket LH |
| 10. Condenser upper bracket RH | | |

⊗ : Always replace after every disassembly.

🔧 : N·m (kg-m, ft-lb)

🔧 : N·m (kg-m, in-lb)

Removal and Installation

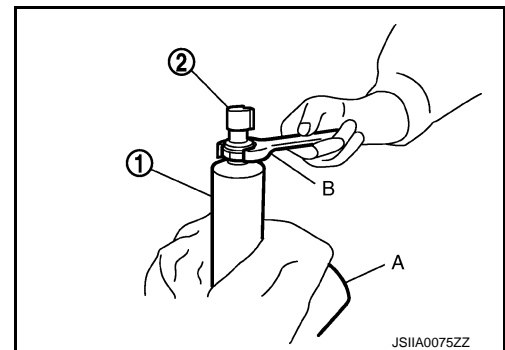
INFOID:000000009718657

REMOVAL

1. Remove liquid tank. Refer to [HA-52, "Exploded View"](#).
2. Fix the liquid tank (1) with a vise (A). Remove refrigerant pressure sensor (2) with a wrench (B).

CAUTION:

- Be careful not to damage liquid tank.
- Seal the refrigerant pressure sensor on liquid tank with caps, vinyl tape, or a similar item to prevent them from being exposed to the atmosphere.



INSTALLATION

Note the following items and then install in the reverse order of removal.

CAUTION:

- Replace the O-ring with a new one. Apply a coat of compressor oil to the O-ring prior to installation.
- Check for leakages when recharging refrigerant.

EVAPORATOR PIPE ASSEMBLY

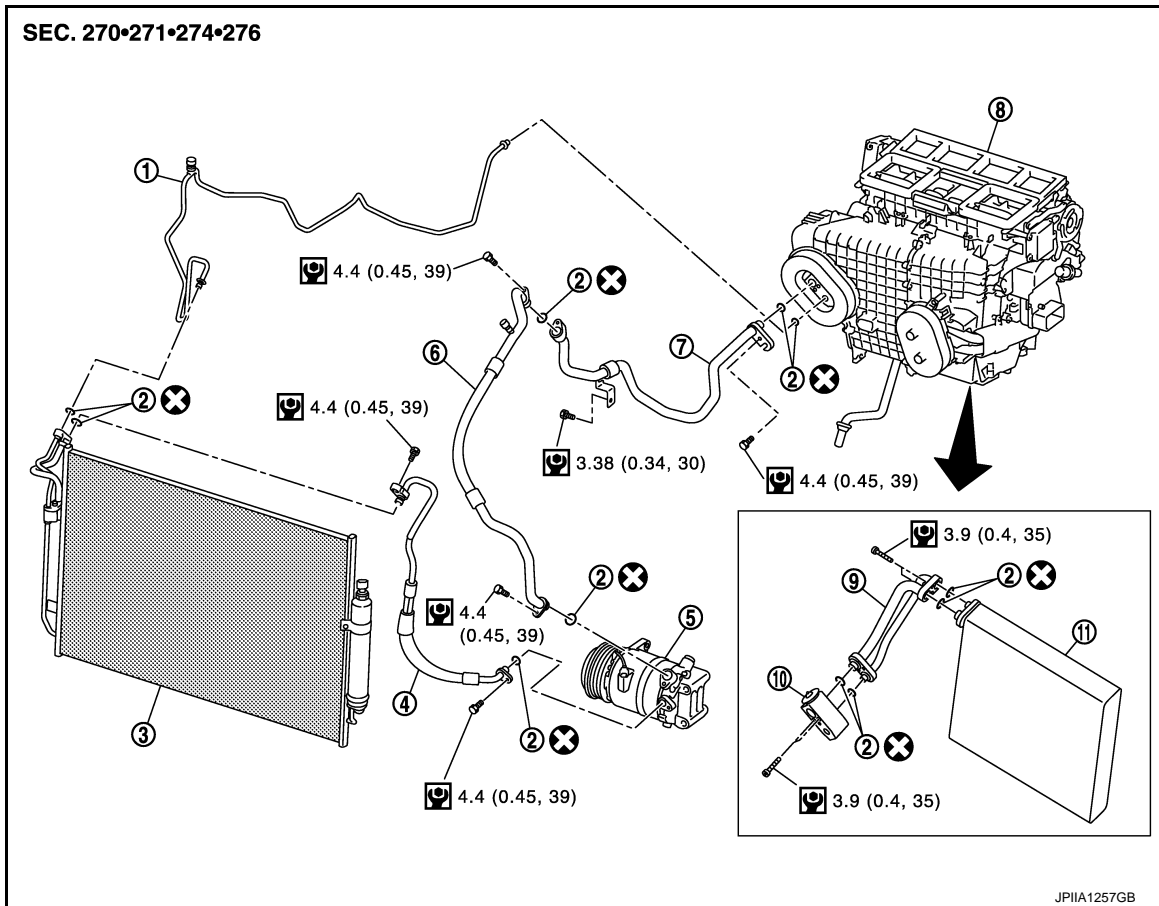
< REMOVAL AND INSTALLATION >

EVAPORATOR PIPE ASSEMBLY

Exploded View

INFOID:000000009718658

Refer to [HA-14, "Refrigerant Connection"](#).



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

⊗ : Always replace after every disassembly.

🔧 : N·m (kg·m, in·lb)

Removal and Installation

INFOID:000000009718659

REMOVAL

1. Set the temperature at full cold.

CAUTION:

The angle may be out, when installing the air mix door motor to the air mix door, unless the above procedure is performed.

2. Disconnect battery cable from the negative terminal.
3. Use refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.

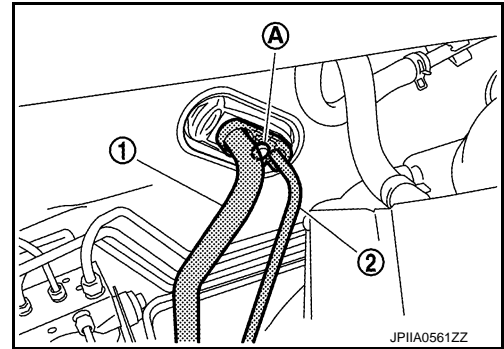
EVAPORATOR PIPE ASSEMBLY

< REMOVAL AND INSTALLATION >

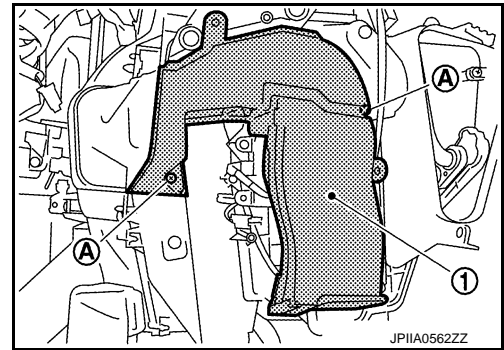
4. Remove mounting bolt (A) and then disconnect low-pressure pipe (1) and high-pressure pipe (2) from expansion valve.

CAUTION:

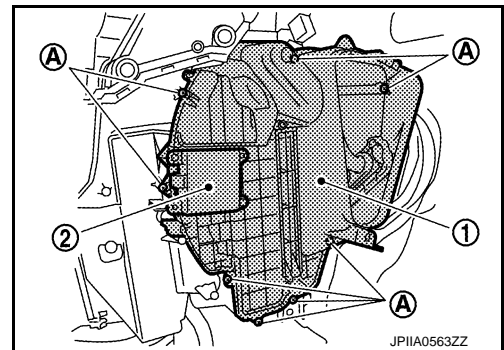
Cap or wrap the joint of the A/C piping and expansion valve with suitable material such as vinyl tape to avoid the entry of air.



5. Remove blower unit assembly. Refer to the following.
- Refer to [VTL-30, "Exploded View"](#) (WITHOUT 7 INCH DISPLAY).
 - Refer to [VTL-94, "Exploded View"](#) (WITH 7 INCH DISPLAY).
6. Remove fixing screws (A) and then remove foot duct assembly RH (1).



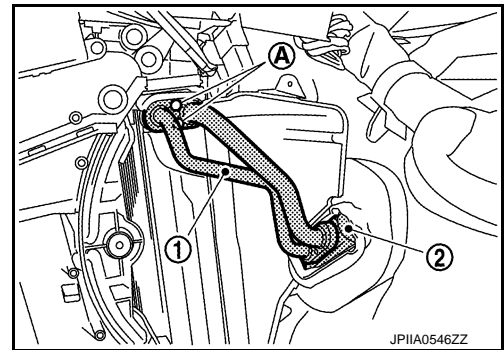
7. Disconnect air mix door motor (passenger side) connector.
8. Remove fixing screws (A) and then remove heater & cooling unit case cover (1) together with the air mix door motor (2). (Passenger side)



9. Remove mounting bolts (A) and then remove evaporator pipe assembly (1) and the expansion valve (2) from evaporator.

CAUTION:

Cap or wrap the joint of the A/C piping and evaporator with suitable material such as vinyl tape to avoid the entry of air.



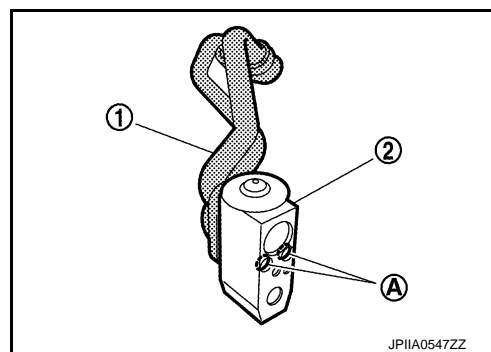
EVAPORATOR PIPE ASSEMBLY

< REMOVAL AND INSTALLATION >

10. Remove mounting bolts (A) and then remove evaporator pipe (2) from evaporator assembly (1).

CAUTION:

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



INSTALLATION

Note the following items and then install in the reverse order of removal.

CAUTION:

- Replace O-rings with new ones. Then apply compressor oil to them when installing.
- Check for leakages when recharging refrigerant.

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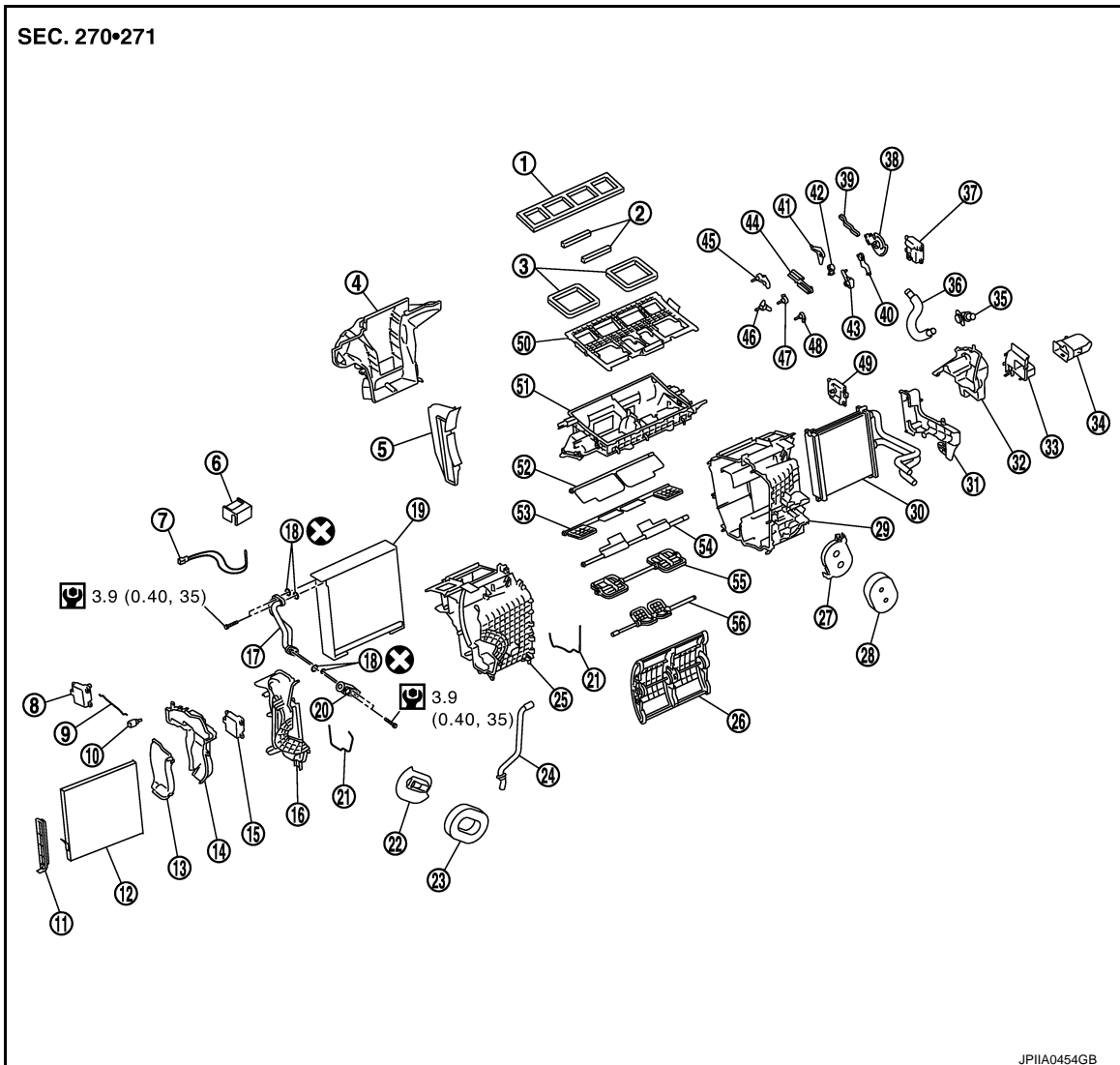
EVAPORATOR

< REMOVAL AND INSTALLATION >

EVAPORATOR

Exploded View

INFOID:00000009718660



- | | | |
|--------------------------------------|-----------------------------------|---|
| 1. Ventilator seal | 2. Upper ventilator seal | 3. Defroster seal |
| 4. Adapter case | 5. Center case | 6. Intake sensor bracket |
| 7. Intake sensor | 8. Upper ventilator door motor | 9. Upper ventilator door rod |
| 10. Upper ventilator door lever | 11. Filter cover | 12. In-cabin microfilter |
| 13. Foot duct 1 RH | 14. Foot duct 2 RH | 15. Air mix door motor (Passenger side) |
| 16. Heater & cooling unit case cover | 17. Evaporator pipe assembly | 18. O-ring |
| 19. Evaporator | 20. Expansion valve | 21. Case packing |
| 22. Grommet | 23. Cooler pipe grommet | 24. Drain hose |
| 25. Heater & cooling unit case RH | 26. Air mix door (Slide door) | 27. Heater pipe support |
| 28. Heater pipe grommet | 29. Heater & cooling unit case LH | 30. Heater core |
| 31. Heater pipe cover | 32. Foot duct 2 LH | 33. Foot duct 1 LH |
| 34. Heater duct | 35. Aspirator | 36. Aspirator hose |
| 37. Mode door motor | 38. Main link | 39. Rod link |
| 40. Max. cool door link | 41. Ventilator door link | 42. Foot door link |
| 43. Mode door lever | 44. Defroster door link | 45. Ventilator door lever |
| 46. Foot door lever | 47. Defroster door lever | 48. Max. cool door lever |

EVAPORATOR

< REMOVAL AND INSTALLATION >

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|--------------------------------------|----------------------------|----------------------------|
| 49. Air mix door motor (Driver side) | 50. Distributor upper case | 51. Distributor lower case |
| 52. Ventilator door | 53. Foot door | 54. Max. cool door |
| 55. Defroster door | 56. Upper ventilator door | |

⊗ : Always replace after every disassembly.

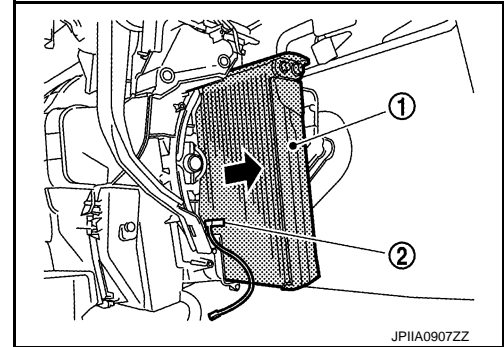
🔧 : N·m (kg-m, in-lb)

Removal and Installation

INFOID:000000009718661

REMOVAL

1. Remove evaporator pipe assembly. Refer to [HA-55. "Exploded View"](#).
2. Slide the evaporator (1) toward the right side of vehicle.
3. Remove intake sensor (2) and then remove evaporator.



INSTALLATION

Note the following items and then install in the reverse order of removal.

CAUTION:

- Replace O-rings with new ones. Then apply compressor oil to them when installing.
- Mark the mounting position of intake sensor bracket prior to removal so that the reinstalled sensor can be located in the same position.
- Never rotate the bracket insertion part when removing and installing the intake sensor.
- Check for leakages when recharging refrigerant.

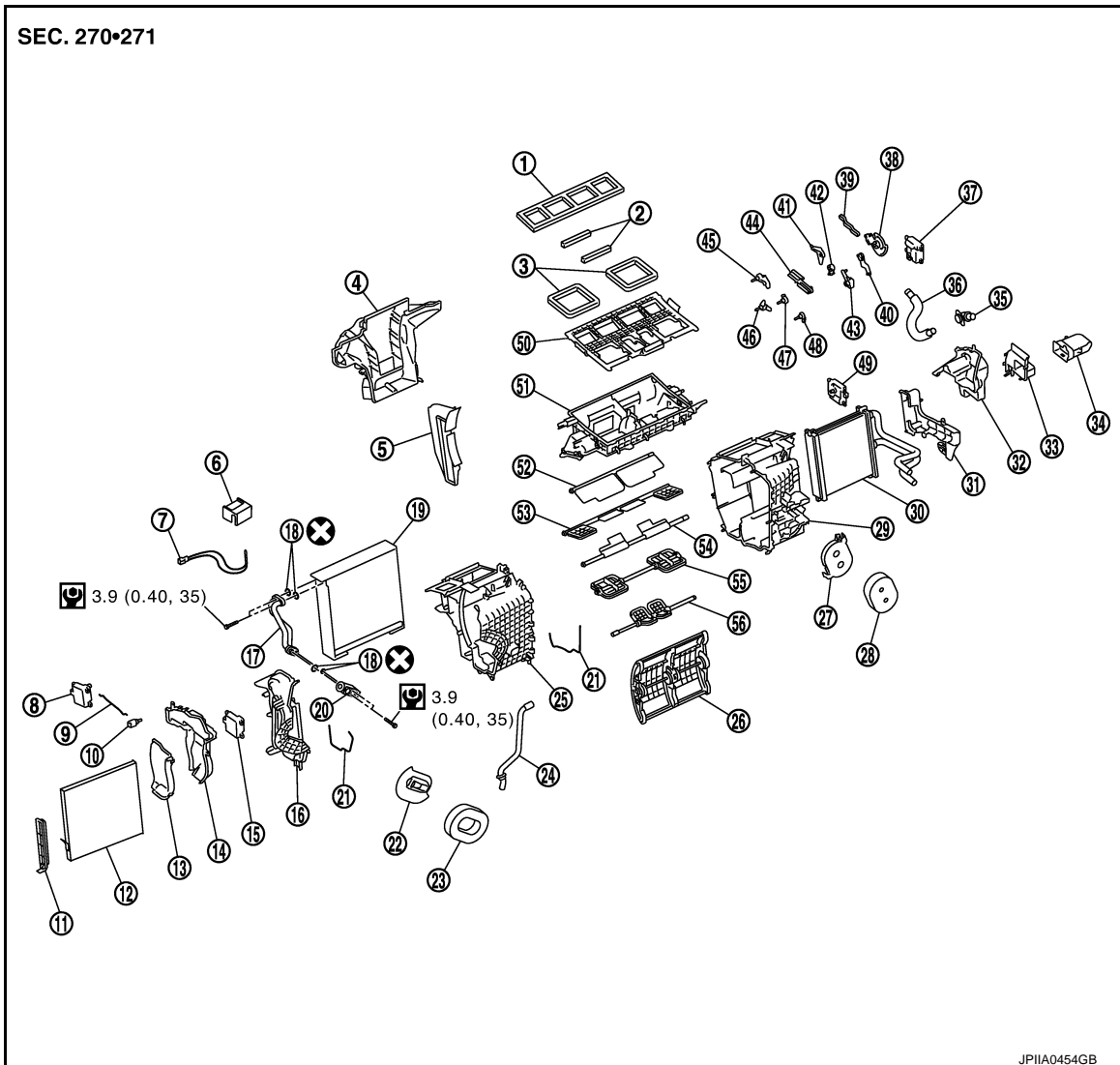
EXPANSION VALVE

< REMOVAL AND INSTALLATION >

EXPANSION VALVE

Exploded View

INFOID:00000009718662



- | | | |
|--------------------------------------|-----------------------------------|---|
| 1. Ventilator seal | 2. Upper ventilator seal | 3. Defroster seal |
| 4. Adapter case | 5. Center case | 6. Intake sensor bracket |
| 7. Intake sensor | 8. Upper ventilator door motor | 9. Upper ventilator door rod |
| 10. Upper ventilator door lever | 11. Filter cover | 12. In-cabin microfilter |
| 13. Foot duct 1 RH | 14. Foot duct 2 RH | 15. Air mix door motor (Passenger side) |
| 16. Heater & cooling unit case cover | 17. Evaporator pipe assembly | 18. O-ring |
| 19. Evaporator | 20. Expansion valve | 21. Case packing |
| 22. Grommet | 23. Cooler pipe grommet | 24. Drain hose |
| 25. Heater & cooling unit case RH | 26. Air mix door (Slide door) | 27. Heater pipe support |
| 28. Heater pipe grommet | 29. Heater & cooling unit case LH | 30. Heater core |
| 31. Heater pipe cover | 32. Foot duct 2 LH | 33. Foot duct 1 LH |
| 34. Heater duct | 35. Aspirator | 36. Aspirator hose |
| 37. Mode door motor | 38. Main link | 39. Rod link |
| 40. Max. cool door link | 41. Ventilator door link | 42. Foot door link |
| 43. Mode door lever | 44. Defroster door link | 45. Ventilator door lever |
| 46. Foot door lever | 47. Defroster door lever | 48. Max. cool door lever |

EXPANSION VALVE

< REMOVAL AND INSTALLATION >

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|--------------------------------------|----------------------------|----------------------------|
| 49. Air mix door motor (Driver side) | 50. Distributor upper case | 51. Distributor lower case |
| 52. Ventilator door | 53. Foot door | 54. Max. cool door |
| 55. Defroster door | 56. Upper ventilator door | |

⊗ : Always replace after every disassembly.

🔧 : N·m (kg-m, in-lb)

Removal and Installation

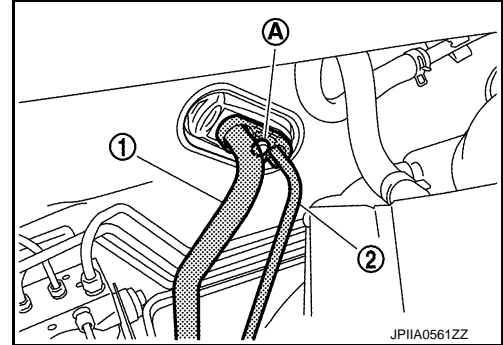
INFOID:000000009718663

REMOVAL

1. Use refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove mounting bolt (A) and then disconnect low-pressure pipe (1) and high-pressure pipe (2) from expansion valve.

CAUTION:

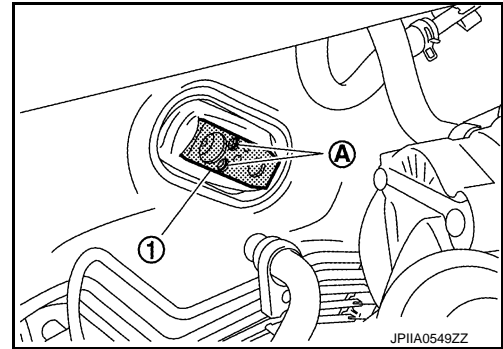
Cap or wrap the joint of the A/C piping and expansion valve with suitable material such as vinyl tape to avoid the entry of air.



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

CAUTION:

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



INSTALLATION

Note the following items and then install in the reverse order of removal.

CAUTION:

- Replace O-rings with new ones. Then apply compressor oil to them when installing.
- Check for leakages when recharging refrigerant.

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SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Compressor

INFOID:000000009718664

Model	VALEO THERMAL SYSTEMS JAPAN make DKS-17D	
Type	Fixation displacement swash plate	
Displacement cm ³ (cu in)/rev	Max.	175 (10.7)
Cylinder bore × stroke (Max.) mm (in.)	30.5 (1.20) × 24 (0.94)	
Direction of rotation	Clockwise (viewed from clutch)	
Drive belt	Poly V	
Disc to pulley clearance mm (in.)	Standard	0.3 - 0.6 (0.012 - 0.024)

Lubricant

INFOID:000000009718665

Name	A/C System Oil Type S (DH-PS)	
Capacity mℓ (US fl oz, Imp fl oz)	Total in system	150 (5.07, 5.3)
	Compressor (service part) charging amount	150 (5.07, 5.3)

Refrigerant

INFOID:000000009718666

Type	HFC-134a (R-134a)
Capacity kg (lb)	0.60 (1.32)

Engine Idling Speed

INFOID:000000009718667

Refer to [EC-536, "Idle Speed"](#).

Belt Tension

INFOID:000000009718668

Refer to [EM-146, "Drive Belt"](#).