

SECTION **HA** HEATER & AIR CONDITIONING SYSTEM

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

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The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

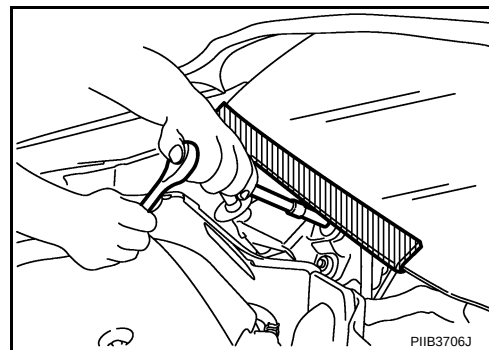
WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

Precaution for Procedure without Cowl Top Cover

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



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

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WARNING:

- CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. These refrigerants must never be mixed, even in the smallest amounts. If the refrigerants are mixed a compressor malfunction is likely to occur.
- Use only specified oil for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If oil other than that specified is used, compressor malfunction is likely to occur.
- The specified HFC-134a (R-134a) oil rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:
 - When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.
 - When installing refrigerant components to a vehicle, do not remove the caps (unseal) until just before connecting the components. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.
 - Only use the specified oil from a sealed container. Immediately reseal containers of oil. Without proper sealing, oil will become moisture saturated and should not be used.
 - Avoid breathing A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.
- Do not allow A/C oil to come in contact with styrofoam parts. Damage may result.

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General Refrigerant Precaution

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WARNING:

- Avoid breathing A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.
- Do not release refrigerant into the air. Use approved recovery/recycling equipment to capture the refrigerant every time an air conditioning system is discharged.
- Always wear eye and hand protection (goggles and gloves) when working with any refrigerant or air conditioning system.
- Do not store or heat refrigerant containers above 52°C (126° F).
- Do not heat a refrigerant container with an open flame; if container warming is required, place the bottom of the container in a warm pail of water.
- Do not intentionally drop, puncture, or incinerate refrigerant containers.
- Keep refrigerant away from open flames: poisonous gas will be produced if refrigerant burns.
- Refrigerant will displace oxygen, therefore be certain to work in well ventilated areas to prevent suffocation.
- Do not pressure test or leak test HFC-134a (R-134a) service equipment and/or vehicle air conditioning systems with compressed air during repair. Some mixtures of air and HFC-134a (R-134a) have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.

Oil Precaution

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- Use only specified oil for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If oil other than that specified is used, compressor malfunction is likely to occur.
- The specified HFC-134a (R-134a) oil rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:
 - When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.
 - When installing refrigerant components to a vehicle, do not remove the caps (unseal) until just before connecting the components. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.
 - Only use the specified oil from a sealed container. Immediately reseal containers of oil. Without proper sealing, oil will become moisture saturated and should not be used.
- Avoid breathing A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.
- Do not allow A/C oil to come in contact with styrofoam parts. Damage may result.

Precaution for Refrigerant Connection

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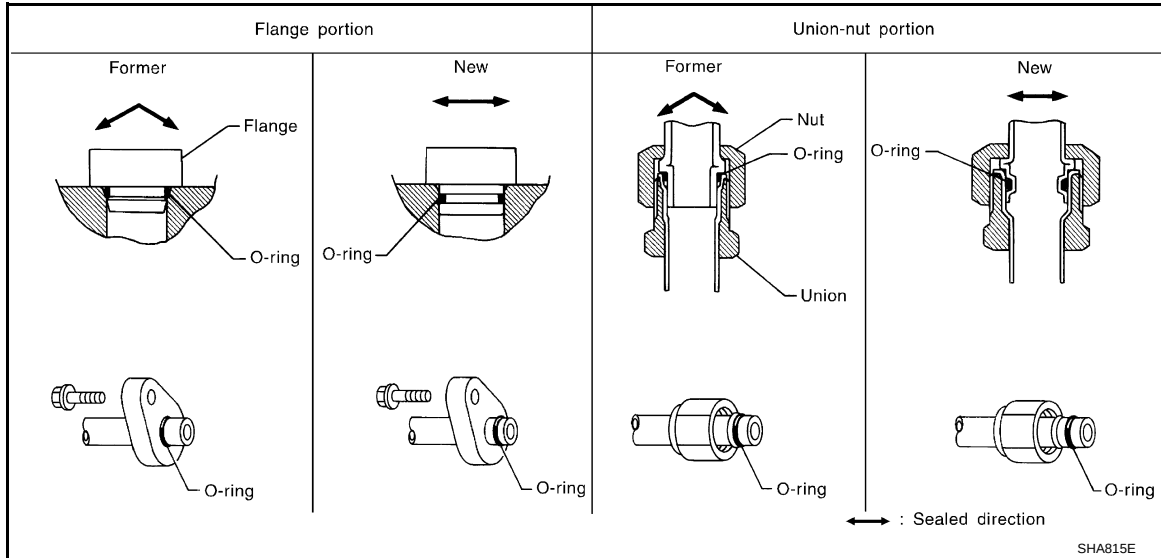
A new type refrigerant connection has been introduced to all refrigerant lines except the following location.

- Expansion valve to evaporator
- Refrigerant pressure sensor to condenser

PRECAUTIONS

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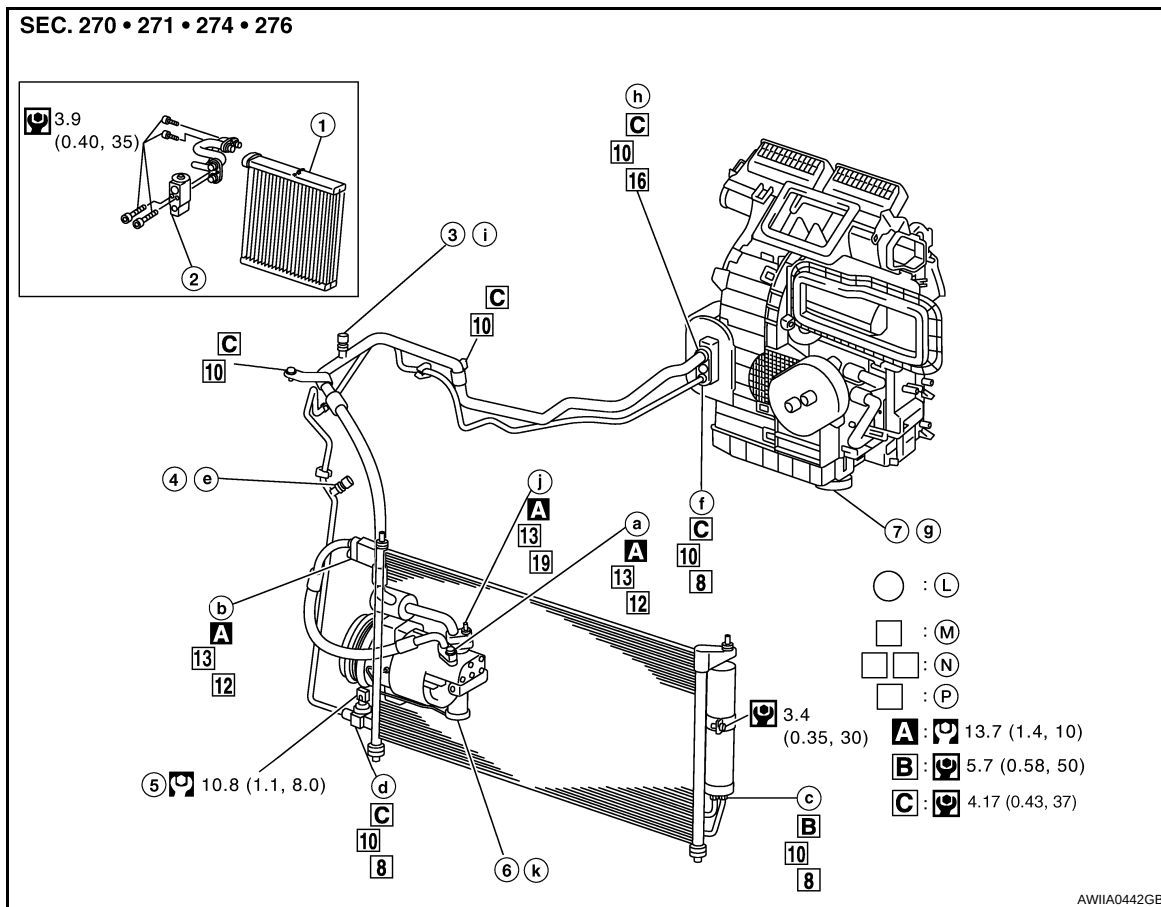
FEATURES OF NEW TYPE REFRIGERANT CONNECTION



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

O-RING AND REFRIGERANT CONNECTION

MR18DE

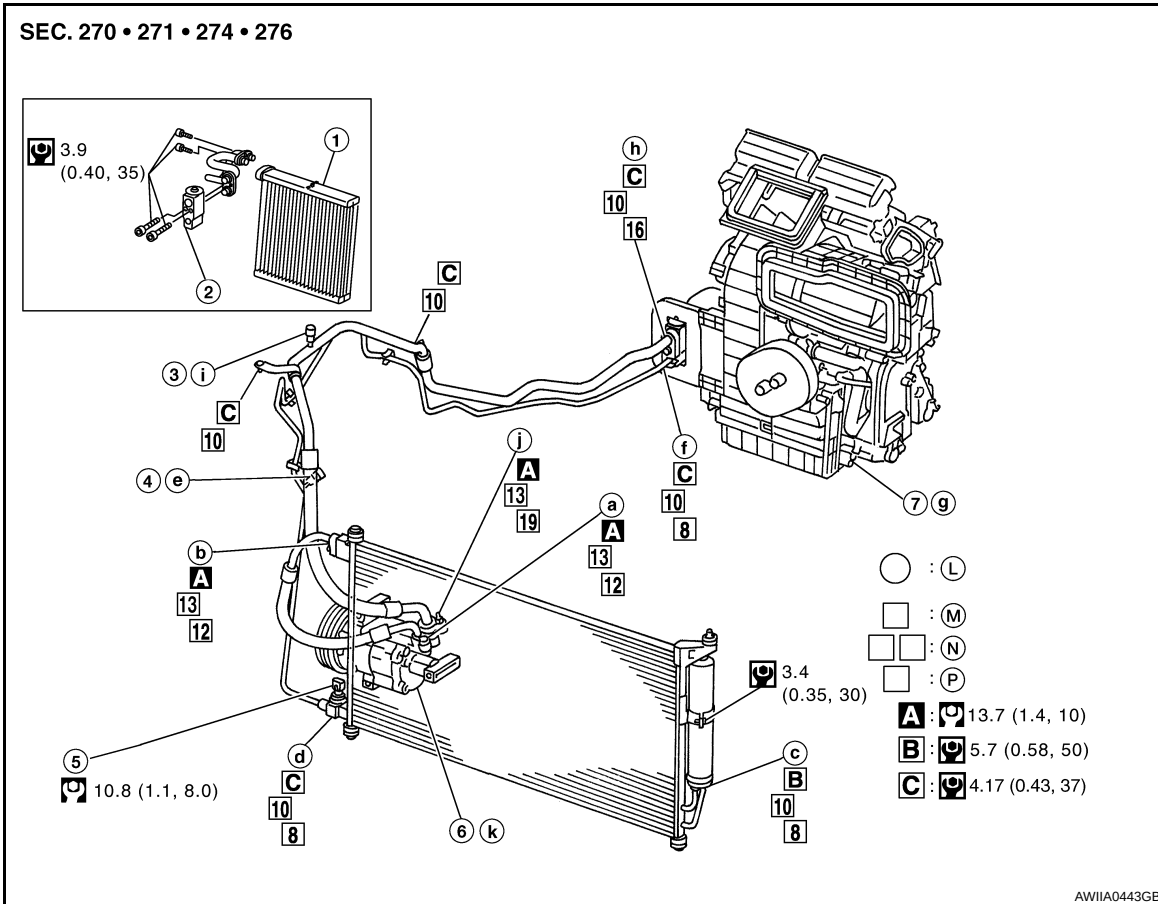


PRECAUTIONS

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|--------------------------------|------------------------------------|-------------------------------|
| 1. Evaporator | 2. Expansion valve | 3. Low-pressure service valve |
| 4. High-pressure service valve | 5. Refrigerant pressure sensor | 6. Shaft seal |
| 7. Drain hose | L. Refrigerant leak checking order | M. Tightening torque |
| N. Wrench size | P. O-ring size | |

HR16DE

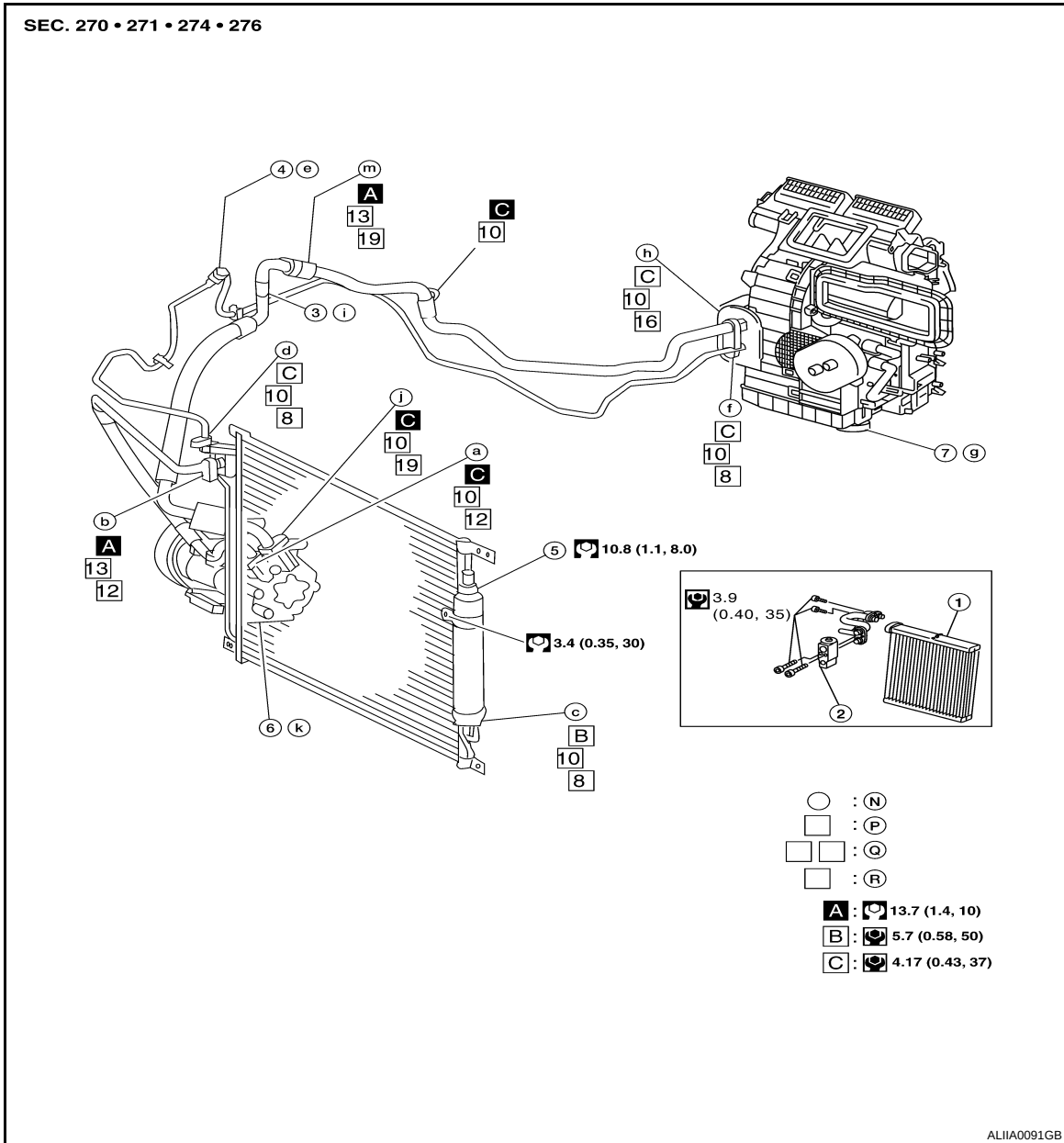


- | | | |
|--------------------------------|------------------------------------|-------------------------------|
| 1. Evaporator | 2. Expansion valve | 3. Low-pressure service valve |
| 4. High-pressure service valve | 5. Refrigerant pressure sensor | 6. Shaft seal |
| 7. Drain hose | L. Refrigerant leak checking order | M. Tightening torque |
| N. Wrench size | P. O-ring size | |

PRECAUTIONS

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K9K



- | | | |
|--------------------------------|------------------------------------|-------------------------------|
| 1. Evaporator | 2. Expansion valve | 3. Low-pressure service valve |
| 4. High-pressure service valve | 5. Refrigerant pressure sensor | 6. Shaft seal |
| 7. Drain hose | N. Refrigerant leak checking order | P. Tightening torque |
| Q. Wrench size | R. O-ring size | |

WARNING:

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

CAUTION:

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

PRECAUTIONS

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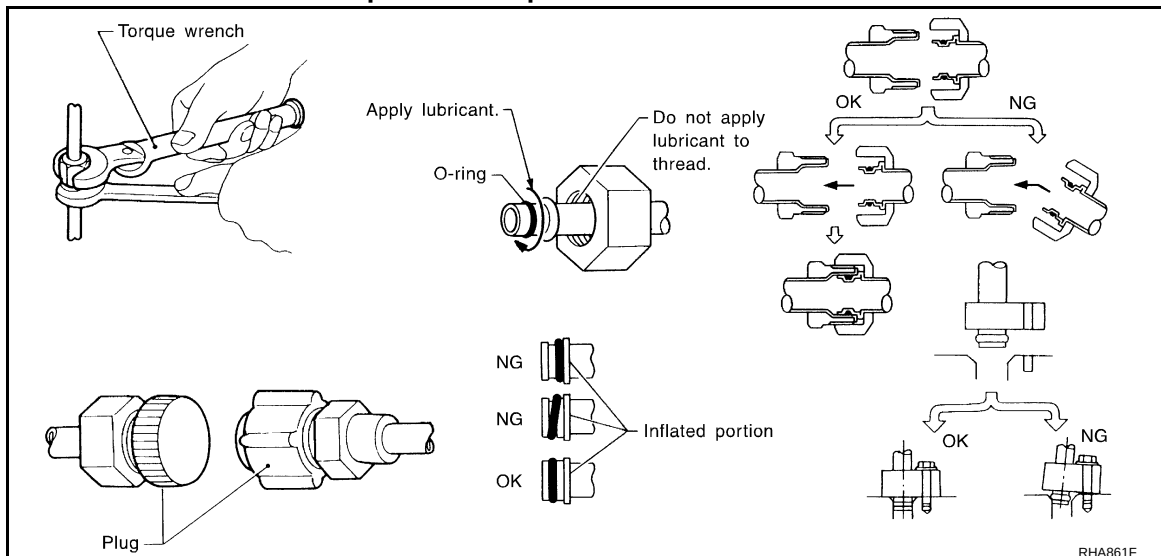
O-Ring Part Numbers and Specifications

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

CAUTION:

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

- When the compressor is removed, store it in the same position as it is when mounted on the vehicle. Doing so will cause oil to enter the low-pressure chamber.
- When connecting tubes, always use a torque wrench and a back-up wrench.
- After disconnecting tubes, immediately plug all openings to prevent entry of dirt and moisture.
- When installing an air conditioner in the vehicle, connect the pipes as the final stage of the operation. Do not remove the seal caps of pipes and other components until just before required for connection.
- Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.
- Thoroughly remove moisture from the refrigeration system before charging the refrigerant.
- Always replace used O-rings.
- When connecting tube, apply the specified A/C oil to circle of the O-rings as shown. Be careful not to apply oil to threaded portion.
- O-ring must be closely attached to dented portion of tube.
- When replacing the O-ring, be careful not to damage O-ring and tube.
- Connect tube until you hear it click, then tighten the nut or bolt by hand until snug. Make sure that the O-ring is installed to tube correctly.
- After connecting line, perform leak test and make sure that there is no leakage from connections. When the refrigerant leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.



Precaution for Service of Compressor

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

PRECAUTIONS

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- When the compressor is removed, store it in the same position as it is when mounted on the car.
- When replacing or repairing compressor, follow "Maintenance of Oil Quantity in Compressor" exactly. Refer to [HA-19, "Maintenance of Oil Quantity in Compressor"](#).
- Keep friction surfaces between clutch and pulley clean. If the surface is contaminated, with oil, wipe it off by using a clean waste cloth moistened with thinner.
- After compressor service operation, turn the compressor shaft by hand more than five turns in both directions. This will equally distribute oil inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for one hour.
- After replacing the compressor magnet clutch, apply voltage to the new one and check for usual operation.

Precaution for Service Equipment

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RECOVERY/RECYCLING EQUIPMENT

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

ELECTRONIC LEAK DETECTOR

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

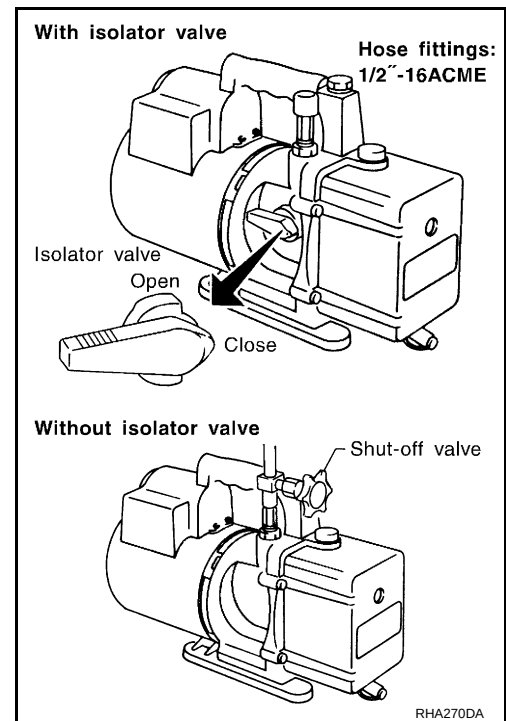
VACUUM PUMP

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

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

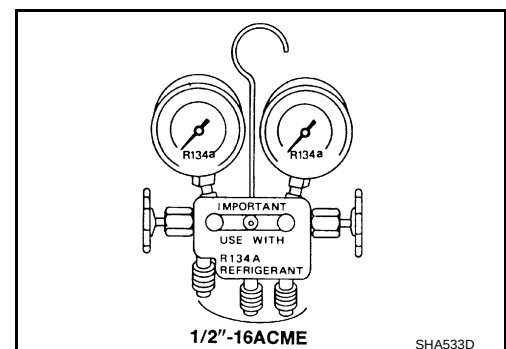
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has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

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



MANIFOLD GAUGE SET

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

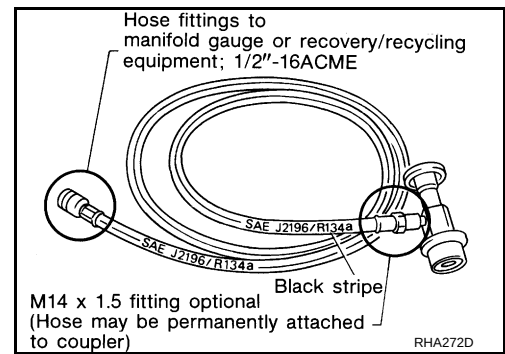


SERVICE HOSES

PRECAUTIONS

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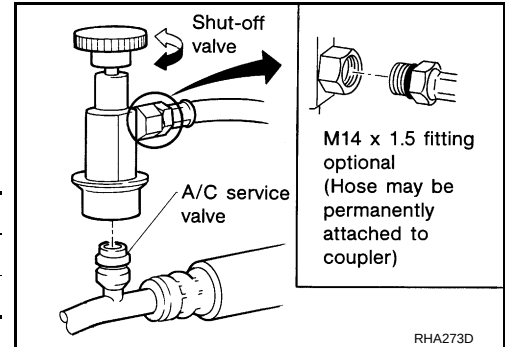
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

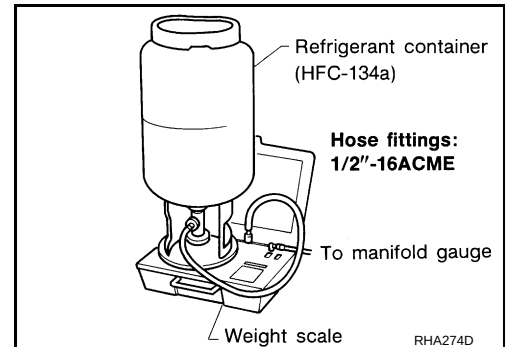
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



REFRIGERANT WEIGHT SCALE

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



CHARGING CYLINDER

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

Precaution for Leak Detection Dye

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- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety goggles to protect your eyes and enhance the visibility of the fluorescent dye.
- The fluorescent dye leak detector is not a replacement for an electronic refrigerant leak detector. The fluorescent dye leak detector should be used in conjunction with an electronic refrigerant leak detector to pinpoint refrigerant leaks.
- For your safety and your customer's satisfaction, read and follow all manufacture's operating instructions and precautions prior to performing the work.
- A compressor shaft seal should not be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electronic refrigerant leak detector.
- Always remove any remaining dye from the leak area after repairs are complete to avoid a misdiagnosis during a future service.
- Do not allow dye to come into contact with painted body panels or interior components. If dye is spilled, clean immediately with the approved dye cleaner. Fluorescent dye left on a surface for an extended period of time cannot be removed.

PRECAUTIONS

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

IDENTIFICATION LABEL FOR VEHICLE

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

NOTE:

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

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PREPARATION

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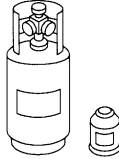
PREPARATION

PREPARATION

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

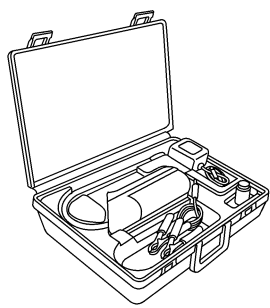
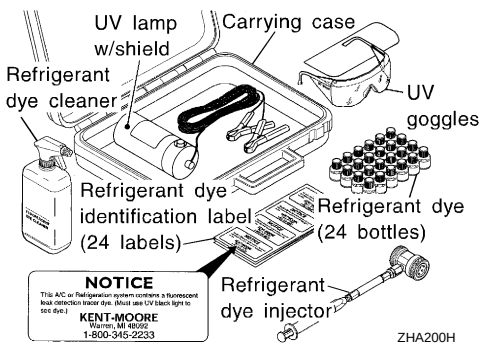
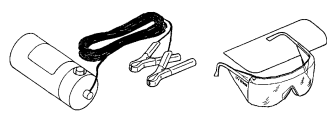
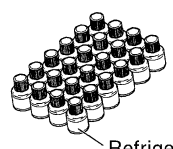
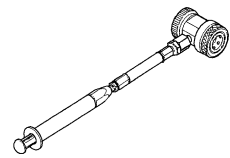
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Never mix HFC-134a refrigerant and/or its specified oil with CFC-12 (R-12) refrigerant and/or its oil. Separate and non-interchangeable service equipment must be used for handling each type of refrigerant/oil. Refrigerant container fittings, service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

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

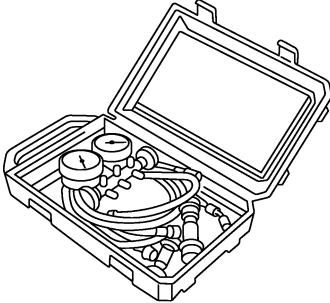
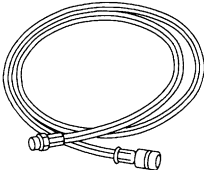
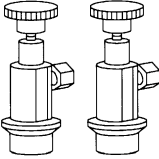
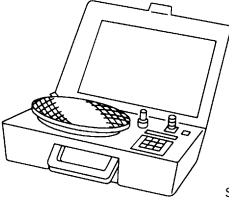
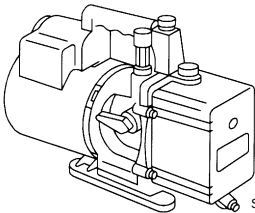
PREPARATION

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Tool number (Kent-Moore No.) Tool name	Description	A
— (J-41995) Electronic refrigerant leak detector  AHA281A	Checking for refrigerant leaks Power supply: DC 12V (battery terminal)	B C D
— (J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) Refrigerant dye injector (J-41447) Quantity 24, 1/4 ounce bottles of HFC-134a (R-134a) fluorescent leak detection dye (J-43872) Refrigerant dye cleaner  NOTICE This A/C or Refrigeration system contains a fluorescent leak detection tracer dye. Refer any UV light to the Sun. KENT-MOORE Warren, MI 48090 1-800-345-2233 ZHA200H	Leak detection dye Power supply: DC 12V (battery terminal)	E F G H
— (J-42220) Fluorescent dye leak detector  SHA438F	Checking for refrigerant leaks when fluorescent dye is installed in A/C system. Includes: UV lamp and UV safety goggles Power supply: DC 12V (battery terminal)	HA J K
— (J-41447) HFC-134a (R-134a) fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)  Refrigerant dye (24 bottles) SHA439F	Application: For HFC-134a (R-134a) PAG oil Container: 1/4 ounce (7.4cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)	L M
— (J-41459) HFC-134a (R-134a) Dye injector Use with (J-41447) 1/4 ounce bottles  SHA440F	For injecting 1/4 ounce of fluorescent leak detection dye into A/C system.	N O
— (J-43872) Refrigerant dye cleaner  SHA441F	For cleaning dye spills.	P

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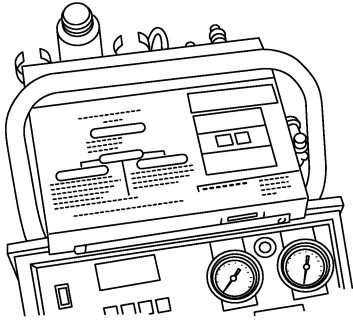
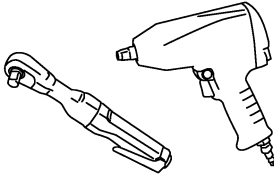
Tool number (Kent-Moore No.) Tool name		Description
— (J-39183-C) Manifold gauge set (with hoses and couplers)	 RJIA0196E	Identification: - The gauge face indicates R-134a. - Fitting size: Thread size 1/2"-16 ACME
Service hoses: (J-39500-72B) High side hose (J-39500-72R) Low side hose (J-39500-72Y) Utility hose	 S-NT201	Hose colors: - Low side hose: Blue with black stripe - High side hose: Red with black stripe - Utility hose: Yellow with black stripe or green with black stripe Hose fitting to gauge: 1/2"-16 ACME
Service couplers: (J-39500-20A) High side coupler (J-39500-24A) Low side coupler	 S-NT202	Hose fitting to service hose: M14 x 1.5 fitting is optional or permanently attached.
— (J-39699) Refrigerant weight scale	 S-NT200	For measuring of refrigerant Fitting size - thread size: 1/2" - 16 ACME
— (J-39649) Vacuum pump (Including the isolator valve)	 S-NT203	Capacity: - Air displacement: 4 CFM - Micron rating: 20 microns - Oil capacity: 482 g (17 oz) Fitting size: Thread size 1/2"-16 ACME

Commercial Service Tool

INFOID:000000001396438

PREPARATION

< PREPARATION >

(Kent-Moore No.) Tool name	Description	A
(J-41810-NI) Refrigerant identifier equipment (R-134a)  RJIA0197E	For checking refrigerant purity and system contamination	B C D
Power tool  PBIC0190E	Loosening bolts and nuts	E F G

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REFRIGERATION SYSTEM

< FUNCTION DIAGNOSIS >

FUNCTION DIAGNOSIS

REFRIGERATION SYSTEM

Refrigerant Cycle

INFOID:000000001396439

REFRIGERANT FLOW

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

FREEZE PROTECTION

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

Refrigerant System Protection

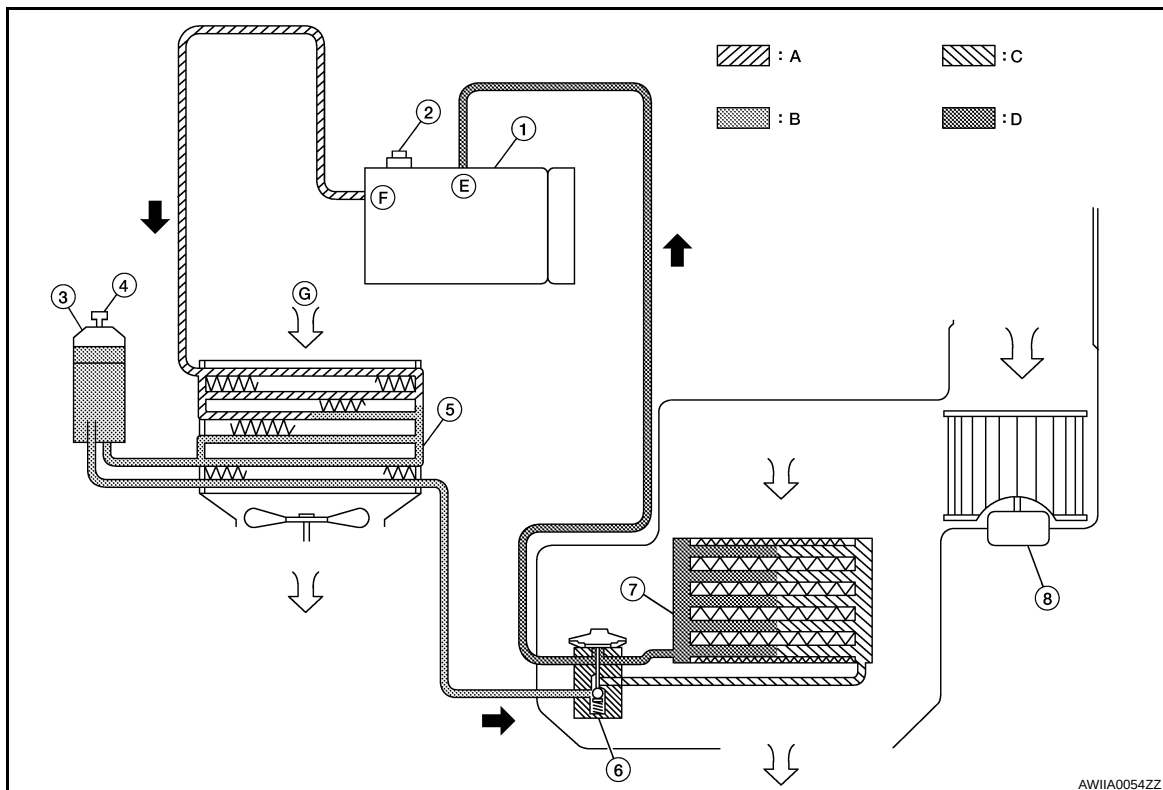
INFOID:000000001396440

REFRIGERANT PRESSURE SENSOR

The refrigerant system is protected against excessively high or low pressures by the refrigerant pressure sensor, located on the condenser. If the system pressure rises above, or falls below the specifications, the refrigerant pressure sensor detects the pressure inside the refrigerant line and sends the voltage signal to the ECM. ECM makes the A/C relay go OFF and stops the compressor when pressure on the high-pressure side detected by refrigerant pressure sensor is over about 2,746 kPa (27.46 bar, 28.0 kg/cm², 398 psi), or below about 134 kPa (1.34 bar, 1.4 kg/cm², 20 psi).

PRESSURE RELIEF VALVE

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



- | | | |
|--------------------------------|--------------------------|--------------------|
| 1. Compressor | 2. Pressure relief valve | 3. Liquid tank |
| 4. Refrigerant pressure sensor | 5. Condenser | 6. Expansion valve |

REFRIGERATION SYSTEM

< FUNCTION DIAGNOSIS >

- | | | |
|-------------------------|------------------------|----------------------|
| 7. Evaporator | 8. Blower motor | A. High-pressure gas |
| B. High-pressure liquid | C. Low-pressure liquid | D. Low-pressure gas |
| E. Suction port | F. Discharge port | G. Outside air |

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OIL

< FUNCTION DIAGNOSIS >

OIL

Maintenance of Oil Quantity in Compressor

INFOID:000000001396442

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

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

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

OIL

MR18DE and HR16DE	: NISSAN A/C System Oil Type R
K9K	: NISSAN A/C System Oil Type S

OIL

< ON-VEHICLE MAINTENANCE >

ON-VEHICLE MAINTENANCE

OIL

Maintenance of Oil Quantity in Compressor

INFOID:000000001396443

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

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

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

OIL

MR18DE and HR16DE : NISSAN A/C System Oil Type R
K9K : NISSAN A/C System Oil Type S

OIL ADJUSTING PROCEDURE FOR COMPONENTS REPLACEMENT EXCEPT COMPRESSOR

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

Amount Of Oil To Be Added

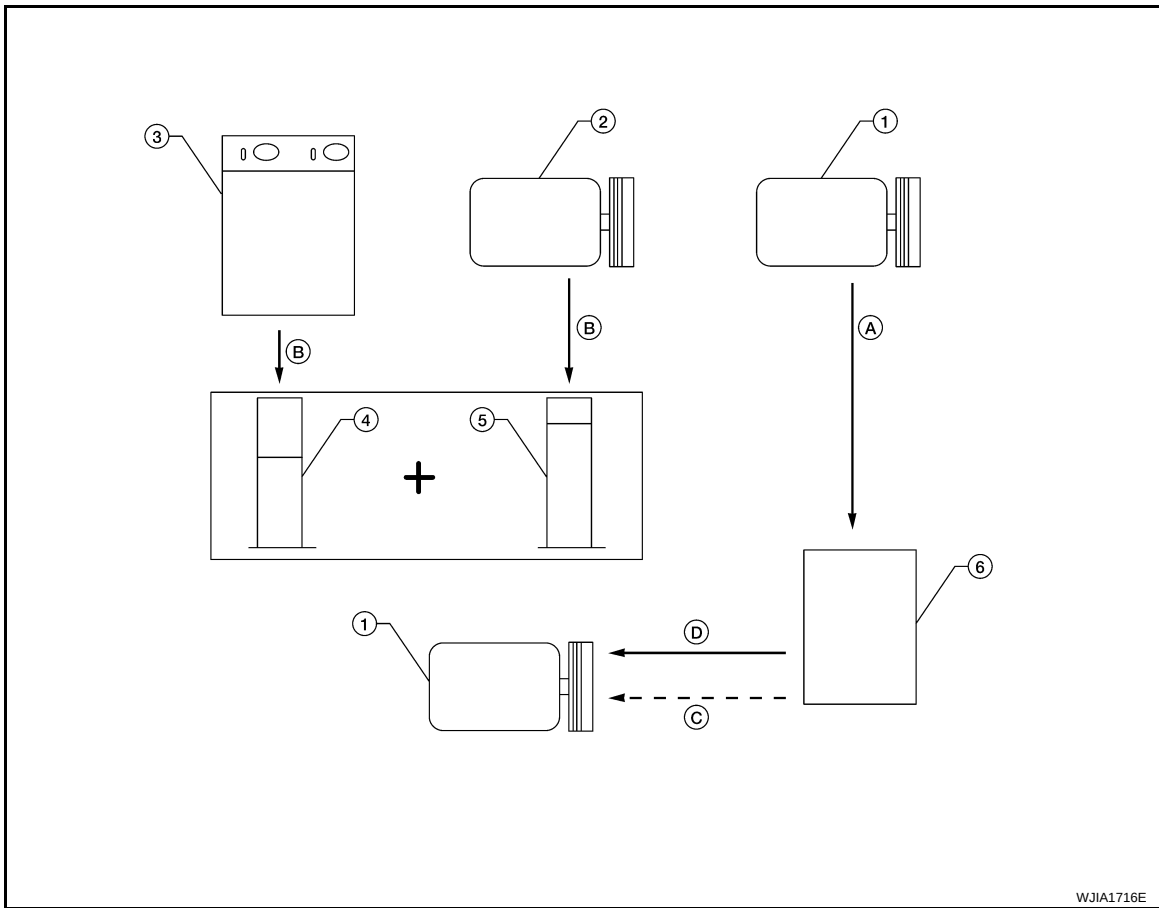
Part replaced	Oil to be added to system	Remarks
	Amount of oil m ℓ (US fl oz, Imp fl oz)	
Evaporator	35 (1.2, 1.2)	-
Condenser	15 (0.5, 0.5)	-
Liquid tank	5 (0.2, 0.2)	-
In case of refrigerant leak	30 (1.0, 1.1)	Large leak
	None *1	Small leak *1

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

OIL ADJUSTING PROCEDURE FOR COMPRESSOR REPLACEMENT

OIL

< ON-VEHICLE MAINTENANCE >



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

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

REFRIGERATION SYSTEM

< ON-VEHICLE MAINTENANCE >

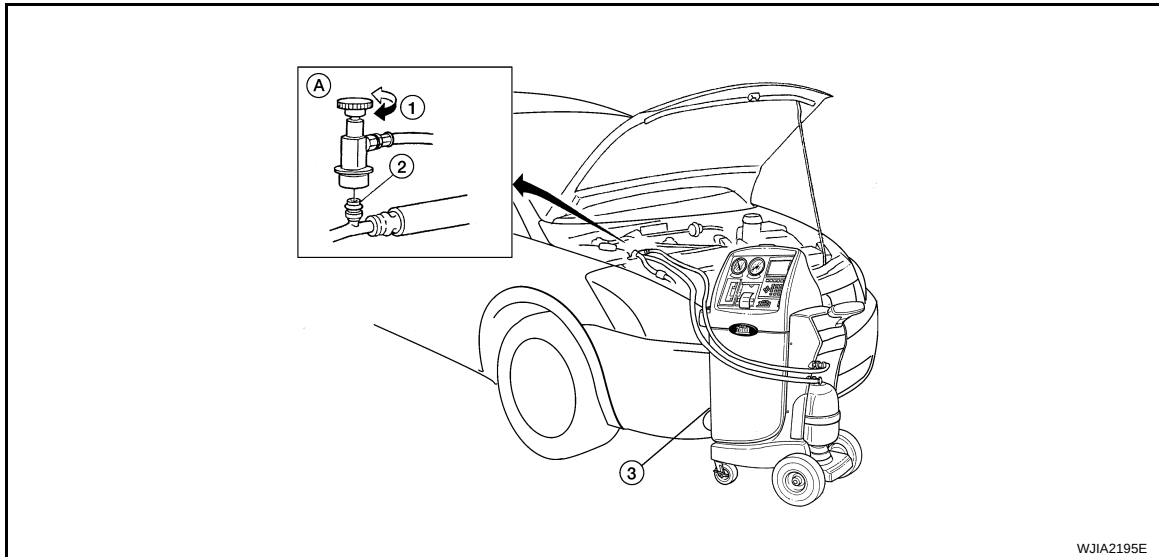
REFRIGERATION SYSTEM

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

INFOID:000000001396444

SETTING OF SERVICE TOOLS AND EQUIPMENT

Discharging Refrigerant

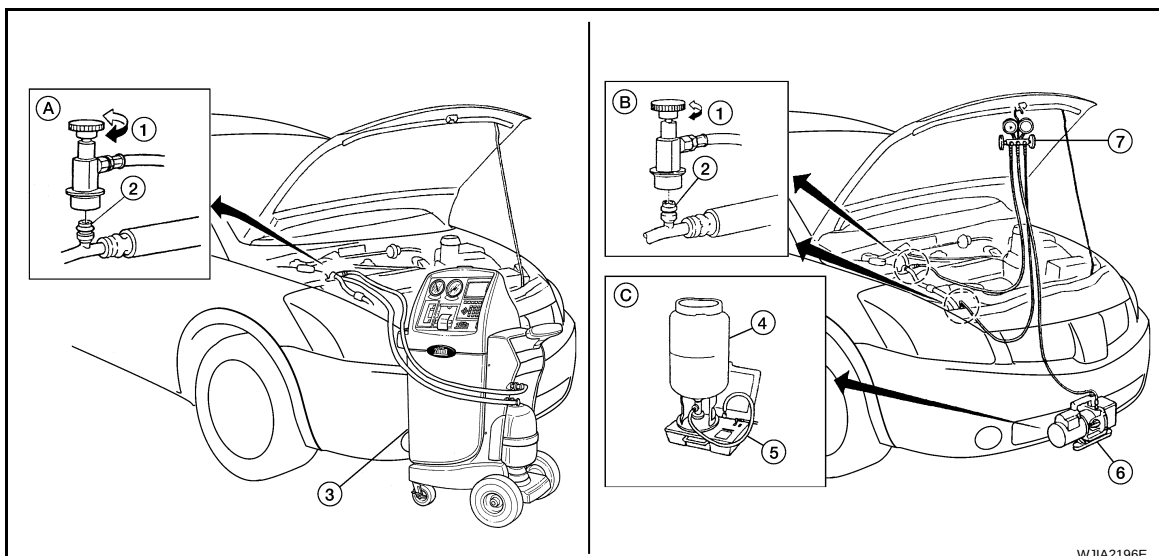


- 1. Shut-off valve
- 2. A/C service valve
- 3. Recovery/recycling equipment
- A. Preferred (best) method

WARNING:

Avoid breathing A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) refrigerant from the A/C system using certified service equipment meeting requirements of SAE J2210 HFC-134a (R-134a) recycling equipment or SAE J2201 HFC-134a (R-134a) recovery equipment. If an accidental system discharge occurs, ventilate the work area before resuming service. Additional health and safety information may be obtained from the refrigerant and oil manufacturers.

Evacuating System and Charging Refrigerant

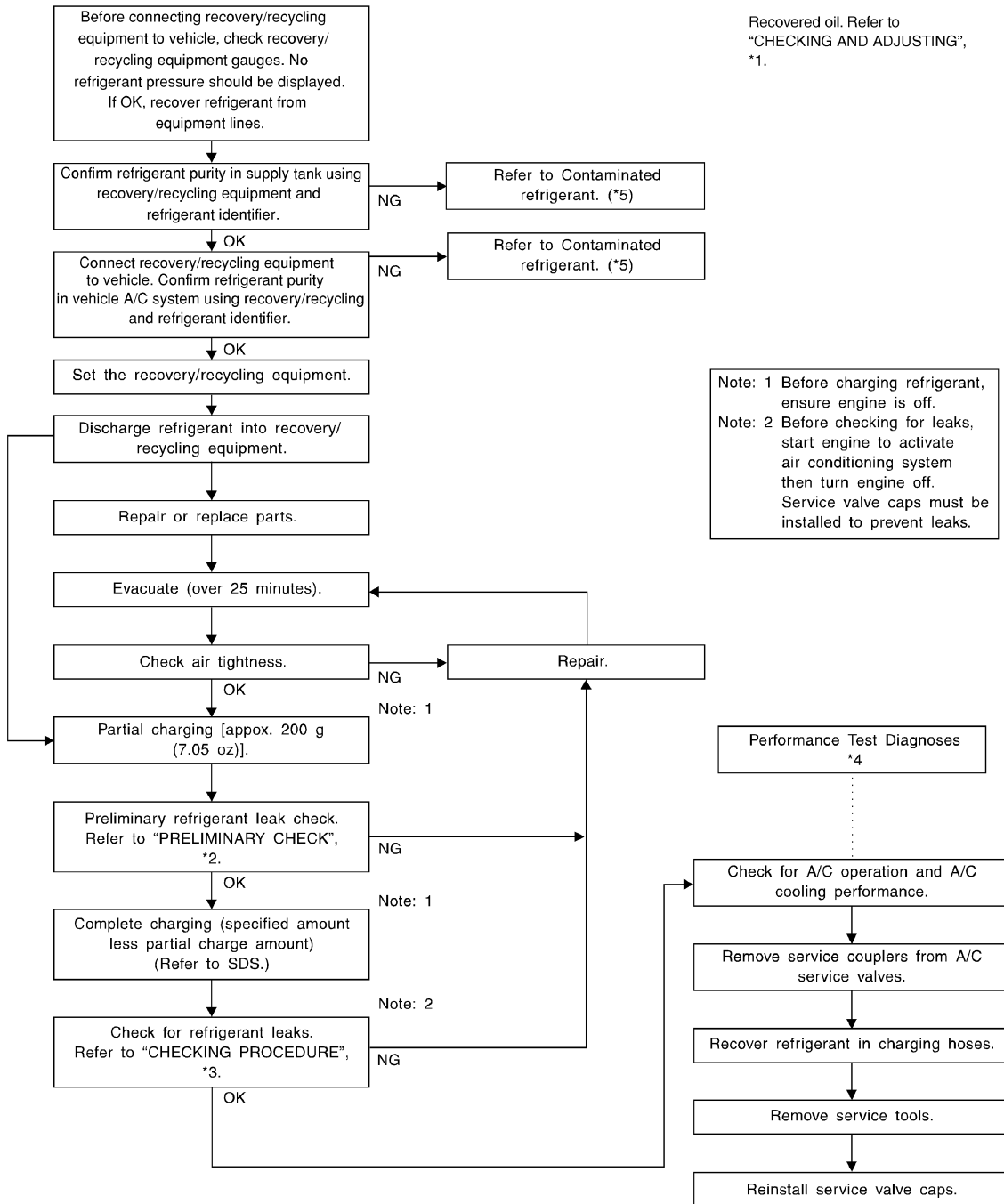


- 1. Shut-off valve
- 2. A/C service valve
- 3. Recovery/recycling equipment
- 4. Refrigerant container (HFC-134a)
- 5. Weight scale (J-39650)
- 6. Evacuating vacuum pump (J-39699)

REFRIGERATION SYSTEM

< ON-VEHICLE MAINTENANCE >

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



WJIA1923E

*1 [HA-19, "Maintenance of Oil Quantity in Compressor"](#)

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

*3 [HA-25, "Electronic Refrigerant Leak Detector"](#)

*4 [HAC-299, "Component Function Check"](#)

Checking of Refrigerant Leaks

INFOID:000000001396447

Perform a visual inspection of all refrigeration parts, fittings, hoses and components for signs of A/C oil leakage, damage and corrosion. A/C oil leakage may indicate an area of refrigerant leakage. Allow extra inspection.

REFRIGERATION SYSTEM

< ON-VEHICLE MAINTENANCE >

tion time in these areas when using either an electronic refrigerant leak detector or fluorescent dye leak detector.

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

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

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

CAUTION:

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

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FLUORESCENT LEAK DETECTOR

< ON-VEHICLE MAINTENANCE >

FLUORESCENT LEAK DETECTOR

Checking System for Leaks Using the Fluorescent Leak Detector

INFOID:000000001396445

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

NOTE:

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

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

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

Dye Injection

INFOID:000000001396446

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

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

CAUTION:

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

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

ELECTRICAL LEAK DETECTOR

< ON-VEHICLE MAINTENANCE >

ELECTRICAL LEAK DETECTOR

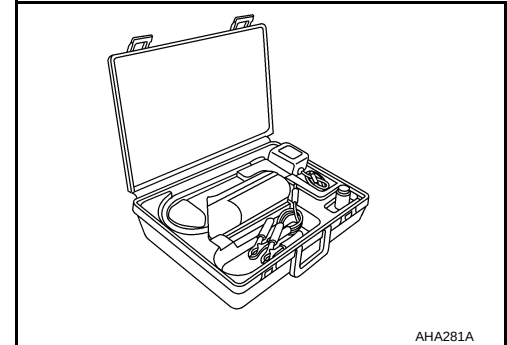
Electronic Refrigerant Leak Detector

INFOID:000000001396448

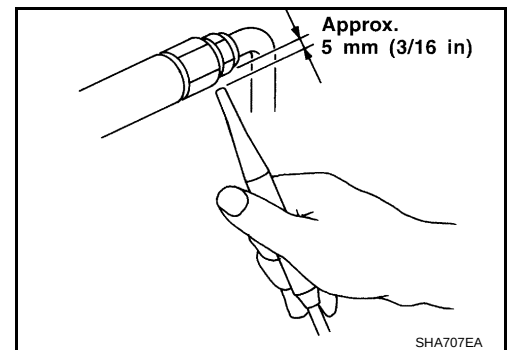
PRECAUTIONS FOR HANDLING LEAK DETECTOR

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

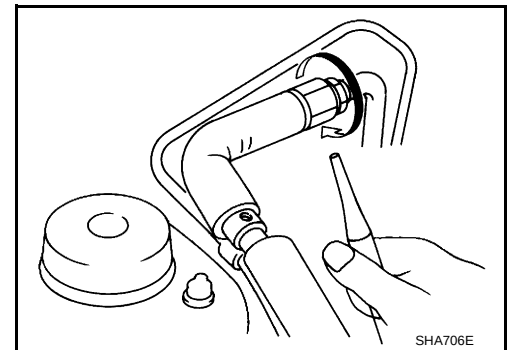
The leak detector is a delicate device. In order to use the leak detector properly, read the operating instructions and perform any specified maintenance.



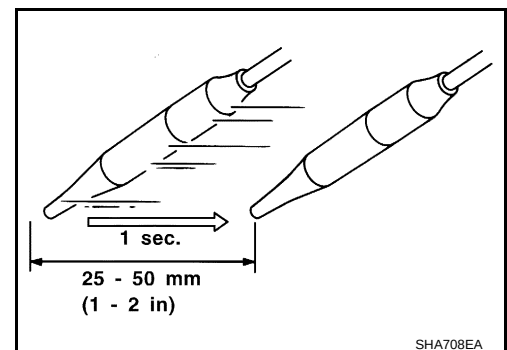
1. Position probe approximately 5 mm (3/16 in) away from point to be checked.



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



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



CHECKING PROCEDURE

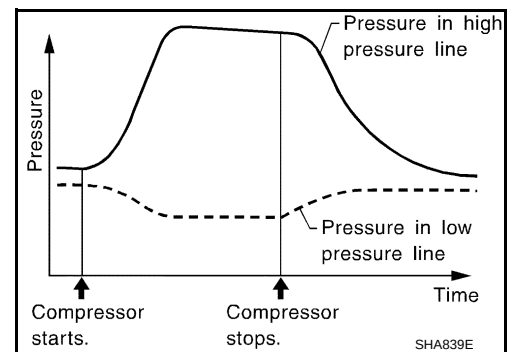
To prevent inaccurate or false readings, make sure there is no refrigerant vapor, shop chemicals, or cigarette smoke in the vicinity of the vehicle. Perform the leak test in calm area (low air/wind movement) so that the leaking refrigerant is not dispersed.

1. Turn engine OFF.

ELECTRICAL LEAK DETECTOR

< ON-VEHICLE MAINTENANCE >

2. Connect a suitable A/C manifold gauge set to the A/C service ports.
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.45 bar, 3.52 kg/cm², 50 psi) above 16°C. If less than specification, recover/evacuate and recharge the system with the specified amount of refrigerant.
NOTE:
At temperatures below 16°C, leaks may not be detected since the system may not reach 345 kPa (3.45 bar, 3.52 kg/cm², 50 psi).
4. Perform the leak test from the high-pressure side (compressor discharge a to evaporator inlet f) to the low-pressure side (evaporator drain hose g to shaft seal k). Refer to [HA-27, "Component"](#). Perform a leak check for the following areas carefully. Clean the component to be checked and move the leak detected probe completely around the connection/component.
 - Compressor
Check the fitting of high- and low-pressure flexible hoses, relief valve and shaft seal.
 - Condenser
Check the fitting of high-pressure flexible hose and pipe, refrigerant pressure sensor.
 - Liquid tank
Check the refrigerant connection.
 - Service valves
Check all around the service valves. Ensure service valve caps are secured on the service valves (to prevent leaks).
NOTE:
After removing A/C manifold gauge set from service valves, wipe any residue from valves to prevent any false readings by leak detector.
 - Cooling unit (Evaporator)
With engine OFF, turn blower fan on "High" for at least 15 seconds to dissipate any refrigerant trace in the cooling unit. Wait a minimum of 10 minutes accumulation time (refer to the manufacturer's recommended procedure for actual wait time) before inserting the leak detector probe into the drain hose. Keep the probe inserted for at least 10 seconds. Use caution not to contaminate the probe tip with water or dirt that may be in the drain hose.
5. If a leak detector detects a leak, verify at least once by blowing compressed air into area of suspected leak, then repeat check as outlined above.
6. Do not stop when one leak is found. Continue to check for additional leaks at all system components. If no leaks are found, perform steps 7-10.
7. Start engine.
8. Set the heater A/C control as follows;
 - a. A/C switch: ON
 - b. Mode control dial position: VENT (Ventilation)
 - c. Intake door lever position: Recirculation
 - d. Max. cold temperature
 - e. Fan speed: High
9. Run engine at 1,500 rpm for at least 2 minutes.
10. Turn engine off and perform leak check again following steps 4 through 6 above.
Refrigerant leaks should be checked immediately after stopping the engine. Begin with the leak detector at the compressor. The pressure on the high-pressure side will gradually drop after refrigerant circulation stops and pressure on the low-pressure side will gradually rise, as shown in the graph. Some leaks are more easily detected when pressure is high.
11. Before connecting recovery/recycling equipment to vehicle, check recovery/recycling equipment gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover refrigerant from equipment lines.
12. Discharge A/C system using approved refrigerant recovery/recycling equipment. Repair the leaking fitting or component if necessary.
13. Evacuate and recharge A/C system and perform the leak test to confirm no refrigerant leaks.
14. Perform A/C performance test to ensure system works properly.



REFRIGERATION SYSTEM

< ON-VEHICLE REPAIR >

ON-VEHICLE REPAIR

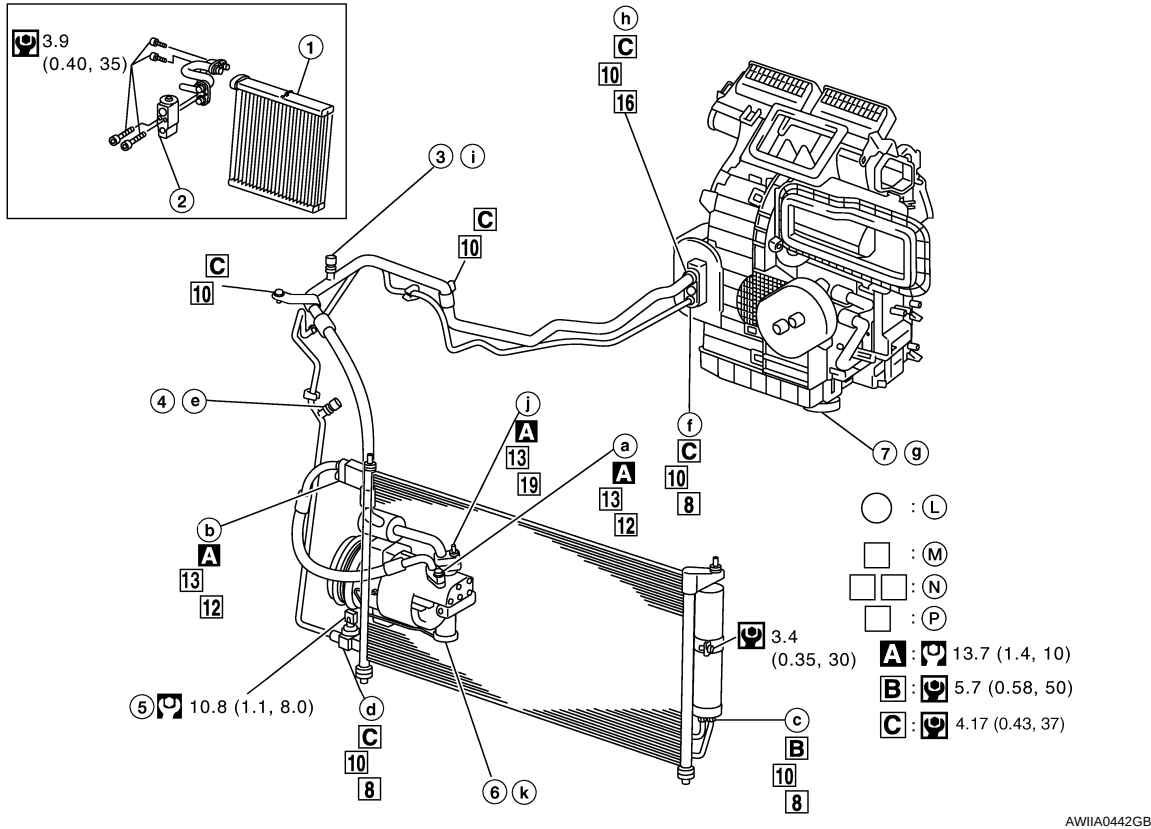
REFRIGERATION SYSTEM

Component

INFOID:000000001404235

MR18DE

SEC. 270 • 271 • 274 • 276



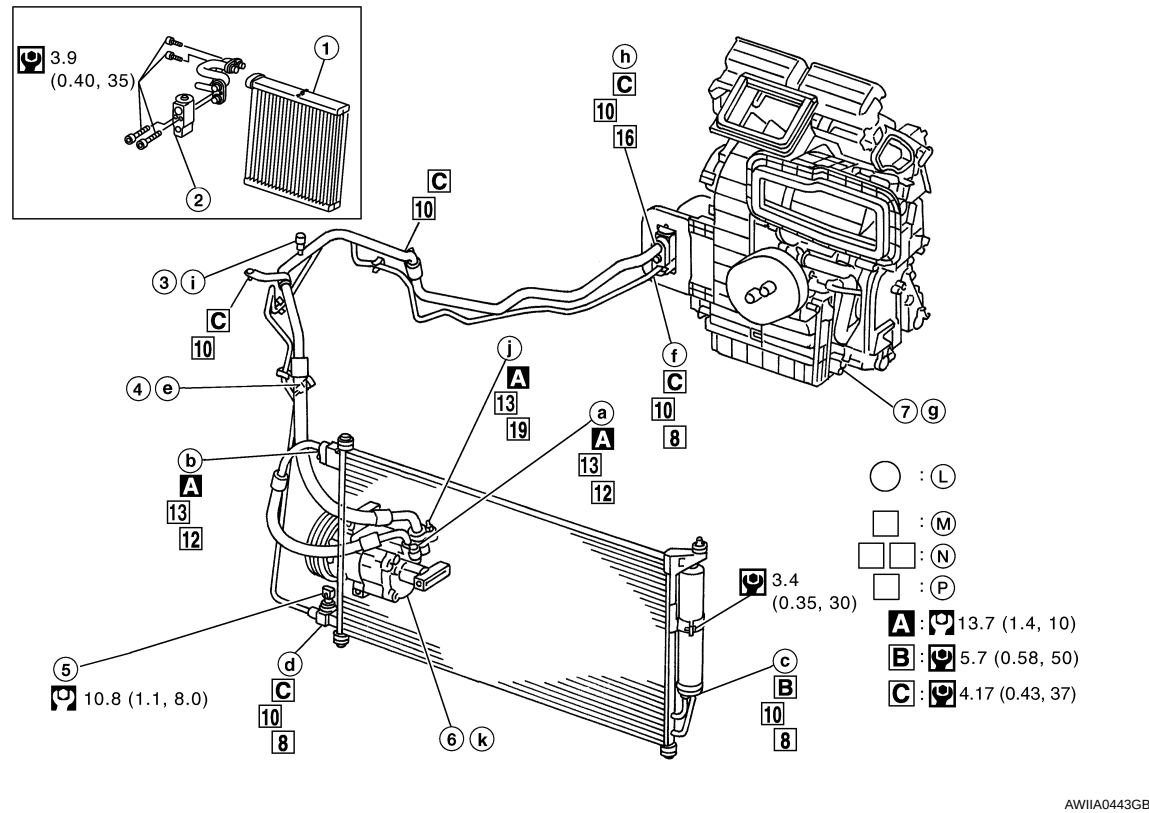
- | | | |
|--------------------------------|------------------------------------|-------------------------------|
| 1. Evaporator | 2. Expansion valve | 3. Low-pressure service valve |
| 4. High-pressure service valve | 5. Refrigerant pressure sensor | 6. Shaft seal |
| 7. Drain hose | L. Refrigerant leak checking order | M. Tightening torque |
| N. Wrench size | P. O-ring size | |

REFRIGERATION SYSTEM

< ON-VEHICLE REPAIR >

HR16DE

SEC. 270 • 271 • 274 • 276

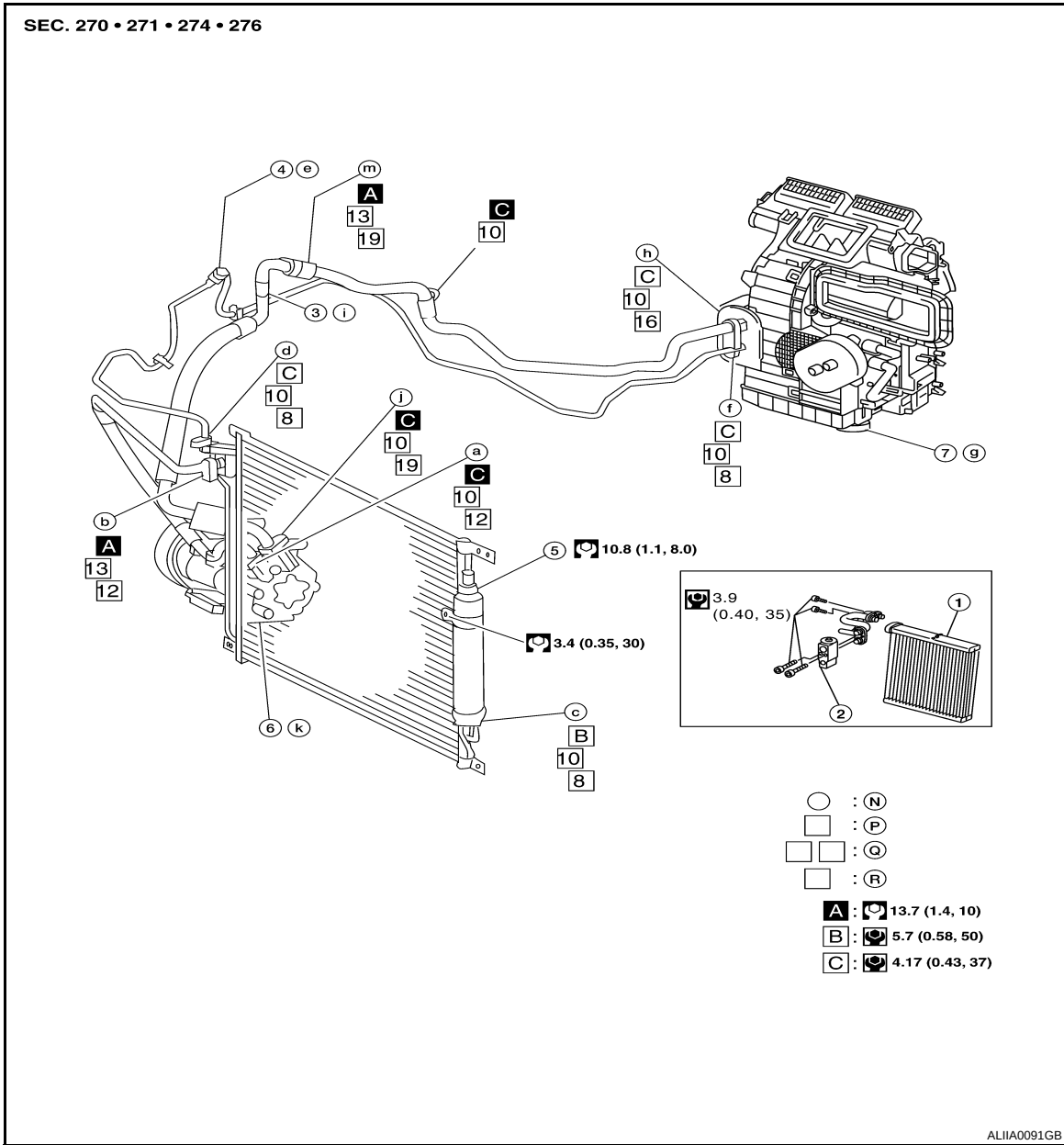


- | | | |
|--------------------------------|------------------------------------|-------------------------------|
| 1. Evaporator | 2. Expansion valve | 3. Low-pressure service valve |
| 4. High-pressure service valve | 5. Refrigerant pressure sensor | 6. Shaft seal |
| 7. Drain hose | L. Refrigerant leak checking order | M. Tightening torque |
| N. Wrench size | P. O-ring size | |

REFRIGERATION SYSTEM

< ON-VEHICLE REPAIR >

K9K



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|--------------------------------|------------------------------------|-------------------------------|
| 1. Evaporator | 2. Expansion valve | 3. Low-pressure service valve |
| 4. High-pressure service valve | 5. Refrigerant pressure sensor | 6. Shaft seal |
| 7. Drain hose | N. Refrigerant leak checking order | P. Tightening torque |
| Q. Wrench size | R. O-ring size | |

Refer to [HA-4, "Precaution for Refrigerant Connection"](#).

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

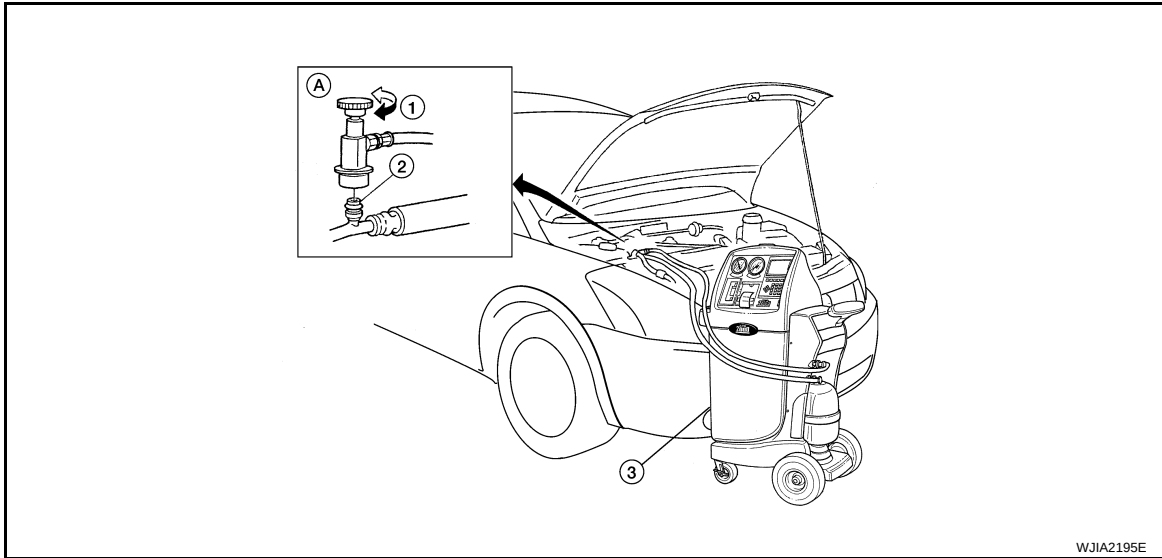
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SETTING OF SERVICE TOOLS AND EQUIPMENT

Discharging Refrigerant

REFRIGERATION SYSTEM

< ON-VEHICLE REPAIR >

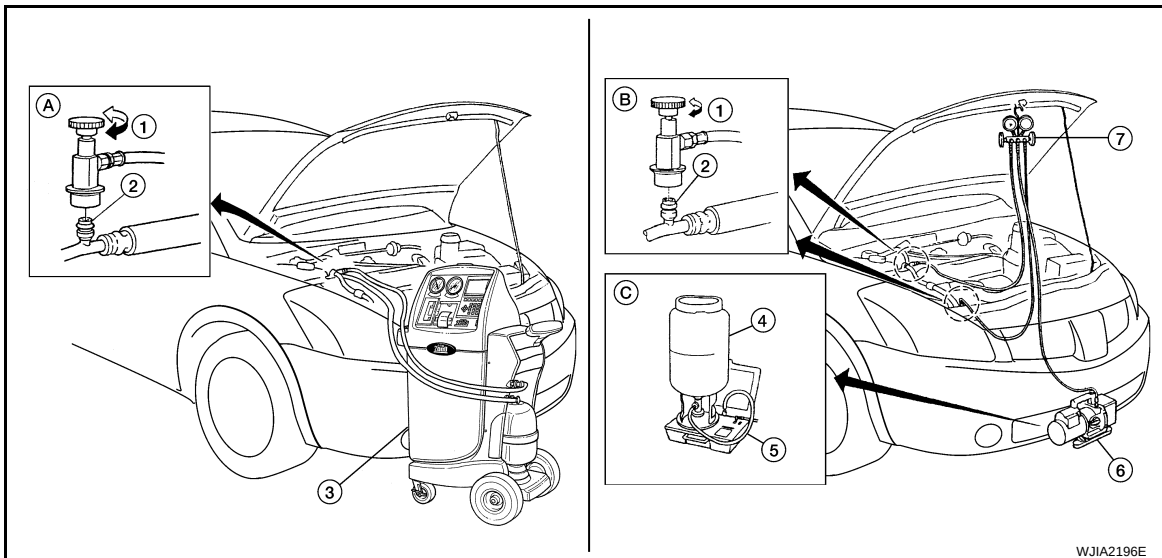


- | | | |
|----------------------------|----------------------|---------------------------------|
| 1. Shut-off valve | 2. A/C service valve | 3. Recovery/recycling equipment |
| A. Preferred (best) method | | |

WARNING:

Avoid breathing A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) refrigerant from the A/C system using certified service equipment meeting requirements of SAE J2210 HFC-134a (R-134a) recycling equipment or SAE J2201 HFC-134a (R-134a) recovery equipment. If an accidental system discharge occurs, ventilate the work area before resuming service. Additional health and safety information may be obtained from the refrigerant and oil manufacturers.

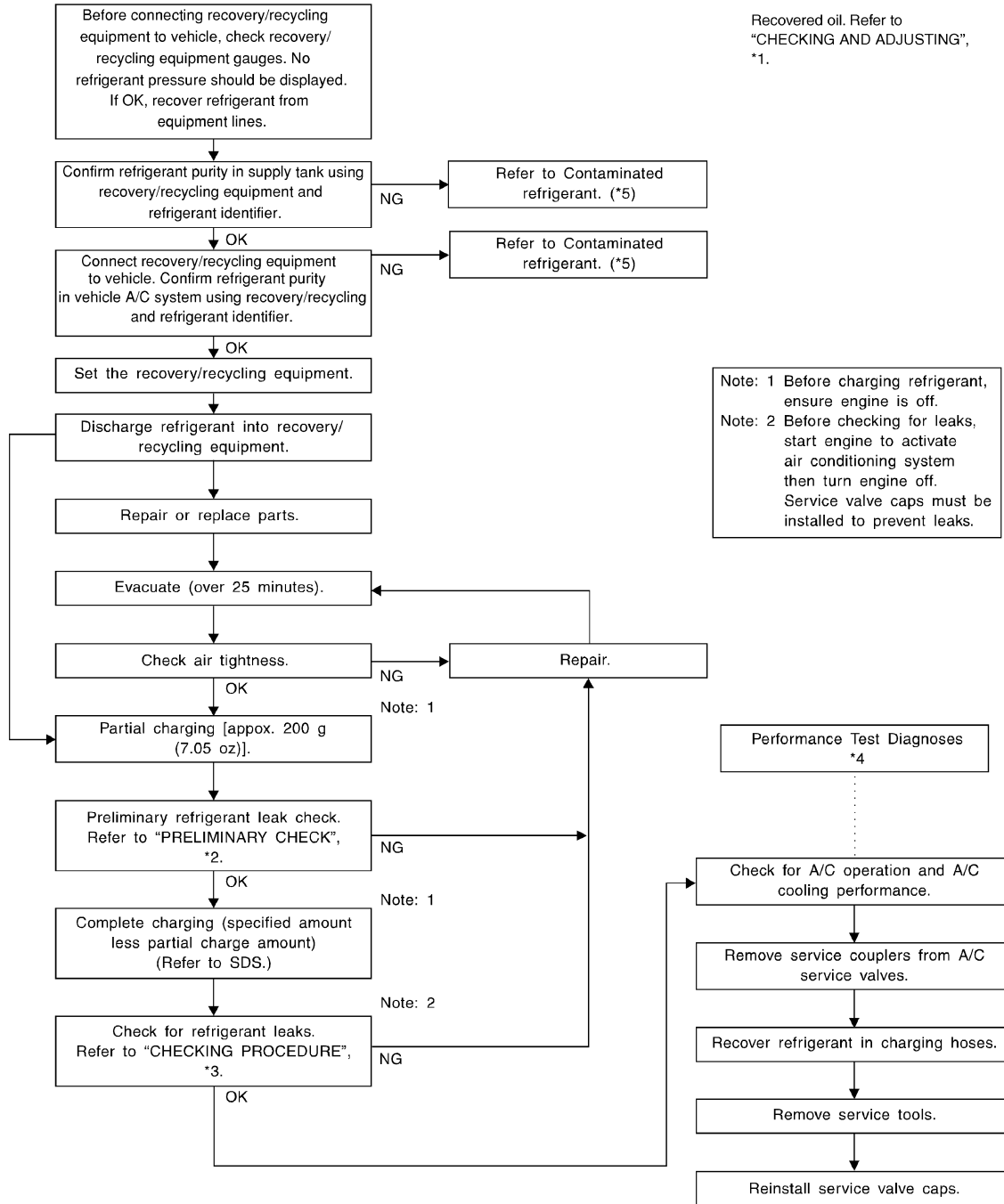
Evacuating System and Charging Refrigerant



- | | | |
|-------------------------------------|----------------------------|-------------------------------------|
| 1. Shut-off valve | 2. A/C service valve | 3. Recovery/recycling equipment |
| 4. Refrigerant container (HFC-134a) | 5. Weight scale (J-39650) | 6. Evacuating vacuum pump (J-39699) |
| 7. Manifold gauge set (J-39183) | A. Preferred (best) method | B. Alternative method |
| C. For charging | | |

REFRIGERATION SYSTEM

< ON-VEHICLE REPAIR >



*1 [HA-19. "Maintenance of Oil Quantity in Compressor"](#)

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

*3 [HA-25. "Electronic Refrigerant Leak Detector"](#)

*4 [HAC-299. "Component Function Check"](#)

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COMPRESSOR

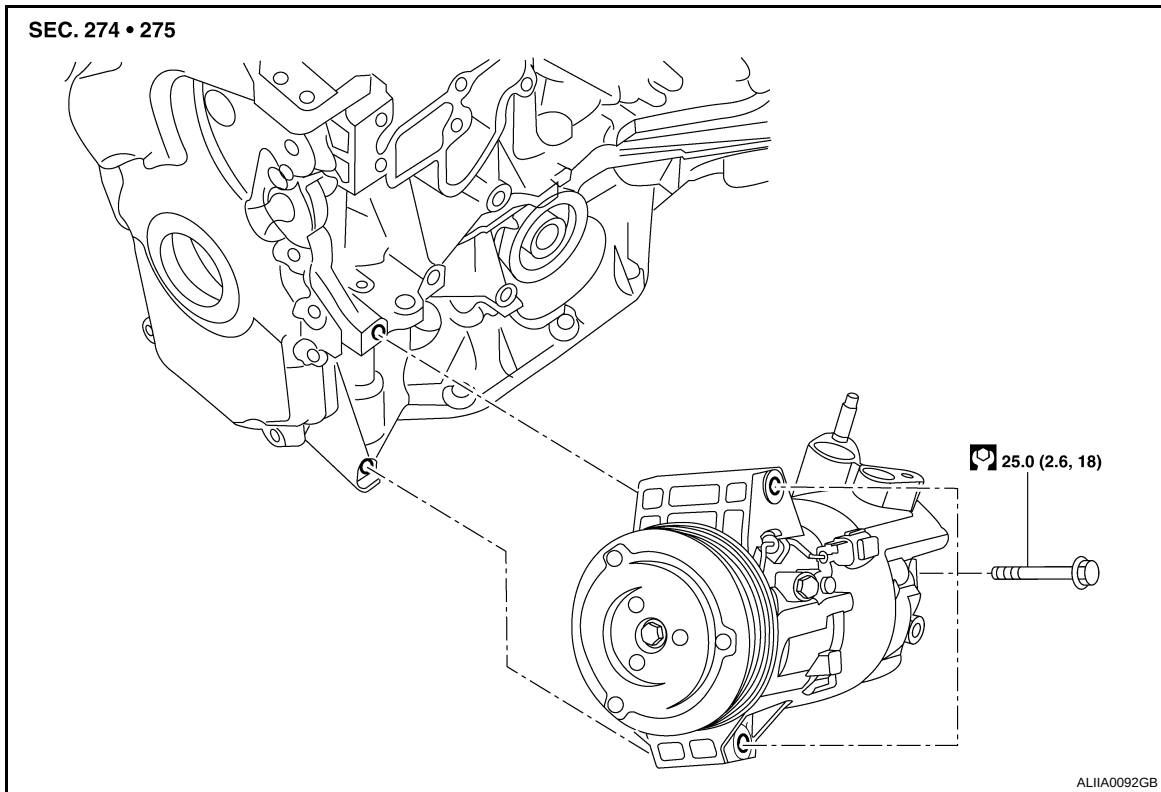
< ON-VEHICLE REPAIR >

COMPRESSOR

Removal and Installation of Compressor - MR18DE

INFOID:000000001404149

MR18DE

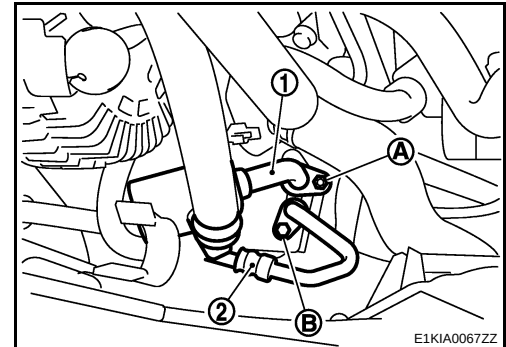


REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-29, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the nut (A) for the low-pressure flexible hose (1) and the bolt (B) for the high-pressure flexible hose (2) and remove the hoses from the compressor.

CAUTION:

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

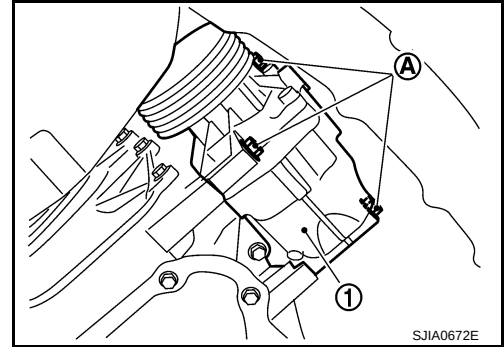


3. Remove the engine undercover, using power tools.
4. Remove A/C compressor belt. Refer to [EM-142, "Removal and Installation"](#).
5. Disconnect compressor connector.

COMPRESSOR

< ON-VEHICLE REPAIR >

6. Remove bolts (A) from compressor (1), using power tools.
7. Remove compressor (1) downward from the engine compartment.

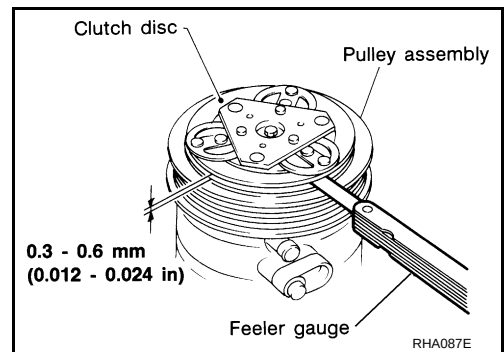


INSPECTION FOR CLUTCH DISC TO PULLEY CLEARANCE

1. Check the clearance around the entire periphery of the clutch disc.

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

- Measure the clearance for the compressor as shown.



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

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings of low-pressure flexible hose and high-pressure flexible hose with a new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks. Refer to [HA-22. "Checking of Refrigerant Leaks"](#).

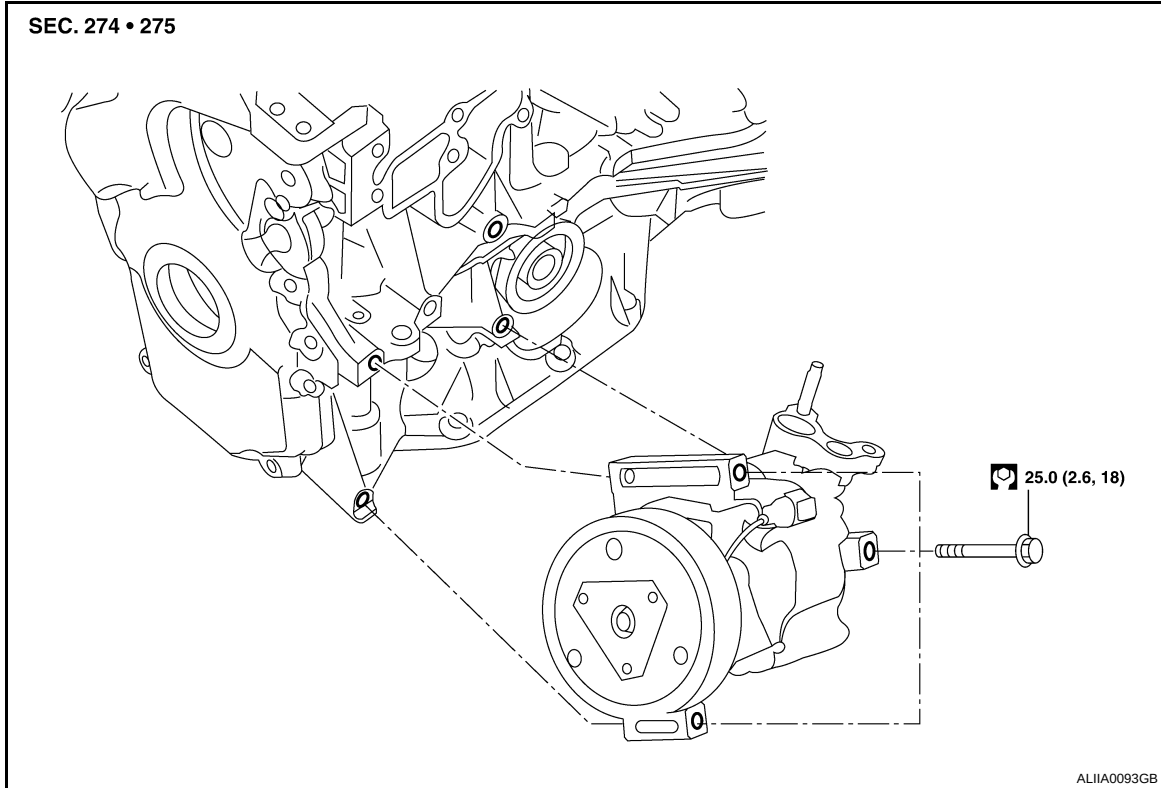
COMPRESSOR

< ON-VEHICLE REPAIR >

Removal and Installation of Compressor - HR16DE

INFOID:000000001523298

HR16DE



REMOVAL

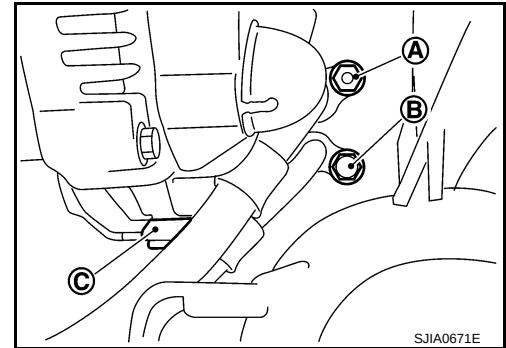
1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-29, "HFC-134a \(R-134a\) Service Procedure"](#).

2. Disconnect the low-pressure flexible hose nut (A) and high-pressure flexible hose bolt (B) and remove the hoses from compressor.

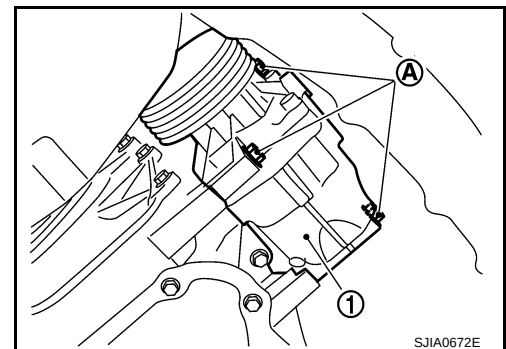
CAUTION:

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

3. Disconnect the compressor harness connector (C)



4. Remove the engine undercover, using power tools.
5. Remove the A/C drive belt. Refer to [EM-16, "Removal and Installation"](#).
6. Remove the bolts (A) from the compressor (1), using power tools.
7. Remove the compressor (1) downward from the engine compartment.



INSPECTION FOR CLUTCH DISC TO PULLEY CLEARANCE

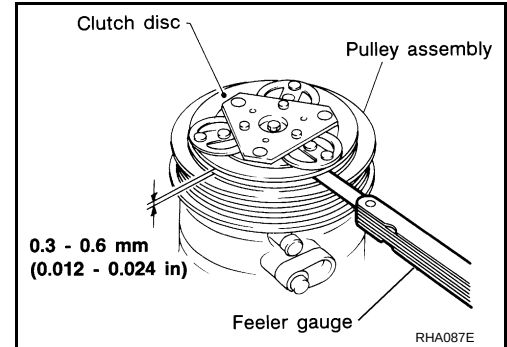
COMPRESSOR

< ON-VEHICLE REPAIR >

1. Check the clearance around the entire periphery of the clutch disc.

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

- Measure the clearance for the compressor as shown.



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

INSTALLATION

Installation is in the reverse order of removal.

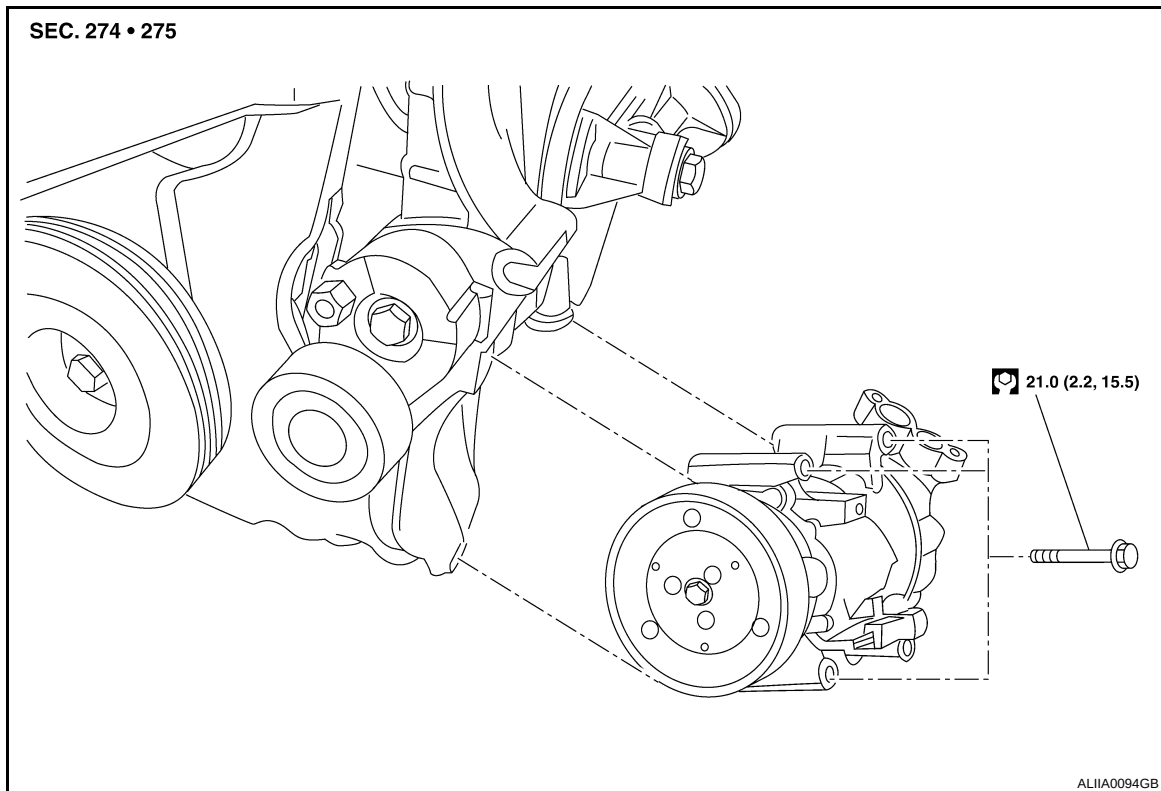
CAUTION:

- Replace O-rings of low-pressure flexible hose and high-pressure flexible hose with new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

Removal and Installation of Compressor - K9K

INFOID:000000001523297

K9K



REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-29, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the engine cover.
3. Remove the front grille. Refer to [EXT-19, "Removal and Installation"](#).

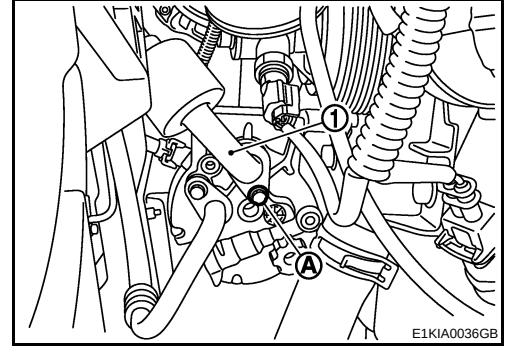
COMPRESSOR

< ON-VEHICLE REPAIR >

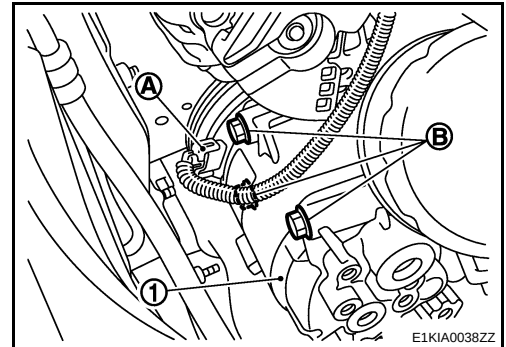
4. Reposition the RH air guide out of the way.
5. Remove the nut (A) to disconnect the low-pressure flexible hose (1) from the compressor, and disconnect the high-pressure flexible hose from the compressor.

CAUTION:

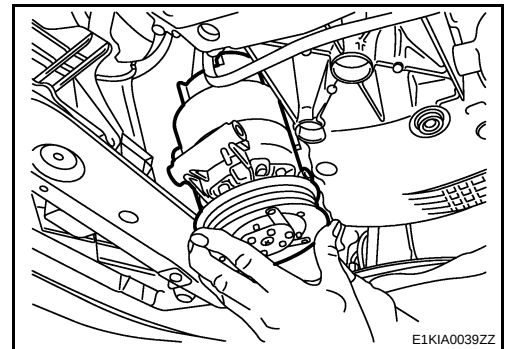
Cap or wrap the joint of compressor, low-pressure flexible hose and high-pressure flexible hose with suitable material such as vinyl tape to avoid the entry of air.



6. Remove the front RH wheel and tire.
7. Remove the engine undercover, using power tools.
8. Reposition the fender protector out of the way.
9. Remove the A/C drive belt. Refer to [EM-263, "Removal and Installation"](#).
10. Remove the compressor harness connector (A), then remove the bolts (B) from the compressor (1), using power tools.



11. Remove the compressor downward from the engine compartment.

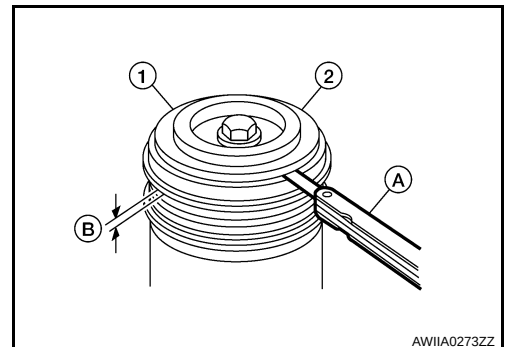


INSPECTION FOR CLUTCH DISC TO PULLEY CLEARANCE

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

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

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



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings of low-pressure flexible hose and high-pressure flexible hose with new ones, and apply compressor oil when installing.

COMPRESSOR

< ON-VEHICLE REPAIR >

- When recharging refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

A

B

C

D

E

F

G

H

HA

J

K

L

M

N

O

P

LOW-PRESSURE FLEXIBLE HOSE

< ON-VEHICLE REPAIR >

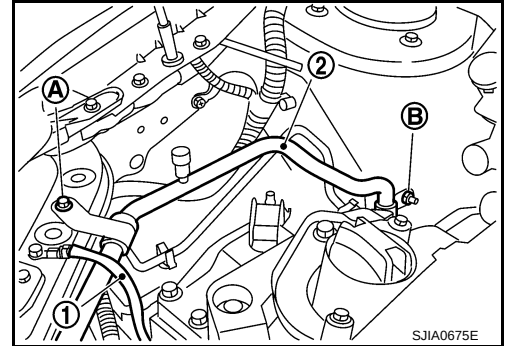
LOW-PRESSURE FLEXIBLE HOSE

Removal and Installation of Low-Pressure Flexible Hose - MR18DE, HR16DE

INFOID:000000001404150

REMOVAL

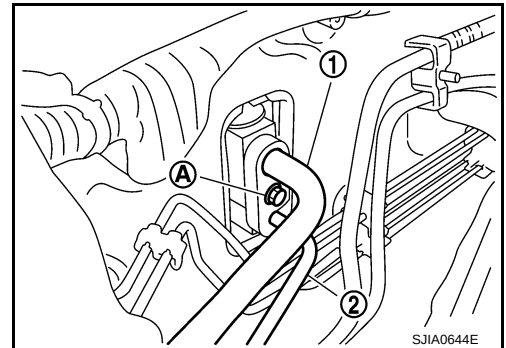
1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove engine cover.
3. Remove cowl top cover. Refer to [EXT-20, "Removal and Installation"](#).
4. Remove lower dash insulator.
5. Remove ground wire harness (1).
6. Remove bolt (A) and nut (B) from low-pressure flexible hose (2) bracket.



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

CAUTION:

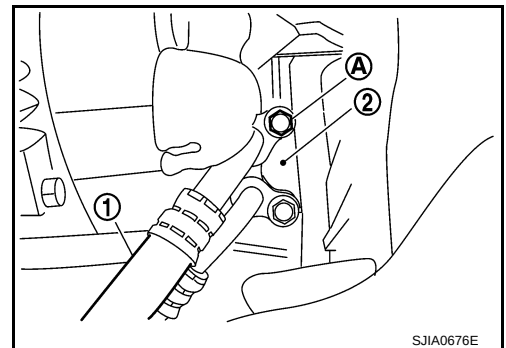
Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.



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

CAUTION:

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



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings for A/C piping with new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

Removal and Installation of Low-Pressure Flexible Hose - K9K

INFOID:000000001527624

REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).

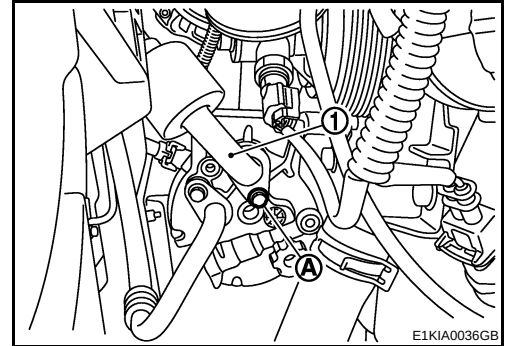
LOW-PRESSURE FLEXIBLE HOSE

< ON-VEHICLE REPAIR >

2. Remove the engine cover.
3. Remove the front grille. Refer to [EXT-19, "Removal and Installation"](#).
4. Reposition the RH air guide out of the way.
5. Remove the nut (A) to disconnect the low-pressure flexible hose (1) from the compressor.

CAUTION:

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



6. Disconnect the low-pressure pipe from the low-pressure flexible hose.

CAUTION:

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

7. Remove the low-pressure flexible hose.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings for A/C piping with new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

LOW-PRESSURE PIPE

< ON-VEHICLE REPAIR >

LOW-PRESSURE PIPE

Removal and Installation of Low-Pressure Pipe - K9K

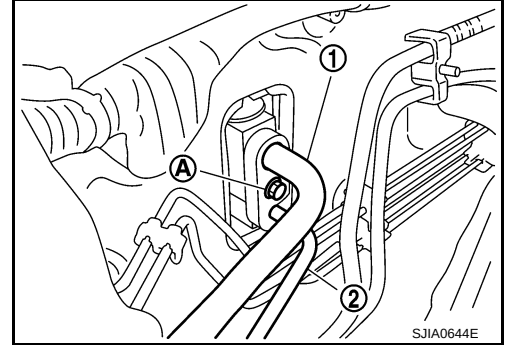
INFOID:000000001404236

REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove engine cover.
3. Remove cowl top cover. Refer to [EXT-20, "Removal and Installation"](#).
4. Reposition the lower dash insulator out of the way.
5. Remove the front grille. Refer to [EXT-19, "Removal and Installation"](#).
6. Remove bolt (A), and then disconnect the low-pressure pipe (1) and high-pressure pipe (2) from the expansion valve.

CAUTION:

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



7. Disconnect the low-pressure pipe from the low-pressure flexible hose.

CAUTION:

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

8. Disconnect the low-pressure pipe from the clamp.
9. Remove the low-pressure pipe.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings for A/C piping with new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

HIGH-PRESSURE FLEXIBLE HOSE

< ON-VEHICLE REPAIR >

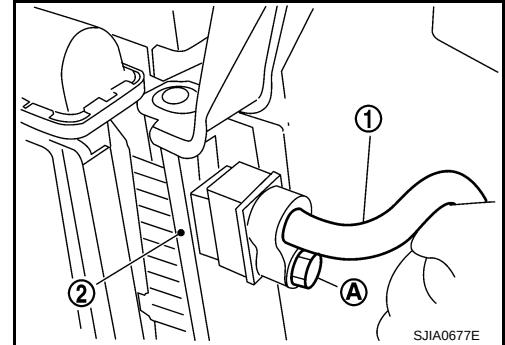
HIGH-PRESSURE FLEXIBLE HOSE

Removal and Installation of High-Pressure Flexible Hose - MR18DE, HR16DE

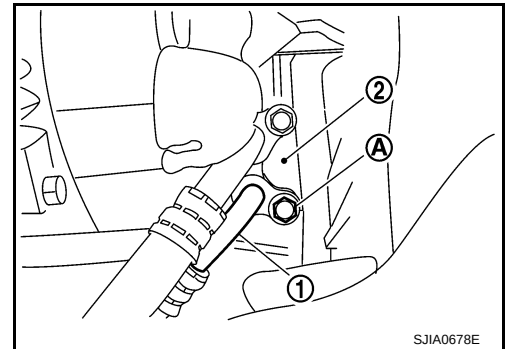
INFOID:000000001404151

REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove high-pressure flexible hose (1) bolt (A) from condenser (2).



3. Remove bolt (A), and then remove high-pressure flexible hose (1) from compressor (2).
CAUTION:
Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.



INSTALLATION

Installation is in the reverse order of removal.

- CAUTION:**
 - Replace O-rings of high-pressure flexible hose with a new ones, and apply compressor oil when installing.
 - When recharging refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

Removal and Installation of High-Pressure Flexible Hose - K9K

INFOID:000000001527623

REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove engine cover.
3. Remove the front grille. Refer to [EXT-19, "Removal and Installation"](#).
4. Reposition the RH air guide out of the way.
5. Disconnect the high-pressure flexible hose from the compressor.
CAUTION:
Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.
6. Disconnect the high-pressure flexible hose from the condenser.
CAUTION:
Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.
7. Remove the high-pressure flexible hose.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

HIGH-PRESSURE FLEXIBLE HOSE

< ON-VEHICLE REPAIR >

- Replace O-rings for A/C piping with new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

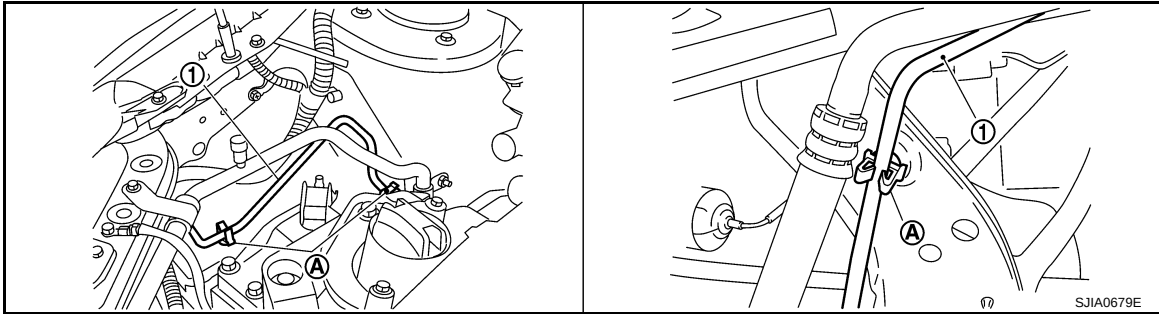
HIGH-PRESSURE PIPE

< ON-VEHICLE REPAIR >

HIGH-PRESSURE PIPE

Removal and Installation of High-Pressure Pipe - MR18DE, HR16DE

INFOID:000000001404219



1. High-pressure pipe

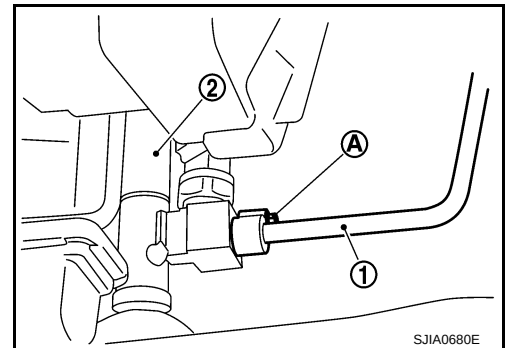
A. High-pressure pipe clips

REMOVAL

1. Remove low-pressure flexible hose. Refer to [HA-38. "Removal and Installation of Low-Pressure Flexible Hose - MR18DE, HR16DE"](#).
2. Remove high-pressure pipe from the clips.
3. Remove high-pressure pipe bolt (A), and then remove high-pressure pipe (1) from condenser (2).

CAUTION:

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



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings of high-pressure pipe with a new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks. Refer to [HA-22. "Checking of Refrigerant Leaks"](#).

Removal and Installation of High-Pressure Pipe - K9K

INFOID:0000000001527625

REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-21. "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove engine cover.
3. Remove cowl top cover. Refer to [EXT-20. "Removal and Installation"](#).
4. Reposition the lower dash insulator out of the way.
5. Remove the front grille. Refer to [EXT-19. "Removal and Installation"](#).
6. Reposition the RH air guide out of the way.

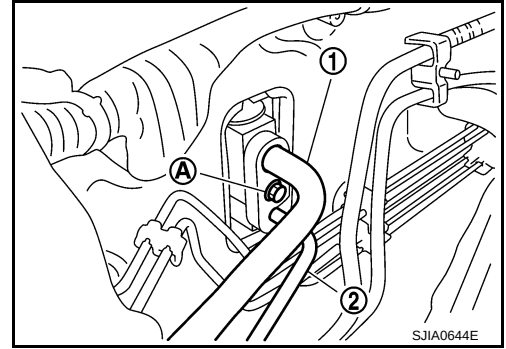
HIGH-PRESSURE PIPE

< ON-VEHICLE REPAIR >

7. Remove bolt (A), and then disconnect the low-pressure pipe (1) and high-pressure pipe (2) from the expansion valve.

CAUTION:

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



8. Disconnect the high-pressure pipe from the condenser.

CAUTION:

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

9. Remove the upper torque rod. Refer to [FSU-9, "Component"](#).
10. Disconnect the high-pressure pipe from the clips.
11. Remove the high-pressure pipe.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings for A/C piping with new ones, and apply compressor oil when installing.
- When charging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

CONDENSER

< ON-VEHICLE REPAIR >

CONDENSER

Removal and Installation of Condenser - MR18DE, HR16DE

INFOID:000000001527646

REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-21. "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the three upper headlamp bolts to reposition the headlamps out of the way
3. Remove the radiator core support upper.
4. Disconnect the high-pressure flexible hose and high-pressure pipe from condenser.

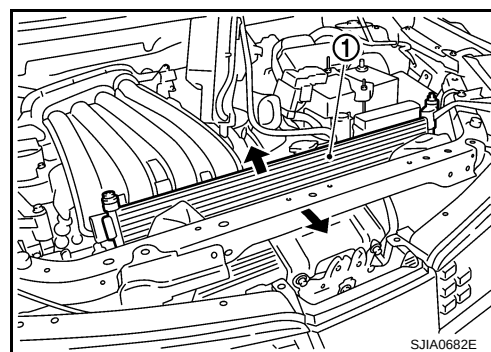
CAUTION:

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

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

CAUTION:

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



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings for A/C piping with new ones, and apply compressor oil when installing.
- When recharging refrigerant, check for leaks. Refer to [HA-22. "Checking of Refrigerant Leaks"](#).

Removal and Installation for Condenser - K9K

INFOID:000000001527627

REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-21. "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the air duct (front).
3. Remove the radiator core support finisher.
4. Remove the front grille. Refer to [EXT-19. "Removal and Installation"](#).
5. Remove the lower splash shield.
6. Remove the radiator core support upper.
7. Disconnect the high-pressure pipe from the condenser.

CAUTION:

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

8. Disconnect the high-pressure flexible hose from the condenser.
9. Disconnect the refrigerant pressure sensor connector and remove the refrigerant pressure sensor.
10. Remove the four condenser bolts.
11. Remove the condenser.

CAUTION:

Do not damage the condenser fins

CONDENSER

< ON-VEHICLE REPAIR >

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Do not damage the condenser fins.
- Replace O-rings of the high-pressure pipe, high-pressure flexible hose and refrigerant pressure sensor with new ones, and apply compressor oil when installing.
- When charging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

AMBIENT SENSOR

< ON-VEHICLE REPAIR >

AMBIENT SENSOR

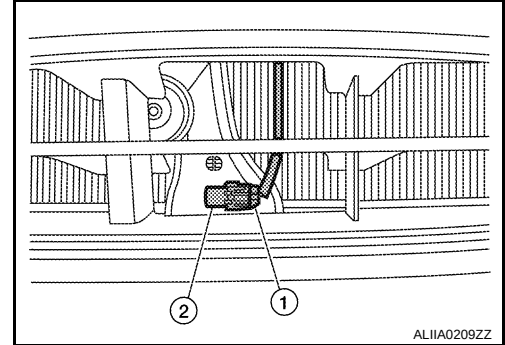
Removal and Installation of Ambient Sensor - MR18DE, HR16DE and K9K INFOID:0000000001696506

NOTE:

Vehicles with automatic A/C systems and manual A/C system with a PTC heater are equipped with a ambient sensor.

REMOVAL

1. Remove the front grille. Refer to [EXT-19, "Removal and Installation"](#).
2. Disconnect the ambient sensor connector (1), and then remove the ambient sensor (2).



INSTALLATION

Installation is in the reverse order of removal.

REFRIGERANT PRESSURE SENSOR

< ON-VEHICLE REPAIR >

REFRIGERANT PRESSURE SENSOR

Removal and Installation of Refrigerant Pressure Sensor - MR18DE, HR16DE

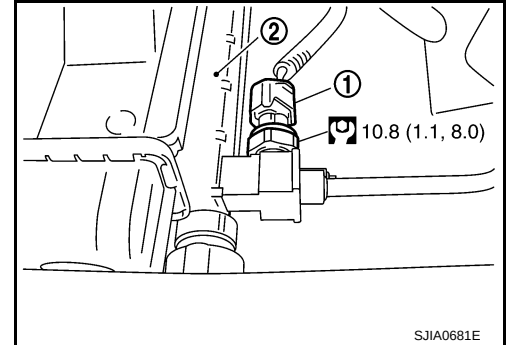
INFOID:000000001527644

REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Disconnect connector, and then remove refrigerant pressure sensor (1) from condenser (2).

CAUTION:

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



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings of refrigerant pressure sensor with a new one, and apply compressor oil when installing.
- When charging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

Removal and Installation of Refrigerant Pressure Sensor - K9K

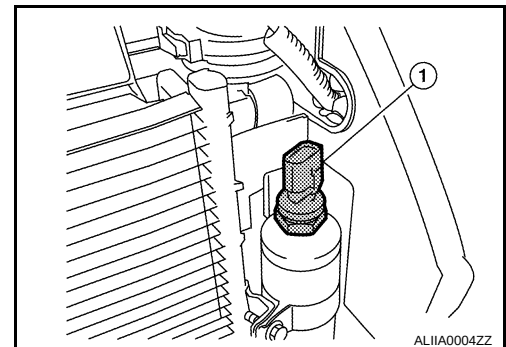
INFOID:000000001527628

REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove the air duct (front).
3. Remove the radiator core support finisher.
4. Remove the front grille. Refer to [EXT-19, "Removal and Installation"](#).
5. Reposition the LH air guide out of the way.
6. Disconnect the refrigerant pressure sensor connector and remove the refrigerant pressure sensor (1) from the liquid tank on the condenser.

CAUTION:

Do not damage the condenser fins.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace the O-ring of the refrigerant pressure sensor with a new one, and apply compressor oil when installing.
- When charging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

EXPANSION VALVE

< ON-VEHICLE REPAIR >

EXPANSION VALVE

Removal and Installation of Expansion Valve - MR18DE, HR16DE and K9K

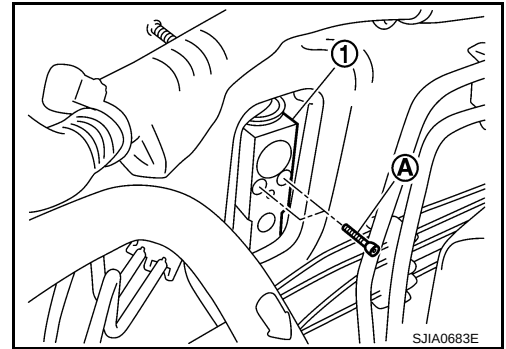
INFOID:000000001527645

REMOVAL

1. Use the recovery/recycling equipment to evacuate the refrigerant. Refer to [HA-21, "HFC-134a \(R-134a\) Service Procedure"](#).
2. Remove cowl top cover. Refer to [EXT-20, "Removal and Installation"](#).
3. Remove lower dash insulator.
4. Disconnect low-pressure flexible hose and high-pressure pipe from evaporator. Refer to [HA-27, "Component"](#).
5. Remove expansion valve bolts (A), and then remove expansion valve (1).

CAUTION:

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



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace O-rings of evaporator with new ones, and apply compressor oil when installing.
- When charging the refrigerant, check for leaks. Refer to [HA-22, "Checking of Refrigerant Leaks"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

MR18DE Engine

INFOID:0000000001396455

Compressor

Model	CR-10	
Type	Vanes rotary (5 vanes)	
Displacement cm ³ (in ³) / revolution	Maximum	96 (5.86)
Direction of rotation	Clockwise (viewed from drive end)	
Drive belt	Poly-V Ribbed Belt (6-Groove)	

Oil

Type	NISSAN A/C System Oil Type R	
Capacity mℓ (US fl oz, Imp fl oz)	Total in system	120 (4.1, 4.2)
	Compressor (service part) charging amount	Refer to HA-19, "Maintenance of Oil Quantity in Compressor" .

Refrigerant

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

HR16DE Engine

INFOID:0000000001396456

Compressor

Model	CR-10	
Type	Vane rotary (5 vanes)	
Displacement cm ³ (in ³) / revolution	Maximum	96 (5.86)
Direction of rotation	Clockwise (viewed from drive end)	
Drive belt	Poly-V Ribbed Belt (7-Groove)	

Oil

Type	NISSAN A/C System Oil Type R	
Capacity mℓ (US fl oz, Imp fl oz)	Total in system	120 (4.1, 4.2)
	Compressor (service part) charging amount	Refer to HA-19, "Maintenance of Oil Quantity in Compressor" .

Refrigerant

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

K9K Engine

INFOID:0000000001396457

Compressor

Model	XXXXX	
Type	Variable displacement swash plate	
Displacement cm ³ (in ³) / revolution	Maximum	XXX (XXXX)

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

Direction of rotation		Clockwise (viewed from drive end)
Drive belt		Poly-V Ribbed Belt (6-Groove)
Oil		
Type		NISSAN A/C System Oil Type S
Capacity mℓ (US fl oz, Imp fl oz)	Total in system	100 (3.4, 3.5)
	Compressor (service part) charging amount	Refer to HA-19, "Maintenance of Oil Quantity in Compressor" .
Refrigerant		
Type		HFC-134a (R-134a)
Capacity kg (lb)		0.45 ± 0.05 (0.99 ± 0.11)

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