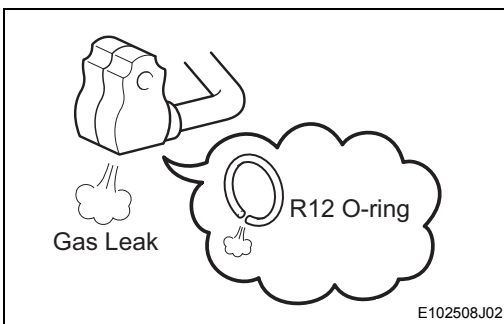
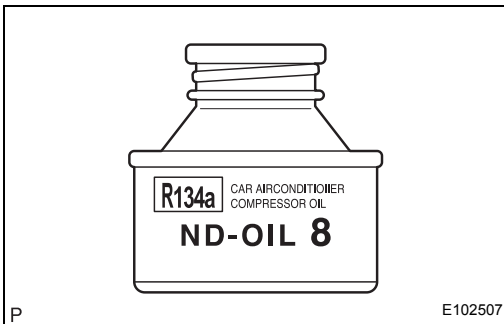
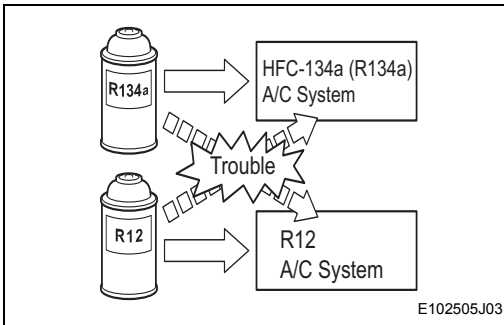


# REFRIGERANT HFC - 134a (R134a)

## PRECAUTIONS



### 1. PRECAUTIONS FOR REFRIGERANT HFC-134a (R134a)

#### (a) COMPATIBILITY

- (1) When selecting compressor oil or component parts in the refrigerant cycle, there is no compatibility between the HFC-134a (R134a) system and the previous R12 system.

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#### (b) REFRIGERANT HFC-134a (R134a)

- (1) Always use refrigerant HFC-134a (R134a).

##### NOTICE:

- Refrigerant is safe and non-toxic under conditons of normal use. However, it may be hazardous if exposed to an open flame or high temperatures (e.g., cigarette or heater, etc.).
- Ensure that there is proper ventilation and do not work in a closed space.
- Do not use a halide torch type leak tester to check for refrigerant leakage.

##### HINT:

In order to avoid mistakes when adding refrigerant, use only a manifold gauge to measure HFC-134a (R134a).

#### (c) COMPRESSOR OIL

- (1) Use only ND-OIL 8 for the compressor oil.

##### HINT:

If R12 compressor oil is used with a HFC-134a (R134a) system, the system may not be properly lubricated and rubber parts may swell. These problems may cause compressor lock-up or refrigerant leakage. Conversely, using HFC-134a (R134a) compressor oil with an R12 System may reduce the durability of the A/C system.

- (2) Because HFC-134a (R134a) compressor oil is highly absorbent, seal all openings with a plug or vinyl tape as soon as A/C parts are removed
- (3) Because HFC-134a (R134a) compressor oil may damage acrylic materials, do not splash the oil.

#### (d) About O-Rings

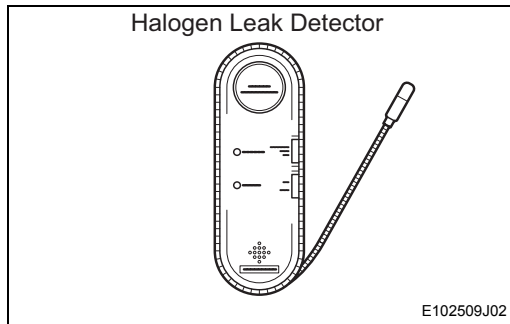
- (1) Be sure to use O-ring for HFC-134a (R134a).

##### HINT:

For the material or size of O-rings for HFC-134a (R134a) and R12 is different, gas leakage may cause by using wrong type.



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## (e) PRECAUTIONS FOR VACUUM PURGING

- (1) To perform vacuum purging, install the vacuum pump for R12 to the solenoid valve adapter.

HINT:

If a solenoid valve adapter is not used during and after vacuum purging, oil (for R12) may reflux into the HFC-134a (R134a) system from the vacuum pump.

## (f) CHECK REFRIGERANT LEAKAGE

- (1) Use a halogen gas leak detector to check for refrigerant leaks.

HINT:

- Standard halide torch type leak testers cannot be used because HFC-134a (R134a) does not contain chlorine.
- The standard electric gas leak tester also may be inaccurate because it may not be sensitive enough to detect HFC-134a (R134a), which has smaller molecules than R12.

- (2) When checking for refrigerant leakage, turn IG OFF.

HINT:

- If the check is performed while the engine is running, results may be inaccurate because leaked gas may be diluting by fan or blower wind.
- If the check is performed when the cooler is operating, gas may not leak because refrigerant pressure in the cooler unit decreases when the unit is in operation.
- If the check is performed when the cooler is operating, results may be inaccurate because the electric gas leak tester may react to sudden humidity changes caused by wet air coming in from the drain hose (the HFC-134a [R134a] model is especially sensitive).

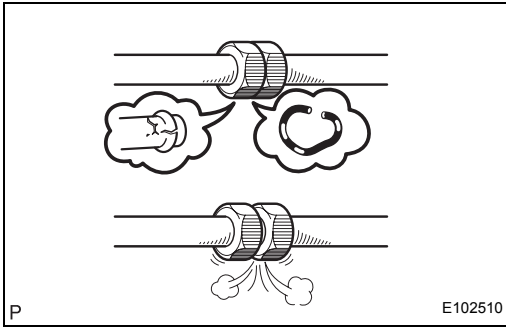
## 2. PRECAUTIONS FOR REMOVAL AND INSTALLATION

## (a) TREATMENT IN EVENT THAT REFRIGERANT GETS IN EYES

- (1) Do not rub your eyes with your hands or with a handkerchief.
- (2) See an eye specialist for treatment.

## (b) HANDLING PRECAUTIONS FOR REFRIGERANT (SERVICE CAN)

- (1) Do not heat a service can. If a service can is heated directly or put into boiled water, the pressure inside the can may increase to dangerous levels and there is a danger of explosion. If it is absolutely necessary to heat a service can, use only water with a temperature below 40°C.
- (2) Do not drop or otherwise cause impact to the service can.
- (3) Do not open the high pressure valve of the manifold gauge while the engine is running. If the high pressure valve is opened while the engine is operating, high pressure gas may flow in the reverse direction and may cause the service can to explode.
- (4) Do not handle the service can in close proximity to your head or face. Always wear safety glasses.



## (c) INSTALL PIPING

- (1) Be sure to use a new O-ring.

## HINT:

- Be sure to use O-ring for HFC-134a (R134a).
  - Use a toothpick or soft thing to remove O-ring, being careful not to damage the piping.
- (2) Sufficiently apply compressor oil (ND-OIL8) to the O-ring.
- (3) Position the hose piping naturally and do not forcibly bend, twist or turn it.
- (4) Do not use cotton work gloves to avoid refrigerant leakage caused by cotton wastes or foreign objects on the O-ring.

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## ADJUSTMENT

## 1. DRAIN REFRIGERANT HFC - 134a (R134a)

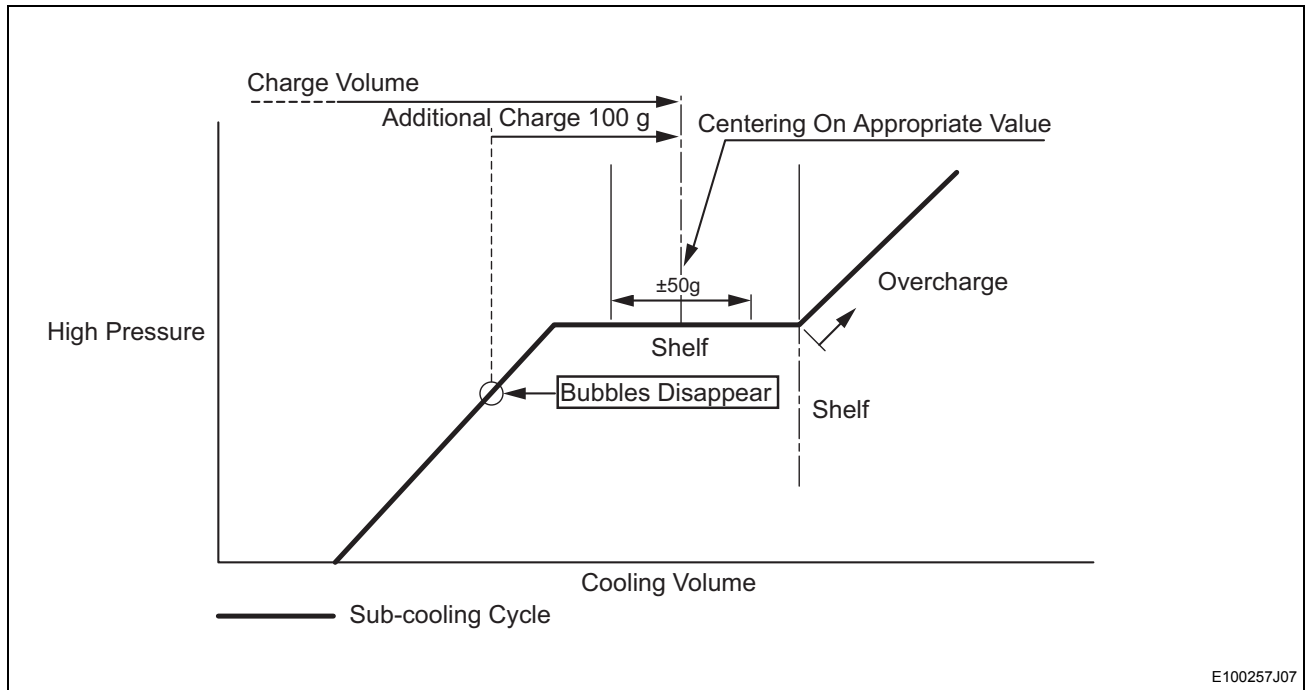
- (a) Turn the A/C switch ON.
- (b) At an engine speed of approximately 1000 r/min, operate the cooler compressor for 5 to 6 minutes in order to circulate the refrigerant and collect into the cooler as much of the compressor oil remaining in each component as possible.
- (c) Stop the engine.
- (d) Connect the refrigerant collection and recycling device to discharge the refrigerant.

## NOTICE:

Use the refrigerant collection and recycling device properly in accordance with its instruction manual.

## 2. CHARGE REFRIGERANT HFC - 134a (R134a)

- (a) Perform vacuum purging using a vacuum pump.
- (b) Charge refrigerant HFC - 134a (R134a).



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## Standard:

300 ± 30 g (RHD)

350 ± 30 g (LHD)

**NOTICE:**

**Do not operate the cooler compressor before charging it with refrigerant. Without refrigerant, the system may burn-out due to insufficient lubrication.**

**HINT:**

Because the collection rate of the refrigerant collection and recycling device is 90%, prepare a service can in order to add refrigerant when reusing refrigerant gas collected using a refrigerant collection and recycling device.

**3. WARM UP ENGINE****NOTICE:**

**After charging the refrigerant, warm-up the engine for at least 2 minutes, keeping the engine speed below 2000 r/min.**

**4. CHECK FOR REFRIGERANT LEAKS**

- (a) After recharging the refrigerant gas, check for refrigerant leakage using a halogen leak detector.

