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## WARNING !

*To avoid injury to persons, disconnect power before servicing this product. If electrical power is required for diagnosis or test purposes, disconnect the power immediately after performing the necessary checks.*

## RECONNECT ALL GROUNDING DEVICES

If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened.

## WHAT TO DO IF YOU SMELL GAS:

- Do not try to light a match, or cigarette, or turn on any gas or electrical appliance.
- Do not touch any electrical switches. Do not use any phone in your building.
- Clear the room, building, or area of all occupants.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions carefully.
- If you cannot reach your gas supplier, call the fire department.

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- We ask that there are no interruptions to this class caused by the usage of cell phones.
- Please keep any and all cell phones either:
  - Turned OFF
  - Turned to “Silent” or “Vibrate Only” mode
- If a call must be made or answered, please do so outside of this classroom.

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LG supplies this training class for the benefit of all in attendance, we ask for your assistance in keeping this a professional meeting and to remain focused only on the technical improvement and education of our service network.

## Safety and Additional Points

1. The waste solvent will contain used oils and other organic contamination. Pour the contaminated solvent into a waste oil drum for proper disposal. If the solvent needs to be transported, care should be taken to ensure the container is properly sealed to prevent spillage. **Still working with Safety to handle this.**
  2. If an additional Rx1 1-flush is required to fully purge a larger system, you do not need to disconnect the Rx1 1 Injection Valve from the refrigeration system. Simply close the valve and remove it from the first Rx1 1-flush canister. Replace it with a new canister to continue flushing.
  3. DANGER: Never connect this canister to nitrogen via manifold sets or other charging hoses! Failure to ensure system is free of pressure when injecting Rx1 1-flush may cause the can to burst and result in injury.
  4. Do not smoke or use an open flame around these materials.
  5. Adequate ventilation is highly recommended, particularly in equipment rooms.
  6. Use gloves (butyl rubber, (not nitrile) and full-face protection and or tightly fitting goggles. Avoid contact with the skin.
- DANGER: Never connect this canister to nitrogen via manifold sets or other charging hoses! Failure to ensure system is free of pressure when injecting Rx1 1 flush may cause the can to burst and result in injury.

1. Use only the appropriate refrigerant, proper recovery equipment, component parts, and tools listed in this Training Material.

2. Do not inject the solvent into the compressor itself; only the supporting refrigeration system should be flushed. Items like Expansion Valves, 3 Way valves and Reversing valves must be bypassed to prevent debris from blocking the action of these devices.

3. The exact amount of Rx1 1-flush required will vary by the internal design of the system, the nature of the system failure and the degree of contamination trapped in the system.

**\*\* DANGER:** Never connect this canister to nitrogen via manifold sets or other charging hoses! Failure to ensure system is free of pressure when injecting Rx1 1-flush may cause the can to burst and result in injury.

**\*\*Do Not over-inflate recovery bag.** It will not stretch, it will burst. It may be necessary to take the bag outside and empty before continuing.

Equipment Required. The following equipment will be required and dedicated for flushing operations:

4300-52 Flushing Hose (dedicated)

4300-89 Injection Valve

43000-09 1 lb. cannister of Rx11

Refrigerant hose with shut off valve (dedicated)

Recovery Bag (dedicated)



Additional equipment needed.

Process adapters

Nitrogen tank

Gloves: Butyl Rubber (not Nitrile!)

Goggles and/or full-face protection

Possible fan for providing adequate ventilation.



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Gloves: Butyl Rubber with a minimum thickness of 5 mil

[https://www.grainger.com/category/safety/hand-arm-protection/safety-gloves/chemical-resistant-gloves/general-purpose-chemical-resistant-gloves?tv\\_optin=true&searchQuery=butyl+rubber+gloves&searchBar=true&tier=Not+Applicable](https://www.grainger.com/category/safety/hand-arm-protection/safety-gloves/chemical-resistant-gloves/general-purpose-chemical-resistant-gloves?tv_optin=true&searchQuery=butyl+rubber+gloves&searchBar=true&tier=Not+Applicable)

Eye Protection: Because we are worried about vapors and not splash hazards with RX11 any tight fitting (seal around the eyes) should be adequate.

<https://www.grainger.com/product/DEWALT-Impact-Resistant-Goggles-Anti-3RYH4>

A small, re-sealable, waste container that will hold the solvent after it is flushed through the system. Ideally the solvent in the container must be visible so it can be inspected during the flushing process. This enables a technician to determine when the solvent begins to run clean, indicating that the system has been thoroughly purged.



## Instructions to Flush

1. Establish one end of the system as the exit point. Suggest a reverse flow.
2. Attach a process tube adapter to it along with a hose with shut off valve. This hose will be dedicated for using Rx11 only. You will be using the shut off valve to restrict the flow of Rx11 and later Nitrogen thru the system to increase the mass flow and contact time of Rx11 thru the system. The hose will be connected to the Recovery Bag.
3. Now attach another process tube adapter to the other end of the system. Blow thru the system with Nitrogen to see if the system is open and allows flow. This is to prevent you from pressurizing a restricted system with Rx11 and having it spit back at you, potentially causing an injury. ***If Nitrogen will not flow thru do not attach Rx11. Contact TCC and explain you have a restricted system that you cannot blow out.***
4. Next you will connect the dedicated flushing hose which will be connected to the Injection valve and Rx11 tank.
5. The amount of Rx11-flush needed to adequately clean the system will vary due to size of unit and contamination, etc. Flush the system until the discharge is coming out clean. Start with a 3-5 second burst.
6. Follow the Rx11-flush with compressed Nitrogen regulated to 120 psig, for maximum cleaning power. The nitrogen will push the Rx11-flush along with the emulsified soils through the line. Purge should be no more than 20-25 seconds (to prevent bag from rupturing). Empty bag and continue to flush till clean.
7. If after purging with Nitrogen the exiting purge is still not clean, reattach the Rx11 and give another shorter burst, 3-5 seconds. Repeat Nitrogen flush until purge is flushing clean. Repeat the above process for each piece of the system that you are flushing out. For final check allow Nitrogen to flow into a clean rag or paper towel in your hand to ensure system is clean.
8. Replace the compressor, drier, and any other sealed System parts that are needed, along with re-connecting any components that had to be disconnected. (3-way valve)
9. Perform a leak check of the system with Nitrogen and then proceed to evacuation of the system as usual. Under vacuum, any remaining Rx11-flush rapidly boils off.
  - DANGER: Insure the Rx11-flush canister is not connected to the nitrogen purge.

Note: The canister has been designed to empty itself completely only when the canister is standing in an upright position. Do not attempt to flush the system with a canister inverted or on its side.

Rx11 with Injection Valve and Flushing Hose  
Ready to back flush the system.



Exit hose w/valve hooked to dedicated recovery bag.



Rx11 disconnected from the system.



Nitrogen set to 120PSI connected to the system.



Final check for cleanliness of the system prior to reassembly. Nitrogen only.



## FAQ

Q. Is this product safe to use on R600a and R134a domestic refrigerators inside the customers home? If so, do you have a procedure as shown in your other materials relating to HVAC unit?

A. RX-11 can be used to flush line sets and coils but should never be introduced to a compressor. Since RX-11 is designed to boil off rapidly and/or evaporate quickly, it doesn't matter what type of refrigerant is used since they will never come into contact with each other. We don't have any small refrigeration application videos unfortunately, but just do a good nitrogen purge and vacuum when you use the product.

Q. Can RX-11 be used with Aluminum components (evaporator and or condenser)?

A. RX-11 is safe to use on aluminum without any known issues. It's solvent based and doesn't stick around very long and will evaporate before it can cause any deterioration on metals.

Q. We use a 3-way valve in our systems. Is it safe to flush thru this or should it be by-passed like an expansion valve?

A. The reason we asked for any TXV to be bypassed is, we don't want loose debris to block the internal screens. It may not be a bad idea to bypass a reversing valve or 3-way valve also, just to prevent the possibility of something getting stuck and preventing the valve from working correctly.

