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TIPS & TOOLS: Defrosting Iced Up Coils

Problem: The air unit is completely iced up, and a normal hot gas defrost seems to have no effect. There are a number of possible causes of this including;

- Hot gas solenoid valve not opening
- Automatic suction stop valve not closing
- Defrost relief regulator not functioning properly

The challenge is how to get it clear of ice while diagnosing how the ice got there.

Solution: Make sure that the pan is clear and that water that does drain will not spill on to the floor. Put the unit into a very long pumpout. For example, if the normal pumpout is 15 minutes, do it for an hour or two. Next put the unit into hot gas defrost. Realize that it may take a very long time to get all of the ice melted, especially ice that is not attached to the tubes. Warm water may be needed to get rid of ice bridges that could form.

Explanation

When the unit is full of ice, the ice acts as an insulator keeping the unit from transferring heat out of the room. A unit in operation that is a ball of ice will be completely full of ammonia liquid. Therefore, not enough heat will be able to reach the air unit to evaporate the ammonia. Thus, a typical pumpout of 15 minutes will leave the unit still full of ammonia.

Turning on the hot gas to a unit full of ammonia is both dangerous and ineffective. It's dangerous because of the potential for liquid hammer as high pressure hot gas hits the incompressible liquid. The defrost will be ineffective. The unit will oftentimes not defrost at all when it is full of ammonia because the hot gas simply bubbles through the liquid ammonia – failing to transfer enough heat to melt the ice.

The key is the longer pumpout which will allow enough time to get the liquid out of the unit before initiating hot gas.