

# HEAT

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## Heat Pump Outdoor Unit Iced UP

It's normal for a Heat Pump to be covered in a white frost or even a light coating of ice in certain weather conditions but if it looks like something the Titanic would steer around that's not normal. If you got a call and you drove up to the unit and it looks like a giant ice cube then we need to see what's causing this.

The outdoor coil of the condenser in heat pump mode absorbs heat from the outdoor air. While doing this if the outdoor temp is below 50 degrees then the coil could actually be below freezing and so if the air is really moist then frost can form on the coil. Again this is perfectly normal and the unit can compensate for this with a function known as defrost. The way this is accomplished is that the defrost control on the machine has an "ambient" sensor which monitors the outdoor temperature. When the temperature drops below 50 degrees then the control begins to monitor the coil temperature sensor. When this sensor sees below freezing temperatures the control begins to count the runtime of the compressor. After a pre-determined run time the defrost control will take over control and cause several things to happen. First it will turn off the outdoor fan and then switch the switch-over valve into cooling mode. In cooling mode the hot gas from the compressor will now go to the outdoor coil which will melt off the frost. If all goes well in a couple of minutes the coil temperature sensor will see about 70 degrees and signal the defrost control to revert back to heat pump mode. During defrost as I mentioned before the unit is now in air conditioning mode so something will have to happen indoors so we won't freeze out the

**home-owner. Some defrost units send a signal back inside via the X2 wire to turn on the auxiliary heat and some utilize a circuit in the thermostat to turn on the heat.**

**Several issues can cause excessive ice to form outside. Things to check are, a bad defrost board, sensors out of range or missing 5 volt reference sensor voltage, a sticky switch-over valve or bad switchover coil. Other possible causes are low refrigerant charge, an under-performing outdoor expansion device, restricted air-flow over the outdoor coil or a bad outdoor fan motor.**

**Just a note here, be sure to tell new first time heat pump owners that when the machine goes into defrost it might just look like it's on fire because of all the "smoke" (that's really steam) coming out. Please don't call the fire department like my daughter did.**