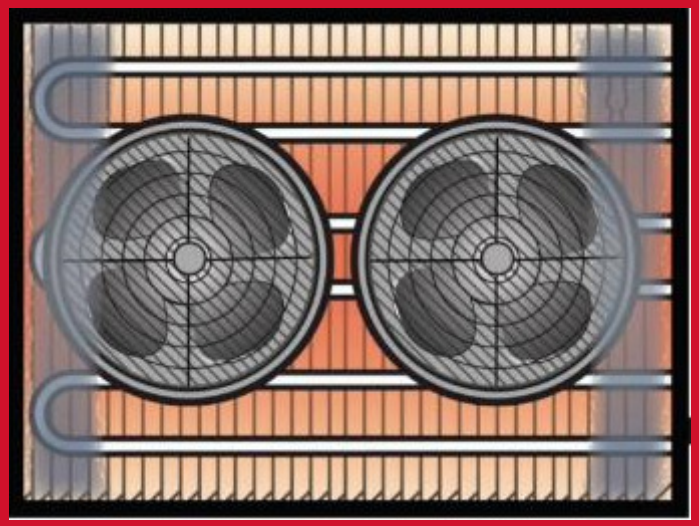
WELBILT
Bringing innovation to the table

Defrost



Kolpak

Walk-In Coolers and Freezers

Why Walk-In's Need Defrost Cycles

- Eliminates excessive ice accumulation
  - operates less efficiently
  - restricts airflow
  - risk high temperatures inside compartment
  - risk damage to the equipment
- Only needed when enough frost accumulation impedes airflow through the coil.

Type of Defrost

AIR DEFROST

- Time initiated
- Time terminated
- 30-45 Minute durations
- Solenoid coil deenergized
- Uses fans (air) to thaw coil
- January 1, 2017 – No timer for air defrost. Temp control has the ability to initiate and control defrost.

Type of Defrost

ELECTRIC DEFROST

- Timer required
- Time initiated
- Temperature terminated
- 30-45 minute durations
  - ➢ Expect termination 15-25 minutes
- Fans, t-stat, and solenoid deenergize
- Electric heaters thaw the coil

Type of Defrost

DEMAND DEFROST

- Low Temp and Medium Temp
- No timer required
- Demand initiated
- Temperature terminated
- Continually measures, monitors, and manages frost
- When efficiency is reduced due to excess frost, the Arctic Fox will initiate a defrost

Defrost Components

AIR DEFROST

- Timer – 115v or 230v
- Thermostat

ELECTRIC DEFROST

- Timer – 240v
- Heaters – 230v or 460v
- Defrost Termination/Fan Delay – Closes 55°F, Opens 30°F
  - Fan Delay (If individual 2-wire) – Closes 35°F, Opens 45°F
- Heater Safety – Closes 55°F, Opens 75°F

Defrost Operation

Air Defrost Cycle

When cycle begins:

- Switch 3 to 4 opens in the timer, breaking the circuit to the temperature control and liquid line solenoid valve. The compressor pumps down and shuts off.
  - Note, the evaporator fans continue to run during the defrost cycle.

- At the end of the defrost duration, switch contacts 3 and 4 close, energizing the temperature control circuit.

- Suction pressure rises, the low pressure control closes, and the compressor starts.

- The system operates in the refrigeration cycle until another defrost cycle is initiated by the timer.

Defrost Operation

Electric Defrost Cycle

When cycle begins:

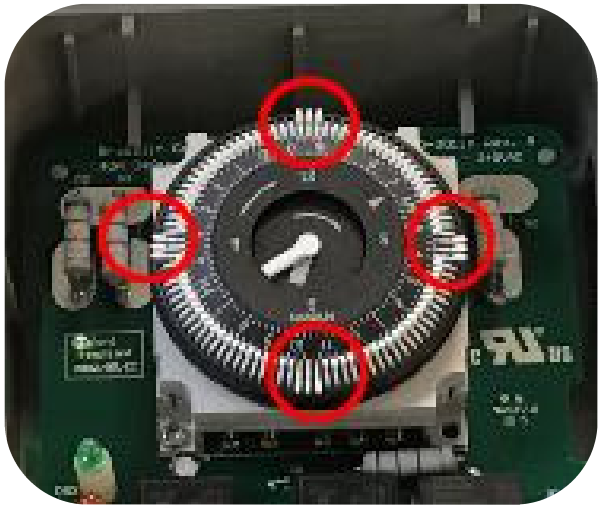
- Switch 2 to 4 opens in the timer, breaking the circuit to the thermostat, liquid line solenoid, and evaporator fan motors. The compressor pumps down and turns off.
- Simultaneously, switch 1 to 3 closes in the timer, energizing the defrost heaters.

- The coil warms to approximately 55°F, the defrost termination closes and energizes the switching solenoid in the timer. At this time, switch 1 to 3 in the timer opens, terminating the defrost heaters.
- Simultaneously, switch 2 to 4 closes in the time clock, energizing the temperature control circuit.

- Suction pressure rises, the low pressure control closes, and the compressor starts.
- The fan relay closes when the coil temperature reaches approximately 30°F. This energizes the fan motors.
- The system operates in the refrigeration cycle until another defrost cycle is initiated by the timer.

Defrost Settings

Air Defrost



Timer

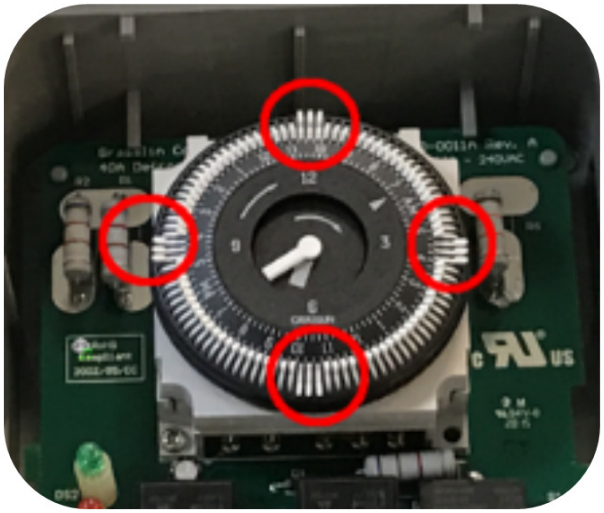
- Each pin represents 15 minutes
- 30 – 45 minute durations
- 2 – 4 cycles in a 24 hour period
- Starts automatically at predetermined times
- Adjust cycles as required

Temperature Controller

- Default - 4 cycles in a 24 hour period
- Default - 30 minute durations
- Starts automatically at predetermined times
- Adjust cycles as required

Defrost Settings

Electric Defrost



Timer

- Each pin represents 15 minutes
- 30 – 45 minute durations
- 2-4 cycles in a 24 hour period
- Time initiated
- Temperature terminated
  - Expect termination 15-25 minutes
- Starts automatically at predetermined times
- Adjust cycles as required

Temp Control

- Display will be blank during defrost cycle

Troubleshooting Defrost

- Verify single phase voltage at timer, terminals 1 and N.
  - 208/230 should be present
- N is common leg and timer switches the other single phase leg (terminal 1) between terminals 4 and 3.
- Manually advance timer into defrost.
  - Did the timer go into defrost?
    - If so, the red light should illuminate on timer. 208/230 should be present between terminals N and 3.
    - If not, inspect timer and termination switch. Remove wire from X terminal, advance into defrost. If timer goes into defrost replace termination switch (below 30). If not, replace timer.
  - Timer is in defrost, but heaters aren't energizing?
    - Verify 208/230 voltage at evap terminal board. If present at timer, it should be present at coil. If not, voltage drop in between the two.
    - Heater safety should be closed. If open (above 75), replace heater safety.
    - Compare amp draw to ratings on evap data tag. Replace heater/s if necessary.

Excessive Defrosts

Flash Steaming

- Too many defrosts or too long of defrost.
  - Minimum frost on the fins.
  - Heaters melt the frost too quickly.
  - The water formed will turn into steam.
  - Steam rises and condenses on any cold surface.
  - Usually ceiling and shelving surround the evap coil.

- Evaluate defrost controls, **adjust defrosts as necessary**.

Excessive Defrosts

Excessive Defrosts

Excessive Defrosts

Defrost

General Notes

- After the freezer has been in normal use for three or four days it should be checked to see if any adjustments need to be made.

- The unfortunate reality is that the amount of frost to be removed varies widely from location to location.
  - Due to the variation in cooling loads, the humidity of infiltrating air and other sources of moisture introduced into the walk-in, the amount of defrost times will vary as well.

Defrost