

CTD Winter Operating Procedure

COLD WEATHER INTRODUCTION

Cold weather is on its way, and with that comes damaging wind and ice. Cooling Tower DEPOT, Inc. cooling towers are designed to reduce icing problems during cold weather operation. The only exposed area on a cooling tower is the air-inlet or louver area, if installed. All other components are inside of the tower and will be protected as long as the tower is supplied with substantial operating heat load. If no heat load is available, the circulating water should be bypassed directly to the cold water basin. If your tower is not equipped with bypass, shut down your tower completely.

Water flow rates to the tower must be maintained at the highest operating level. This will ensure a full warm water wash of the internal components.

COLD WEATHER STARTUP

With initial startup of the entire tower or individual cells, general procedures as outlined earlier should be followed. In addition, the procedure should include:

1. Check the hot water distribution system for all nozzles at full flow (see troubleshooting section if any nozzles are clogged).
2. Visually inspect the fan and drive shaft for any ice buildup. Startup with ice on the fan blades or drive shaft can cause an imbalance and damage.
3. Start water flow prior to any other startup. Should there be any ice buildup on the mechanical equipment, the warm air vapor must be allowed to melt the ice prior to any other equipment startup (typically 30 minutes).

COLD WEATHER OPERATION

The cold water temperature should be maintained at 55°F or greater. The temperature should be monitored every four to six hours during critical dry bulb periods.

When the water temperature fall below 55°F, the following steps should be taken:

1. Fans should be shut down, one at a time.
2. Should cold water temperatures fall below 55°F with one fan off, shut off both fans.

NOTE: With fans off, splash-out may occur.

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3. In climates where cold water temperatures will fall below 55°F with all fans off, the tower should be equipped with closure tarpaulins. These are to be installed at the air inlet opening on the windward side of the tower. With the tarpaulins in place, the same reduced speed and shutdown fan procedure above should be followed.
 4. The same inspection method should be followed as under pre-starting procedures. In addition, visual inspection of the air inlet area should be made during the coldest hours of the day.
 5. Any ice buildup on the perimeter columns or the bottom of the fill should be noted and frequently monitored. If ice buildup becomes excessive, begin shutdown procedure. Do not in any case try to physically remove or strip the framework of ice. Melting will leave components in good condition. Physical removal of ice will generally cause more damage.
 6. The mechanical assemblies supplied with this tower may be capable of reverse operation, see documentation supplied by the motor starter and controls vendor for further information. Reversing motor rotating direction will reverse fan direction and push air down through the tower components from the fan stack through the sir inlet. This will push warm air to the air inlet opening for melting any ice accumulation.

Reversing procedure (if applicable) should be performed only as a last resort. The reversing mode of operation should be monitored continuously. Reverse operation should be used only on those cells with severe ice buildup and systems capable of reverse operation.

The reverse mode should be activated for a maximum of 30 minutes. Because the sir flow is reversed there will be splash out through the sir inlet / louver area (if supplied) of the tower.

NOTE: Louvers with heavy ice will split and break. Broken louvers will cause splash-out as well.

Flow water fifteen minutes with the fans shut off to prevent ice buildup in the plenum area.

Prior to restarting fans in either normal or reverse directions, fan blades must be visually rechecked to ensure there has been no ice buildup.

- Please allow at least two minutes between forward and reverse operation.
- It is acceptable to begin reverse direction when the fan is windmilling in the forward direction. The nearly zero-speed torque applied to the mechanical equipment is not excessive