



TECHNICAL SERVICES BULLETIN

010-020 MP1100 Defrost Cycle Procedure
April 30, 2003

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Scope

Applies to all THERMOGENESIS CORP. MP1100 and MP1101 Plasma Freezers.

Subject: The Defrost Cycle

It was discovered that the Defrost Cycle procedure in the MP1100 Operation and Maintenance Manuals (Revision A through C) does not include the steps required to pump the water out from the freezer reservoir after the unit is defrosted.

Procedure

The procedure for the Defrost Cycle has been revised to include the missing steps which guide the user to remove the water from the freezer reservoir. See changes at Step G through Step J in Section 2 (Draining the Water from the System). Please disregard the Defrost Cycle procedure in your MP1100 Plasma Freezer Operator and Maintenance Manual (part number 6-07-003 or 6-07-013) and use the attached procedure in its place. The manual will be corrected at the next revision.

If you have any questions, contact THERMOGENESIS CORP. Customer Service at 800-783-8357 (U.S. and Canada) or 916-858-5100 (non-U.S./Canada) for assistance.

(See revised procedure on next page)

The Defrost Cycle

Periodically, low temperature equipment such as the MP1100/MP1101 Plasma Freezer with MicroCascade™ Refrigeration accumulates ice buildup and must be defrosted. Defrost of the unit may not be required for several months if the temperature and humidity is within the recommended operating range, and the unit is maintained to keep the coolant reservoir insulated from the room environment.

Note: The MP1100/MP1101 is equipped with an electric defrost heater to aid in warming up the coolant.

The following Cycle steps will guide the user through the defrost cycle procedure.

Before Starting the Defrost Cycle

There are two items to verify before starting a defrost cycle. Non compliance of either of these may cause the sensing bulb of the safety thermostat to be exposed above the coolant and cause the termination of the defrost cycle. As a result of the termination of the cycle, the display panel will go black. The system will automatically return to the refrigeration cycle (the display panel will reinitiate just as though the user had turned off, then turned on the machine).

1. It is important to make sure that the freezer is level, both front-to-back, and side-to-side.
2. The coolant level in each chamber should be about 2.5" above the bottom of the chamber when the unit is at rest. There must be sufficient coolant in the freezer.

WARNING! FIRE DANGER DO NOT PLACE AN ELECTRIC IMMERSION HEATER IN THE COOLANT (See *Safety Precautions in the Preface Section of the Operation & Maintenance Manual*).



1. Initiating the defrost cycle

- A. To start the defrost cycle enter 400 on one of the numeric keypads, then press RESET. This closes the refrigerant liquid line solenoid valve, shutting off refrigeration to the freezer. At the same time, the pumps begin circulating the coolant through the chambers, and the defrost heater is energized to warm up the coolant to +3°C (37°F) to +5°C (41°F). The MP1100/MP1101 with Electric Defrost will take 6 – 7 hours to warm the coolant from – 55°C (-67°F) to termination temperature.
- B. Before the time the defrost cycle completes the warm up of the coolant (to about +2°C) remove the pockets from the front and back of each chamber
- C. Place 4 to 6 drops of dye (Located in the Accessories Kit) in each chamber. *Since the pumps are still running, they will circulate the dye throughout the reservoir and the chamber(s) allowing any water in the freezer to absorb the coloring.*

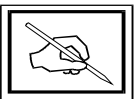
- D. Once the defrost warm-up cycle completes and shuts off the pumps, allow the unit to sit for about 5 minutes (this will allow the water in the system to settle) turn the power switch on the freezer to the OFF position.
- E. While still facing the primary power panel, remove the 4 screws holding the primary power panel in place and gently slide the primary power panel out of the console.
- F. Remove the solenoid fuse from the fuse holder marked SOLENOID.
- G. Replace the primary power panel in the console and secure with the four screws.

2. Draining the water from the system

- A. Make sure that pockets at the front and back of the chambers are removed to allow access to the bottom of the chambers for removal of any water collected there.
- B. Make sure that you have a 5-gallon pail and the hand pump (located in the Accessories Kit).
- C. Take the hand pump and carefully skim any colored water residing on top of the coolant which is in the bottom of each chamber.
- D. Once the chambers are cleared of any collected water, turn the power switch to the ON position, start the pumps again, and run for a period of 15 minutes. This will deposit more water into the chambers.
- E. After shutting off the pumps, allow the unit to sit for a period of 5 minutes to allow the water to settle in the chambers.
- F. Repeat Steps A through D until no colored water is seen in the chambers. Then turn the Freezer Power switch to the OFF position.
- G. Remove the small black port cover on the drain port of the freezer (located on left hand side of freezer in upper right hand corner). Attach the hand pump to the drain port.
- H. Pump any colored fluid from the drain port until the fluid coming out of the reservoir becomes clear. Since only the water is affected by the dye, clear liquid will indicate that the water has been successfully drained from the system.
- I. Remove the hand pump from the drain port and replace the small black port cover on the drain port.
- J. Allow the fluid in the 5-gallon pail to settle for about 5 minutes. This will separate the water from any coolant in the pail. Properly dispose of the colored water. Pour the remaining coolant into the unit (Refer to Checking the Coolant Level in Section 4D of the Operation and Maintenance Manual). Store the hand pump to prevent damage or loss; you will need the hand pump for future defrost cycle use.

3. Restoring the freezer to operating temperature

- A. Replace all pockets removed in the defrost process to their proper positions, making sure the snap-seals are firmly in place. Also, check all the pockets for tears or holes. *Improperly sealed, or torn pockets allow moisture to enter the freezer chamber. This moisture enters the system quickly when the freezer is down to operating temperature contributing to ice build up and resulting in the need for more frequent defrost.*
- B. While facing the primary power panel, remove the 4 screws holding the primary power panel in place and gently slide the primary power panel out of the console.



- C. Replace the solenoid fuse in the fuse holder marked SOLENOID and verify that the fuse holder is securely refastened.
- D. Replace the primary power panel in the console and secure with the four screws.
- E. Remove the motor box cover and temporarily reset the thermostat to 27°C (80°F).
- F. The setting of the thermostat should now be above the temperature of the coolant and the display panel should light up.
- G. The refrigeration will start and the system will begin to cool down to the set operating temperature (-25°C to -55°C or -32°F to -67°F). Remember, there is a programmed 2 – 5 minute delay after the defrost cycle is terminated, prior to the refrigeration system start up.
- H. Set freeze cycle times on both keypads for 90 minutes and run continuous freeze cycles to circulate coolant until the unit is down to the set operating temperature.
- I. **IMPORTANT:** When the system has reached operating temperature, be sure to reset the thermostat to 13°C (55°F).
- J. Verify Operating Temperature Calibration and calibrate as needed. (See Calibrating the Operating Temperature in Section 3B of the Operation and Maintenance Manual).

