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Preventative Maintenance of the Thermo Scientific Revco Chest Ultra Low Freezer

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

This document provides the Blood Bank Medical Technologist with guidelines and directions when performing preventative maintenance of the Thermo Scientific Revco[®] Chest Ultra-Low Tissue Freezer.

II. CLINICAL SIGNIFICANCE:

Temperature monitored equipment must be preventively maintained to safeguard storage of tissue products and ensure safe implant. This monitoring follows a defined schedule at least as frequent as specified by the manufacturer. This attachment aids in this process and these actions are recorded on a corresponding form, *Preventative Maintenance of the Revco[®] Chest Ultra-Low Freezer*.

III. EQUIPMENT:

- A. Thermo Scientific Revco[®] Chest Ultra-Low Tissue Freezer Model 5815 Serial Number 300026725, WBH#446256

IV. SUPPLIES:

- A. Towels for soaking up water and drying
- B. Independent calibrated thermometer
- C. Mild detergent
- D. Battery: Sealed lead acid battery 12V-7.2Ah

- E. Ice scraper

V. PROCEDURE:

A. Monthly Preventative Maintenance

1. Verify Ambient temperature
 - a. The ambient temperature of the laboratory <32.2°C (<90°F).
2. Verify probe cover, gaskets, hinges and lid are clear of ice and snow.
 - a. Using a soft cloth, remove any frost build-up from the probe cover, gaskets, hinges and lid.
 - b. Clean the door more frequently if needed, to secure a properly closed door.
3. Check alarm back up battery.
 - a. Press the Mode key until the configuration indicator lights.
 - b. Press the right arrow until SYS BAT TEST is displayed in the message center.
 - c. Press Enter to initiate the test.
 - d. TESTING BATT will display during the testing period. Upon the completion of the test the message center will display BATT GOOD or BATT FAIL.
 - i. When a test is failed, the audible alarm will sound, the alarm indicator and Low Battery indicator will light.
 - ii. Press the Silence key and the alarm indicator will go off.
 - iii. The Low Battery light will stay on until a future battery test is performed and passed.

B. Quarterly Preventative Maintenance

1. Door ajar alarm
 - a. Open the chest freezer door.
 - b. The message center will display DOOR IS OPEN.
 - c. The audible alarm sounds.
2. Low alarm
 - a. The low alarm test is used to verify that the low alarm will activate, should the freezer temperature equal or become less than the low alarm set point.
 - b. Press the Mode key until the Configuration indicator lights.
 - c. Press the right arrow until LO ALRM TEST is displayed in the message center.
 - d. Press Enter initiate the test.
 - e. The temperature on the display will begin to decrease until the low alarm set point has been reached.

- f. The audible alarm will sound, the alarm indicator will flash within 1 minute.
 - g. Press the Silence key to mute the alarm.
- 3. High alarm
 - a. The high alarm test is used to verify that the high alarm will activate, should the freezer temperature equal or exceed the high alarm set point.
 - b. Press the Mode key until the Configuration indicator lights.
 - c. Press the right arrow until HI ALRM TEST is displayed in the message center.
 - d. Press Enter to initiate the test.
 - e. The temperature on the display will begin to increase until the high alarm set point has been reached.
 - f. The audible alarm will sound, the alarm indicator will flash.
 - g. Press the Silence key to mute the alarm.
- 4. Clean air filter
 - a. Open the lower panel door by grasping the handle.
 - b. Locate the grille on the door. Grasp the middle of the grille material and gently pull out to remove.
 - c. Vacuum if full of dust, then wash the filter material using water and a mild detergent.
 - d. Dry by pressing between two towels.
 - e. Install the filter back into the grille and close the door.
 - f. Depending upon the environmental conditions, the filter may need to be cleaned or replaced more frequently (part # 398217).

C. Annual Preventative Maintenance

- 1. Verify Calibration of TempTrak™ and Thermometers.
 - a. Using the NIST thermometer the Blood Bank staff performs the calibration of the freezer's thermometer and the TempTrak™ Sensor calibration.
- 2. Check the condenser.
 - a. This is performed Facilities Management, (FM).
- 3. Verify inspection sticker.
 - a. This is performed Facilities Management, (FM).
- 4. Power failure alarm and defrost the freezer
 - a. Notify Facilities Management when freezer is turned off for defrost.
 - b. Remove all products.
 - c. Turn the unit off and disconnect it from the power source.
 - d. Power failure alarm will message, POWER FAIL.

- e. Turn off the battery switch.
- f. Open the lid and remove sub-lids. Place towels on the chamber floor.
- g. Allow the frost to melt and become loose. Remove with a soft cloth.
- h. After defrosting is complete, clean the interior with a non-chloride detergent.
- i. Rinse thoroughly with clean water and dry with a soft cloth.
- j. Plug unit in and turn power switch on.
- k. Turn the battery power switch to Standby mode.
- l. Allow the freezer to operate empty overnight.
- m. Temperature monitoring must be done for 24 hours, document on the form, *Manual Temperature Monitor*.
- n. Reload the tissue if monitoring is successful.

D. Biennial Preventative Maintenance

- 1. Change battery
 - a. Performed by Facilities Management.
 - b. Part No. 400159, Sealed Lead Acid Battery-12V- 7.2 Ah

VI. LIMITATIONS:

A. Failing PM

- 1. If the PM fails, repeat the testing (if applicable).
- 2. If the PM fails even after repeating, the following apply:
 - a. Attempt to repair or replace the failing PM and repeat testing.
 - b. Notify the tissue coordinator and / or contact HVAC for repair.
 - c. Consult the supervisor or designee to determine if the freezer should be taken out of service.
 - d. Do not use the equipment if alarms fail or temperatures are out of range.
 - e. Refer to Transfusion Medicine policy, *Storage Equipment Alarms and Temperature Deviations*.
 - f. Tag the freezer with Transfusion Medicine form, *Out of Service Tag*.
 - g. Document the event on the Transfusion Medicine form, *Blood Bank Equipment & Reagent Problems Log*.

VII. REFERENCES:

- 1. Thermo Scientific Revco® CxF -40C and -86C Chest Freezers Operating Manual 7045808 Rev. 5
- 2. AABB, *Technical Manual*, current edition.

- 3. AABB, *Standards for Blood Banks and Transfusion Medicine*, current edition.
- 4. College of American Pathologists, *CAP Checklist*, current edition.

Attachments

- [Equipment Alarms and Temp Deviations.pdf](#)
- [Glycerol Probe Sticker.pdf](#)
- [Out of Service Notice.pdf](#)
- [RevcoChestUltraLowFreezerPreventative Maintenance.docx](#)

Approval Signatures

Step Description	Approver	Date
Policy and Forms Steering Committee (if needed)	Vaishali Pansare: Chief, Pathology	2/13/2024
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Troy