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Applicability	Troy

Preventative Maintenance of the Thermo Scientific Upright 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 Upright Ultra-Low Tissue Freezer.

II. CLINICAL SIGNIFICANCE:

Temperature monitored equipment must be preventively maintained to safeguard the storage of tissue products for a safe implant. This monitoring follows a defined schedule at least as frequent as specified by the manufacturer.

III. EQUIPMENT AND SUPPLIES:

A. Thermo Scientific Upright Ultra-Low Tissue Freezer Model 703
    1. Serial Number 824978-206, WBH# 329743
B. Towels for soaking up water and drying
C. Independent calibrated thermometer
D. Cleaning supplies, mild detergent
E. Battery: Sealed lead acid battery 12V-7.2Ah
F. Ice scraper

IV. PROCEDURE:

A. Monthly Preventative Maintenance

1. Ambient Temperature Check
    a. Check and record the temperature of the Pyxis on the Temperature QC Log.
    b. The ambient temperature should not exceed <32.2°C (<90°F).
2. Door handle latches
    a. Check that the door handle is firmly latching.
    b. If the handle does not latch properly, submit a work order for repair.
3. Clear Frost
    a. Using a soft cloth, remove any frost, ice and snow build-up formed on the probe cover, inner door and gaskets, vacuum relief port and hinges.
4. Clean the Air Filter
    a. Open the front lower panel door by grasping the bottom left corner.
    b. Locate the grille on the door. Grasp the middle of the grille material and gently pull out to remove.
    c. Vacuum 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 No. 760203).
5. Check alarm back up battery
    a. Check that the Low Battery light is not illuminating.
    b. If low battery light is illuminating, replace the backup battery.

B. Quarterly Preventative Maintenance

1. Door Ajar Alarm
    a. The door alarm is used to verify that an alarm would activate should the door be left open and help avoid loss of tissue.
        i. Open the upright freezer door.
        ii. Observe that the DOOR OPEN light illuminates on the control panel.
        iii. Make sure the audible alarm sounds.
        iv. Document that the alarm sounded.

2. 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. This testing may coincide with the door ajar alarm. After performing the door ajar alarm test, if the temperature is already near -74°C (Figure 1-6) skip to step 4.
    c. To avoid the freezer going the below the high alarm and have trouble recovering, for testing the alarm, change the high alarm from -60°C to -72°C.
        i. Open the door to allow the freezer to warm up.
        ii. Watch the temperature on the outside display of the unit.
        iii. DO NOT leave the freezer unattended.
        iv. Close the freezer door at about -74°C, because the freezer will continue to increase in temperature.
        v. Observe the HIGH ALARM illuminate on the control panel.
        vi. Observe an audible alarm.
        vii. Return the high alarm from -72°C back to -60°C.

C. Annual Preventative Maintenance

1. Verify Temperature Calibration of TempTrak™ and Thermometers
    a. The Blood Bank using a NIST thermometer performs the freezer's thermometer and TempTrak™ Sensor calibration.
2. Check the Condenser
    a. Performed by Facilities Management, (FM).
3. Inspection Sticker
    a. Performed by Facilities Management, (FM).
    b. Verify inspection date documented is valid.
4. Power Failure Alarm and Defrost of Freezer
    a. Notify Facilities Management when freezer is turned off for defrost.
    b. Remove all product and place it in alternate freezer.
    c. Turn the power switch off and disconnect it from the power source.
    d. Power failure alarm sounds and the POWER FAILURE light illuminates on the control panel.
    e. Turn off the battery switch (O).
    f. Open all the interior and exterior doors.
    g. Place towels in the chambers and on the floor.
    h. Allow the frost to melt and become loose. Remove with a soft cloth.

i. After defrosting is complete, clean the interior with a non-chloride detergent. 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. When temperature stabilizes within operation range, begin temperature monitoring for 24 hours.

n. Reload the tissue, if 24 hour monitoring is successful and reviewed by supervisor or designee.

D. Biennial Preventative Maintenance

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

V. REFERENCES:

1. Thermo Scientific Model 700 Series; -86C Ultra Low Temperature Freezer Operating and Maintenance Manual 7030702 Rev. 4
2. AABB, *Technical Manua*l, current edition.
3. AABB, *Standards for Blood Banks and Transfusion Services,* current edition.
4. College of American Pathologists CAP Checklist, current edition.

Attachments

Equipment Alarms and Temp Deviations.pdf

Out of Service Notice.pdf

UprightUltraLowFreezerPreventative Maintenance.docx

Approval Signatures

Step Description	Approver	Date
	Vaishali Pansare: Chief, Pathology	2/13/2024

	Ryan Johnson: OUWB Clinical Faculty	2/9/2024
Policy and Forms Steering Committe (if needed)	Teresa Lovins: Supv, Laboratory	2/6/2024
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