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Preventative Maintenance of the Blood Bank Jewett Double Door Refrigerator - Troy

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

This document provides the Blood Bank medical technologist with directions for performing preventative maintenance (PM) of the Jewett® Double Door Refrigerator.

II. INTRODUCTION:

A. Temperature monitored equipment must be preventively maintained to safeguard the storage of blood products and provide a safe transfusion. Blood Bank reagents also follow strict guidelines for storage as directed by their manufacturer.

B. The Jewett® BBR Series Blood Bank Refrigerator utilizes the HemaPro²ᵒᵒᵒ Surveillance Center to operate various functions needed to establish stored product safety.

1. HemaPro²ᵒᵒᵒ Surveillance Center is a sophisticated precision electronic instrument. Its primary purpose is to ensure the user of stored product safety. The center is designed to be a separate and distinct system which operates and functions independently from the refrigeration control system. It is located on the front of the refrigerator and is divided and into 4 separate sections:

   a. LCD Display Section
   b. Alarm Self Test Function
   c. Back Up Battery Test
   d. Safe and Failure LED

C. The PM follows a defined schedule at least as frequent as specified by the manufacturer and

these actions are recorded on a Transfusion Medicine form, *Preventative Maintenance of the Jewett® Double Door Refrigerator.*

III. DEFINITIONS/ACRONYMS:

A. UPS: Uninterruptible Power Supply outlet

IV. EQUIPMENT AND SUPPLIES:

A. Jewett® Double Door Refrigerator Model BBR55, SN 55949-195
B. HemaPro²ᵒᵒᵒ Surveillance Center, SN D32428
C. Chart paper 306100H01/J7-10+60-7
D. Stop watch
E. Independent calibrated thermometer
F. Cleaning supplies
G. Batteries (9 volt alkaline)
H. Helmer® probe bottles and Glyerin kit #400922-1

V. PROCEDURE:

A. Quarterly Preventative Maintenance

1. **Door Ajar Status:** A visual and audible alarm will be present if the door is opened for more than three minutes.
    a. Left Door (on a double door refrigerator do one door at a time).
        i. Record initial temperatures of sensor (display), upper (left shelf), and lower (left shelf) thermometer's.
        ii. Activate stop watch as door is opened.
        iii. Leave door ajar (slightly is enough).
        iv. Stop watch when refrigerator alarm sounds.
        v. Close door.
        vi. Record post open door test temperatures of sensor, upper (left shelf) and lower (left shelf) thermometer's in minutes and seconds.
        vii. Document if the open door test passed.
    b. Right Door
        a. Repeat 1-8 after waiting at least 5 minutes before testing the right door.
        b. Document temperatures from the display, right upper and right lower shelf thermometers.
2. **Alarm Self-Test Function**: The alarm test feature physically heats or cools the thermistor

inside the probe to simulate the alarm function.

a. High Alarm Test
    i. On the HemaPro²⁰⁰⁰ Surveillance Center face panel on the refrigerator locate the Alarm Test module.
    ii. Press and release the HIGH TEMP button.
    iii. The thermistor will slowly rise until it reaches the standard high alarm setting.
    iv. Record sensor temperature when alarm activates. (Probe temperature then returns to that of the monitoring solution.)
    v. Record an internal refrigerator calibrated thermometer reading.
    vi. Test passes if alarms at setpoint.

b. Low Alarm Test
    i. Press and release the LOW TEMP button on the Alarm Test module.
    ii. The thermistor will slowly fall until it reaches the low alarm setting.
    iii. Record sensor temperature when alarm activates. (Probe temperature then returns to that of the monitoring solution.)
    iv. Record an internal refrigerator calibrated thermometer reading.
    v. Test passes if alarms at setpoint.

3. **Cleaning the Refrigerator**
    a. Using a soft cloth and a mild detergent wipe the exterior, interior and door gaskets.
    b. Place a ***Service Now*** ticket for facilities management to clean the condenser.
    c. Print a copy of the ticket and place in the Supervisor's mailbox.

4. **Graph Battery Check / Replace**
    a. The HemaPro²⁰⁰⁰ Surveillance Center will monitor the temperature of the upper solution bottle during an AC power failure. The 9 volt back up battery will power the center for approximately 6 hours.
    b. Replace the 9V battery found in the graph recording compartment in the months of Jan and July.
        1. Date and initial the battery.
    c. Check the status of the 9V battery in the months of April and October.
        1. If the green radio light in the lower area to the left of the graph is flashing replace.
        2. If the green radio light is steady battery is ok.

B. Annual Preventative Maintenance

1. **Probe Bottle Maintenance**

a. The upper and lower solution bottle temperatures will be constantly displayed with the exception, during an alarm condition, at which time only the upper solution will be displayed.

b. Probe bottles and glycerin will be replaced annually with the Helmer® Probe Bottle and Glycerin/Glycerol kit for refrigerators.

c. Follow the manufacturer instructions described on the Glycerin packet for use.

d. Affix a sticker F342 when replacing.

e. Fill the upper and lower solution bottle to within 1 inch of the top.

f. The probes should be placed into the bottles ensuring that lower 4 inches of the probes are completely immersed.

2. **AC Power Failure and Battery Back UP check/replace**

    a. **I**f AC power fails, a visual and audible alarm will be present.

    b. During this test if the 9 volt back up battery decreases to 7 volts under load, there will be a visual and audible alarm to replace the battery.

    c. Press and hold Battery Test key. This simulates a power failure.

    d. Record audible alarm activated

        1. The flashing POWER FAILURE and the back light on the LCD will extinguish.
        2. Release the Battery Test key.
        3. The LCD display will return to normal.
        4. At this time if the back-up battery status indicates the battery needs replacement replace otherwise replace annually.

C. Inspection Sticker Date

A. Place a ***Service Now*** ticket for facilities management to inspect the refrigerator.

    a. Print the Service Now ticket and place in the Supervisor's mailbox.

B. A yearly Inspection sticker is affixed to each unit by Facilities Management (FM).

    a. Document the date of inspection.

VI. NOTES:

If the Jewett refrigerator is temporarily out of service for preventative maintenance (PM), or if any of the PM described in this document is unacceptable and cannot be corrected as described in this document, then the technologist shall perform the following tasks as appropriate:

- Attach the green *Out of Service Tag* if not operational.
- Document Transfusion Medicine form, *Storage Equipment Alarms and Temperature Deviations.*
- Document Transfusion Medicine form, *Log of Blood Bank Reagent or Equipment Problems.*

- Notify the Supervisor or Lead MT.

VII. REFERENCES:

1. AABB, *Technical Manual,* current edition.
2. AABB, *Standards for Blood Banks and Transfusion Services,* current edition.
3. College of American Pathologist, *CAP Checklist*, current edition.
4. *Jewett® HemaPro²⁰⁰⁰ Surveillance Center Installation and Operation Manual*, 306127H01 Rev C2004

Attachments

Equipment Alarms and Temp Deviations.pdf

Glycerol Probe Sticker.pdf

Jewett Refrigerator.pdf

Out of Service Notice.pdf

Reagent Equipment Problems Log.pdf

Approval Signatures

Step Description	Approver	Date
	Vaishali Pansare: Chief, Pathology	6/19/2023
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