PROCEDURE
Corewell Health East - Preventative Maintenance of the Helmer Double Door Refrigerator - Troy

This Procedure is Applicable to the following Corewell Health sites:
*Sites:, Corewell Health Beaumont Troy Hospital

Applicability Limited to: N/A

Reference #: 33978

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Functional Area: Clinical Operations, Laboratory

Lab Department Area: Lab - Blood Bank

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1. **Principle**
   A. This document provides the Blood Bank Medical Technologist with guidelines and directions when performing preventative maintenance of the Helmer® Double Door Refrigerator.
   B. Temperature monitored equipment must be preventatively maintained to safeguard the storage of blood products for a safe transfusion.
   C. Blood Bank reagents also follow strict guidelines for storage as directed by their manufacturer. This monitoring follows a defined schedule at least as frequent as specified by the manufacturer. This attachment aids in this process specific for the Helmer® Double Door Refrigerator and these actions are recorded on a corresponding form.

2. **Responsibility**
   Personnel who have completed the competency requirements will perform these tasks.

3. **Definitions**
   A. HOME: the home screen displays current information and is the starting screen for all interaction with the monitoring system. To return to the home screen, press the farthest left button (HOME) on the monitoring system.

4. **Reagent/Equipment Needed**
   A. Chart Paper (Item #220366)
   B. Independent calibrated thermometer
   C. Cleaning supplies
   D. Batteries (one 9V and six 1.5V D-cell non-rechargeable alkaline)
   E. Helmer® probe bottles and Glycerin kit #400922-1

5. **Procedure**
   A. All required preventative maintenance tasks will be documented on form *33978-1 Helmer Double Door Refrigerator Maintenance*.
   B. Quarterly Maintenance
      1. Chamber Temperature Calibration

a. Verify the temperature probe is reading correctly by comparing the chamber probe reading to the temperature read by an independent thermometer. If the chamber temperature probe is not reading correctly, change the value displayed on the temperature monitoring system using the following steps. Start with upper probe.
    1) Remove the upper probe bottle (located in the upper part of the refrigerator between the two doors) from the bracket.
    2) Unscrew the cap and insert the independent thermometer in the bottle with the other probes. The probes and thermometer should be immersed at least 2'' in the liquid. The cap does not need to be screwed back on at this time.
    3) Secure the bottle back in the bracket and close the door.
    4) Set a timer for 10 minutes to allow the temperature to stabilize.
    5) Record the temperature of the independent thermometer.
    6) Locate the Home screen on the display by pressing the far-left button.
    7) Press the MAIN button.
    8) Press the DOWN button to highlight Edit Configuration. Press SELECT.
    9) Enter the password (1234) when prompted.
    10) Press the DOWN button to highlight Temperature Calibration. Press SELECT.
    11) Press the INC or DEC button to select the probe (upper or lower).
    12) Record the current temperature of the probe (upper or lower).
    13) An adjustment is needed if the independent thermometer and the current temperature of the probe are not within 0.5°C.
        a) If no adjustment is needed proceed to step the next step, if an adjustment is needed go to the below section, Probe Calibration.
    14) Repeat these steps for the lower probe (located on the left lower side of the refrigerator just above the lowest shelf).
    15) Remove the independent thermometer from the probe bottle, tighten the cap and return the bottle with probes to bracket.

2. Probe Calibration
    a. From the Temperature Calibration menu, select the probe that requires adjustment.
    b. Press Down button to highlight Temperature.
    c. Press INC or DEC to increase or decrease the value to match the measured value in Chamber calibration step from Chamber Temperature Calibration.
    d. Record adjustment value.
    e. Press DOWN button to highlight Store Calibration.
    f. To save the new value press ENTER, a message appears “Calibration Memorized”. The new setting is now saved.
    g. To discard the new value press BACK or HOME to exit. The new setting is not saved.
3. Door Ajar Test
    a. Record initial temperatures of sensor (display), upper shelf, and lower shelf thermometers on form.
    b. Change Door Ajar Timeout setting to 0 minutes
        1) Press the MAIN button
        2) Press the DOWN button to highlight Edit Configuration. Press the SELECT button.
        3) Enter the password when prompted.
        4) Press the DOWN button to highlight Alarm Setpoints. Press SELECT.
        5) Press the DOWN button to highlight Door Ajar Timeout.
        6) Press the DEC button to change the setting to 0.
        7) Press the BACK button to return to the Edit Configuration screen, or press the HOME button to exit. New settings are saved.
        8) Open the door. Door ajar alarm will activate immediately.
        9) Close the door. Door ajar alarm will clear and audible alarm will cease.
        10) Repeat ajar alarm test for any additional door.
        11) Change the Door Ajar Timeout setting to the original setting (3 min.).
    c. Document if the open-door test passed as indicated in Expected Results.

4. Automatic Chamber Alarm Test: Test the Low and High Alarm
    a. The alarm setpoint is recorded in the expected result section of the form.
    b. On the HOME screen on the refrigerator monitor.
    c. Select MAIN.
    d. Press the DOWN button to and SELECT System Alarm Test and Status.
    e. The System Alarm Test and Status screen appears.
    f. Press the DOWN button and SELECT Start Low Alarm Auto Test.
    g. Press ENTER.
        1) The “Low Alarm Test in Progress” message appears.
        2) The alarm will activate when the alarm setpoint is reached.
        3) When the test is complete, the message clears.
    h. Record sensor temperature when audible alarm activates.
    i. Record an internal thermometer temperature.
    j. Document if the alarm test passed as indicated in the Expected Results section of the form.
    k. Repeat these steps to perform the high alarm testing by selecting Start High Alarm Auto Test.
5. Cleaning the Refrigerator
    a. The exterior, interior, and door gaskets are cleaned with a soft cloth and mild detergent.
    b. The condenser grill is cleaned by Facilities Management.
    c. Facilities Management will inspect electrical components and wiring terminals in the electrical box for discoloration and for secure connection.
        1) Contact Helmer® Technical Services if any wiring discoloration is found. Facilities Management can tighten wiring terminal connections as necessary.
6. Chart Recorder Graph Battery Check/Replace
    a. Replace the 9V battery found in the graph compartment of the refrigerator in the months of January and July. Date and initial the battery.
    b. Check the status of the 9V battery in the months of April and October.
        1) In the graph compartment in the upper left area above the graph there is a light to the right of a button with > arrow. This light should be green if battery is ok. If light is red replace battery.

C. Annual Maintenance

1. Power Failure Alarm Test / Backup Battery Replacement
    a. The Power Failure Alarm Test will be completed at least annually, or whenever backup batteries have been replaced.
        1) Refrigerator backup batteries should be replaced annually.
            a) Obtain six non-rechargeable 1.5V D-cell alkaline batteries.
            b) Contact Facilities Management to replace the batteries prior to performing the test.
    b. Disconnect the refrigerator from the AC power. This can be done by moving the refrigerator and unplugging it.
    c. The power failure alarm will be activated according to the equipment delay setting (set at zero minutes).
        1) If the alarm does not sound or have a visual display change after unplugging, replace the battery. Repeat testing after battery change, then document that the testing has been performed.
    d. Reconnect the refrigerator to AC power. Power failure alarm will clear and audible alarm will cease.
2. Probe Bottle Maintenance
    a. Failure to fill probe bottles or keep probe bottles filled to the appropriate level may not allow the chamber temperature to stabilize at the refrigerator setpoint or the chamber temperature to display higher or lower than the actual temperature.
        1) Probe bottles and glycerin will be replaced annually with the Helmer® Probe Bottle and Glycerin/Glycerol kit for refrigerators.

2) Follow the manufacturer instructions described on the Glycerin packet for use.
3) Probes must be immersed at least 2 inches in the glycerin solution.
4) Affix a sticker to the replacement bottles to indicate the date replaced and technologist initials. Use attachment 33978 – 2 *Glycerol Probe Sticker* to print stickers.

3. Document Inspection Sticker Date
   a. A yearly inspection sticker is affixed to each unit by Facilities Management (FM) with the date of inspection.

D. **As Needed Maintenance**
1. Temperature Controller Setpoint is programmed at the factory and should only be changed when instructed by Helmer® Technical Services.
2. All Refrigerator light bulbs should be changed when not illuminating.
3. Refrigerant will be added as Facilities Management determines.

6. Limitations

A. If the Helmer double door 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, refer to CHE SOP Corewell Health East - Variance Reporting - Blood Bank - All Beaumont Hospitals
   1. Document the *Equipment Out of Service* form and attach the form to the equipment.
   2. Notify Lead Technologist and/or Supervisor.

7. Revisions

Corewell Health reserves the right to alter, amend, modify or eliminate this document at any time without prior written notice.

8. References

A. Helmer® Refrigeration Operation Manual 360078-1/L
B. Helmer® Refrigerator Service Manual 360077-1/O
C. American Association of Blood Banks Technical Manual, current edition.
D. College of American Pathologists CAP Checklist, current edition.

9. Procedure Development and Approval

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10. Keywords

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