TRAINING UPDATE

Lab Location:	SGAH and WAH	**Date Implemented:**	09.19.2014
Department:	Blood Bank	**Due Date:**	10.15.2014

DESCRIPTION OF PROCEDURE REVISION

Name of procedure:

Refrigerated Centrifuge Maintenance (Sorvall RC-4)

Description of change(s):

1. Set 2 programs on the centrifuge:
    a. Program 1 is for centrifuging platelets (2000 RCF, 22°C, 10 min)
    b. Program 2 is to "cool" the centrifuge at full speed (4400 RPM, 22°C, on hold/unlimited time)

2. Prior to use, run the centrifuge on program 2 until it reaches the desired temperature.
    a. The centrifuge can only cool; heating is achieved by friction of the rotor when spinning
    b. If the centrifuge sits, it will get too cold

3. To take the temperature:
    a. Place 2 bags of saline in the centrifuge (need 2 to balance the centrifuge). The bags must be at room temp.
    b. Run the bags/centrifuge at maximum speed (program 2) until the temperature is reached.
    c. Stop the centrifuge and take the temperature of one of the bags using the infrared thermometer.
    d. Temp must be 20-24°C.

4. Form was updated to reflect changes to the procedure

Non-Technical SOP

Title	**Refrigerated Centrifuge Maintenance (Sorvall RC-4)**	
Prepared by	Stephanie Codina	Date: 4/28/2011
Owner	Stephanie Codina	Date: 4/28/2011

Laboratory Approval

Print Name and Title	Signature	Date
Refer to the electronic signature page for approval and approval dates.		

Local Issue Date: Local Effective Date:

Review:

Print Name	Signature	Date

Form revised 3/31/00

TABLE OF CONTENTS

1. PURPOSE

This document describes the process for maintenance of the Sorvall RC-4 refrigerated centrifuge.

2. SCOPE

This procedure applies to the maintenance and quality control of the Sorvall RC-4 refrigerated centrifuge.

3. RESPONSIBILITY

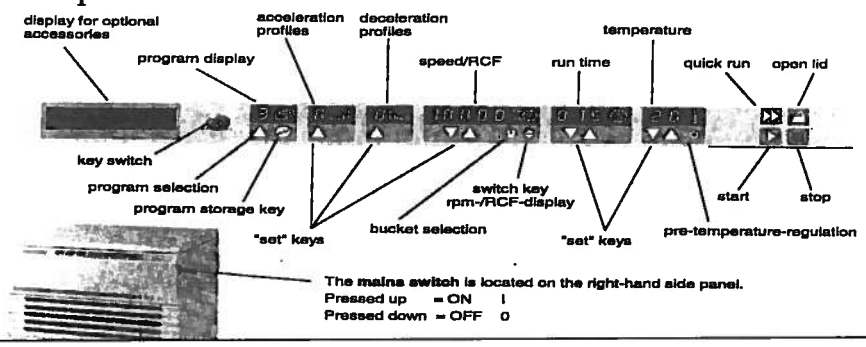
All blood bank staff members must understand and adhere to this procedure when using or maintaining the Sorvall RC-4 refrigerated centrifuge.

4. DEFINITIONS

Refrigerated Centrifuge: a centrifuge where the rotator area is cooled by mechanical refrigeration

5. PROCEDURE

Maintenance to be Performed Each Day of Use

Step	Action
1	Switch on the centrifuge. The mains switch is located on the right-hand side of the front panel. 

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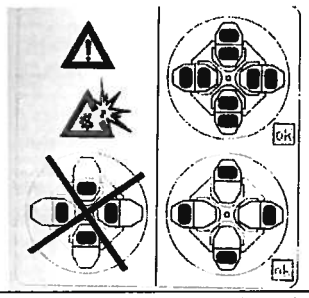
Step	Action
2	Visually inspect the centrifuge for cleanliness. Clean if necessary. Document the inspection on the QC form.
3	Select the program that corresponds to what you are centrifuging. A. Program 1 is routinely set at 2000RCF, 22°C, and 10 minutes for centrifugation of platelet products. B. Program 2 is routinely set at 4400 RPM, 22°C, on hold (unlimited time) to allow the centrifuge to reach the appropriate temperature range for centrifugation of platelets. C. You can change the program by pressing the program selection button until the correct program displays.
3	Run the centrifuge on program 2 until the appropriate temperature has been reached. It may take up to 30-60 minutes for the temperature to equilibrate. Note: The centrifuge does not have the ability to warm (only to cool). Heat is generated via friction of the rotor which is best achieved by running the centrifuge at maximum speed.
4	Stop the centrifuge when the appropriate temperature range (20-24°C) has been reached.
5	IMMEDIATELY change the program per step 3, and verify the settings. Document the verification on the QC form.
6	Balance the centrifuge. 
7	Verify the digital temperature of the centrifuge is within acceptable range of 20-24°C. Document the temperature on the QC form.
8	Start the centrifuge. A. Close the lid. B. Press the start key "▶." C. The centrifuge is not balanced properly if the "bAL" message displays.

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Step	Action
9	The centrifuge will stop when the run has terminated. A. Wait for the speed to reach zero then press the "open lid" key to open the centrifuge. B. Immediately remove the platelet product form the centrifuge. The centrifuge will immediately begin to cool and may reach an unacceptable temperature range.

Quarterly Maintenance

Step	Action
1	The Biomedical Engineering department will perform timer and speed checks on the centrifuge quarterly.
2	Compare the digital temperature of the centrifuge to the infrared thermometer. A. Obtain 2 blood bags filled with at least 250mL of water. Note: The bags will be used to balance each other, so it is important to match the volumes of the 2 bags. B. Store the water bags in the platelet rotator or at room temperature until they read 20-24°C with the infrared thermometer. C. Run the centrifuge per above procedure until the temperature is within acceptable range of 20-24°C. D. Place the water bags in the centrifuge. Be sure the centrifuge is balanced appropriately. E. Run the bags through a centrifuge cycle on setting 1. F. Immediately take the temperature of 1 centrifuge bag using the infrared thermometer. G. Compare the temperature obtained to the temperature reading of the centrifuge. H. The centrifuge and infrared temperatures must agree within ±2°C. If the difference between the two temperatures is >2°C, a. Remove the centrifuge from service. b. Notify a supervisor or the Quest Biomedical Engineering department. I. Document maintenance on the QC form.

Annual Maintenance

Step	Action
1	Check the rotor brushes and drive belts for wear. Replace as needed.
2	Check the lid safety interlock. Repair as needed.

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As Needed Maintenance

Step	Action
1	Clean the centrifuge chamber and buckets using 70% ethanol.
2	Clean the vent slots. A. Unplug the centrifuge. B. Remove the lateral fastening screws from the venting grid. C. Clean the lamellas with a soft brush and vacuum cleaner. D. Re-screw the venting grid to the centrifuge.

6. RELATED DOCUMENTS

SOP: Timer Accuracy Check
Form: Refrigerated Centrifuge Functional Quality Control Form (AG.F103)
Form: Centrifuge/Cell Washer Functional Quality Control Form (AG.F55)

7. REFERENCES

1. Fung, M., Grossman, Hillyer, C.D., and Westhoff, C.M, 2014. Technical Manual of the AABB, 18th ed. AABB Publishing, Bethesda, Maryland.
2. Standards for Blood Banks and Transfusion Services, 2014. AABB, 29th ed. AABB Publishing, Bethesda, Maryland.
3. Kendro Sorvall RC-4 Instruction Manual. Version 20057791. Kendro Laboratory Products, Inc. Asheville, NC. 9/2003.

8. REVISION HISTORY

Version	Date	Reason for Revision	Revised By	Approved By
		Supersedes SGAH B515.00		
000	6.27.2014	Moved RPM checks from semi-annual to quarterly; Changed timer checks from tech to Biomed; increased temperature setting from 20°C to 22°C (range did not change); changed temperature QC procedure per manufacturer's recommendation.	SCodina	NCacciabeve

9. ADDENDA AND APPENDICES

None

Shady Grove Adventist Hospital Blood Bank
Rockville, Maryland

Refrigerated Centrifuge Functional Quality Control

Perform on each day of use.

Date	Tech	Centrifuge is clean prior to use? Clean if necessary Y / N	Centrifuge is programmed for the correct settings? 22°C, 2000 RCF, 10 Min Y/N	Temperature 20 – 24°C Document Temperature on Digital Readout At Start of Cycle	Satisfactory Interpretation? Y/N

Perform Quarterly

Is the temperature set to 22°C? Y/N	
Serial Number of Infrared Thermometer	
Digital Temperature Reading of the Centrifuge (20-24°C)	
Reading of the Infrared Thermometer (20-24°C) (Measure Saline Bag After Cycle)	
Do the digital and infrared temperatures agree within 2°C? Y/N	
Are Results Acceptable? Y/N	
Date	
Tech	

Perform Annually

	Date	Tech
Check the rotor brushes and drive belts for wear. Notify a supervisor is replacement is needed.		
Check the list safety interlock. Notify a supervisor is repair is needed.		

Y = Yes
N = No

Reviewed By / Date:_____