

Human Immunology Center Core Laboratory

David H. Smith Center for Vaccine Biology and Immunology

Aab Institute of Biomedical Sciences

STANDARD OPERATING PROCEDURE: Operation and Maintenance of the Beckman Coulter Allegra X-15R and X-12R series centrifuges.

Date: 03/03/08

Author: Terry Wightman / Matt Conchran

Approval: Dr. Sally Quataert

### 1. Purpose/Scope:

This procedure defines the operation, maintenance and calibration of the Beckman Coulter Allegra X-15R and X-12R series centrifuges.

### 2. General Policy:

The HIC will adhere to the specific guidelines recommended by Beckman Coulter's instruction manual for the use and maintenance of each centrifuge. The specific policy is described below for use and care of each centrifuge. Maintenance and calibration for each centrifuge is documented on the equipment master schedule, vendor service record filed in the lab equipment record files and on the instrument certification sticker located on the right side of each centrifuge.

### 3. Specific Policy

#### 3.1. Installation of all centrifuges

##### 3.1.1. Reference the operation manual for the specific installation procedure of each centrifuge

3.1.1.1. Place centrifuge on a sturdy and level surface. This surface must be able to withstand the weight of the centrifuge (128 kg/ 283lb) as well as resist the vibration of the centrifuge when it's running. Make sure that the front feet of the centrifuge are fully supported by this surface.

3.1.1.2. Centrifuge must have sufficient ventilation to allow for heat dissipation. There must be 7.6 cm (3 in.) clearances at the sides and back of centrifuge. Also must allow additional clearance on the left side to allow access to the power switch

3.1.1.3. Centrifuge must not be operated in less than 10°C (50°F) or higher than 35°C (95°F). The relative humidity should not exceed 75%.

3.3.1.4. Check the air intake and exhaust for obstructions. Keep vents clear and clean.

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### 3.2. Operation of the Centrifuge

#### 3.2.1. Reference the manual for specific operation procedures.

##### 3.2.1.1. Setting up run speed

3.2.1.1.1. Press RPM/RCF once to enter the speed in RPM. Press twice if you want to enter the speed in RCF.

3.2.1.1.2. Using the key pad enter the desired speed.

3.2.1.1.3. Press enter/save to save the speed you desire.

3.2.1.2. Entering run time. You can enter up to 99 hours and 59 minutes or you can run the centrifuge on hold and it will continue to run until you press stop.

3.2.1.2.1. Press time to enter in your desired time

3.2.1.2.2. Use the keypad or arrow keys to enter in time. The time will be displayed on the display. If your desired time is over 59 minutes the centrifuge will automatically recalculate the time in hours and minutes. If you want to hold the time of run press the time key twice.

3.2.1.2.3. Press the enter/save key to save the desired time.

3.2.1.3. Entering a run Temperature. Temperature can be entered from -10°C to +40°C. If no value is entered the centrifuge selects the last entered temperature.

3.2.1.3.1. Press Temp key on keypad, using the keypad or arrow keys enter the desired temperature. (-10°C to +40°C) If outside of the range of the machine an error message will appear and the input will be cleared

3.2.1.3.2. Press the enter/save button to save your desired temperature.

3.2.1.4. Entering acceleration and deceleration rates. There are different rates for different processes. Refer to the operation manual for the acceleration rate preferred for what process your doing.

3.2.1.4.1. Press accel/decel and using the keypad or arrow keys enter the desired acceleration/deceleration rate.

3.2.1.4.2. Press enter/save

3.2.1.5. Starting a run.

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- 3.2.1.5.1. Press enter/save to check all desired settings and enter/save a second time to enter the settings in the computer. After settings is set and saved press start. When the light begins to flash the rotor will begin to spin. When the time expires on the run the the rotor will start stopping depending on the deceleration rate and the light next to stop will start flashing. When run is completed a tone will sound.
- 3.2.1.5.2. When run is completed push the door key. The door will then open allowing you to remove your samples.
- 3.2.1.6. Operating the pulse function. The pulse option is used to override a current time entered into the computer. The centrifuge will accelerate until you no longer press the pulse key. Then the centrifuge will decelerate using the maximum speed of deceleration. This pulse key just eliminates the need to press the start and stop keys.
- 3.2.1.7. Creating a program in the centrifuge. The internal memory can store up to 10 programs, which can be recalled using keypads numbers 0-9. Programs are saved even if power goes out.
  - 3.2.1.7.1. Press the program key and enter the desired number you wish to use for the program your entering. Press enter/save when done.
  - 3.2.1.7.2. Enter the program parameters eg. Speed, time, temperature, acceleration/deceleration settings and press enter/save.
  - 3.2.1.7.3. Press enter/save one more time when finished to enter the program into the computer system.
  - 3.2.1.7.4. To recall a program push the program key and the number of the program. Press enter to check the desired settings and press enter once more to enter the program into the computer. Then press start to start the program.
  - 3.2.1.7.5. To overwrite a saved program follow steps 3.2.1.7.1 to 3.2.1.7.3 for a program number that is already saved.
- 3.2.1.8. Using aerosol containment cups for centrifuging blood bags.
  - 3.2.1.8.1. Load the blood bags as far down as possible in the cups. Making sure the bags are as vertical as possible.
  - 3.2.1.8.2. Sandwich the tubing between the blood bag and the cup.
  - 3.2.1.8.3. To reduce the possibility of bag breakage align the blood bag seam with the rotor pivot pins with the label facing out.

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3.2.1.8.4. Make sure the top of the cup is firmly in place before starting centrifuge.

3.2.1.8.5. For any further questions refer to the SX4750 rotor manual

### 3.3 Maintenance of the Centrifuges

3.3.1. Daily: If completing any maintenance please sign maintenance log sheet.

3.3.1.1 Upon use inspect the centrifuge chamber for accumulations of sample, dust, or glass particles from broken sample tubes. Clean as required following BSL2 precautions and the instructions in 3.3.1.1 to 3.3.1.3

3.3.1.1.1. Cleaning of the centrifuge use only a dry paper towel or a mild detergent and a sponge. Clean the exterior and the drive hub using a paper towel or a mild detergent. For disinfection 70% ethanol can be used on the surface of the centrifuge.

3.3.1.1.2. For tube breakage examine the chamber gasket to make sure there are no glass particles retained on it. Carefully remove any glass particles visible and carefully wipe away any glass particles that remain in the chamber. Dispose of glass in the proper sharps container after decontamination.

3.3.1.1.3. If the centrifuge and/or accessories are contaminated with radioactive or pathogenic solutions, perform all appropriate safety and decontamination procedures. Refer to Chemical resistances (publication IN-175) to be sure the decontamination method will not damage any part of the instrument.

3.3.1.1.4. If using the centrifuge at subfreezing temperatures wipe condensation out of rotor chamber between runs with a sponge or clean cloth to prevent chamber icing. If chamber icing does occur defrost chamber by setting chamber to 30°C for 30 min and wipe out moisture before using again.

3.3.2. Weekly: When completing any maintenance, the maintenance log sheet is signed and dated.

3.3.2.1 The inside of centrifuge must be wiped out with a soft cloth and vesphene weekly to keep instrument free of dust and any other debris. This ensures proper decontamination and instrument performance.

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3.3.3. Monthly: When completing any maintenance, the maintenance log sheet is signed and dated.

3.3.3.1. A monthly inspection must be done for the rotor, buckets, and the multiwell-plate carriers. There must be no rough spots or pitting, white powder deposits, or heavy discoloration. If any of these are present contact your Beckman Coulter representative for information about the rotor repair service.

3.3.3.2 O rings on the aerosol containment canisters should be inspected for any nicks, abrasions, or other damage. If any damage is apparent replace with a new O ring and discard the damaged O ring. When replacing, O rings must be coated with a light film of silicone grease and then pushed into place with a pencil. O rings must be free of any damage in order for the canisters to retain aerosol containment.

3.3.4. Every 3 months:

3.3.4.1. Every three months after cleaning the inside of centrifuge with Vesphene, coat the sockets with "Paint on Graphite Lubricant". Allow the lubricant to dry for at least 5 minutes before using the centrifuge.

3.4 For any troubleshooting issues refer to the instruction manual located in the centrifuge folder in the equipment files drawer.

3.4.1. If the centrifuge circuit breaker trips for any reason, the power switch will move to the off position. Reset the circuit breaker by turning the power switch back to the on position. If it trips again do not reset it again as it could cause substantial damage to electrical and electronic components. Call the Beckman Coulter Field service representative.

3.4.2. The HIC personnel assigned to centrifuge equipment is responsible for scheduling preventative maintenance by a Beckman Coulter field service representative under the service contract after consulting the equipment master schedule.

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Reference:

Installation and Operation Manual for the Allegra x-15R and x-12R series centrifuge by Beckman Coulter.

**Revision History**

Version	Change	Impact	Justification	Change Date:
HIC 4-0001	New	New/HIC startup	SOP	1/22/08