**Purpose**

This SOP has been put made to describe and provide understanding on how the Avanti J-15 series centrifuge should be operated and how to maintain it.

**Scope of policy**

The Avanti J-15 series centrifuge should not be operated without the appropriate PPE and should only be operated by trained personnel. This SOP will also cover maintenance of the machine and relevant safety information.

**Introduction**

The Avanti J-15 series centrifuge is intended for the separating of components through the use of relative centrifugal force. It is designed to separate human samples, including blood and other body fluids, for processing, analysis, and in vitro diagnostic testing, as well as nonhuman body samples and chemical, including industrial and environmental samples. The centrifuge application includes- routine processing such as sample preparations, pelleting, extractions, purifications etc., cell isolation, binding studies and separations of whole blood, rapid sedimentation of protein precipitates, large particles, and cell debris.

**Safety features**

An electromechanical door lock system prevents user contact with spinning rotors and prevents run initiation unless the door is shut and locked.

A steel barrier surrounds the rotor chamber to provide full operator protection.

A rotor model identification system prevents the installed motor from running above its maximum speed.

An imbalance detector monitors the rotor during the run, causing automatic shutdown if rotor loads are severely out of balance.

**Operation**

To install a rotor:

1. Turn the power switch on
2. Select open door (this command will only be available when the rotor is at a complete stop)
3. Install the rotor according to the directions in the rotor manual. Ensure that the rotor is seated on the drive hub and avoid bumping the display panel keys during rotor installation and removal. (before installations ensure the drive hub is sufficiently lubricated)
4. Close the chamber door by pressing down firmly on both sides, when the door is properly latched, the START button appears.

Manual run:

1. Complete steps 1-3 of installing a motor
2. Set the run parameters (speed, time, temperature(if applicable), acceleration/deceleration, radius)
3. Select the setting. The parameter setting screen opens.
4. Use the keypad to enter a new setting.
5. Select ACCEPT ENTRY. The screen reverts to the home screen.
6. Check all the parameters are correct. Ensure the door is properly latched, and press START.
7. Wait for the time to count down to zero, or end the run by pressing STOP (to end a run for any reason, do not turn the power switch off, use the STOP button instead).

To operate the machine, turn the power switch (right hand side of machine) on. Insert your samples into the buckets and close the lid. When loading the buckets back into the centrifuge always ensure ‘Beckman Coulter’ is facing outwards. The display screen will light up and you will need to input the speed at which you would like to spin your samples. The maximum speed on this centrifuge is 10,200 rpm.

Once you have inputted the relevant information, press start. Stay with the centrifuge for around 10 mins or until it has reached maximum speed, just to make sure there are no minor faults with the run. If any of your sample has spilled out of the buckets or tubes they were in, leave the centrifuge closed for around 20 mins so the chemicals do not produce harmful aerosols and then proceed to correctly clean the spillage. Once the run is completely over remove your samples from the centrifuge and press the power off button.

**Retrieving your sample in case of a power failure**

If facility power fails, the run will be restarted when power is restore. In the event of an extended power failure, it may be necessary to trip the door-locking manually to remove the rotor and retrieve your sample. NEVER ATTEMPT TO OVERRIDE THE DOOR LOCKING SYSTEM WHEN THE ROTOR IS SPINNING. Wait for the rotor to come to a complete stop before attempting to open the door.

**Maintenance and cleaning**

Perform the following procedures regularly to ensure continued performance and long service life of the centrifuge.

* Lubricate the drive shaft with Spinkote at least once a month and after each cleaning
* Inspect the centrifuge chamber for accumulations of sample, dust, or glass particles from broken sample tubes
* Check the air intake and exhaust for obstruction. Keep vents clean and clear.
* Wipe condensation out of rotor chamber between runs with a sponge or clean cloth to prevent chamber icing.
* Lift the rotor out of its position once a month to ensure it does not get stuck in its fixed position.
* Treat O-rings with the lubricant provided every month. Ensure the O-rings are always black, shiny, and stretchy. If they are not one of these things, replace them with brand new O-rings.
* Always check the rotors are spinning without faults.

When cleaning the centrifuge always wear the appropriate PPE e.g. when checking chamber wear gloves to prevent broken glass piercing skin

1. To prevent accumulations of sample, dust, and/or glass particles from broken sample tubes, keep the chamber clean and dry by frequent wiping with a cloth or paper towel. For thorough cleaning, wash the chamber using a mild detergent, dilute the detergent with water (10 parts water to 1 part detergent), rinse thoroughly and dry completely.
2. Wash the bowl using a mild detergent such a diluted solution, rinse thoroughly and dry completely. Contact the cleaning solution vendor to verify that the solution will not damage the centrifuge. (unless it is solution 555)
3. Clean the centrifuge exterior surfaces by wiping with a cloth dampened with solution 555. Dilute the detergent 10 to 1. DO NOT USE ACETONE.
4. Remove the rotor from the centrifuge and clean the drive shaft, shaft cavity, threads, and the tie-down screw regularly using a mild detergent such as solution 555 and a soft brush. Dilute the detergent 10 to 1. Rinse thoroughly and dry completely. Lubricate the drive shaft with Spinkote after cleaning

The buckets can be autoclaved however do not autoclave the safety lids. Whenever washing the safety lids, be sure to remove the blue valve first because water will damage it.

Tube breakage: If a glass tube breaks, and all the glass is not contained in the bucket or rotor, be sure to thoroughly clean the chamber. Examine the chamber gasket to make sure that no glass particles are retained in it. Carefully remove any glass particles that may remain. Carefully wipe away any glass particles that remain in the chamber.

To sterilise/decontaminate:

Ethanol (70%) does not damage the centrifuge parts however is not guaranteed to sterilise the centrifuge, speak to the laboratory manager on the appropriate measures to take when sterilising.