WCAC Ultracentrifuges and Rotors.

This document summarizes Ultracentrifuges and rotors maintained by the WCAC and lists basic rotor and instrument maintenance tips. The operator is strongly urged to strictly follow all instructions in this document.

The WCAC is responsible for the following three ultracentrifuges. The rotors available are listed alongside. Before using any instrument for the first time please notify a WCAC staff member.

Ultracentrifuge	Location	Rotors
BC Optima L100K	ABC 216	SW 32 Ti 90Ti 70Ti 422 Ti
BC Optima XE 100	MIC 312E	SW-55Ti SW-28
Thermo Sorval RC6	ABC 216	Fiberlite F14-6x250y F12S-6x500 LEX F21S-8x50y SA-512

In case of a spill you should inform a WCAC staff member. In addition, you should immediately start appropriate decontamination procedures for the rotors, centrifuge and accessories such as the vacuum pump.

GENERAL CONSIDERATIONS

Never use a rotor without a lid. Super-speed or General Purpose rotors not tied down securely on the spindle may jump off and cause damage to the drive shaft and the centrifuge chamber.

Never attempt to touch or stop a rotor by hand. Failure to do so may damage the surface finish of the rotor and, over time, expose some pointed ends of carbon filaments, which may break through the skin like a wooden splinter.

Always check, prior to starting a run, the condition of the segmented over-speed disk of an ultra rotor. The over-speed disk is located at the bottom of the metallic hub. If the disk is scratched, partially peeled or otherwise damaged, replace the disk with a new one of the same type.

Excessive vibration of a high-speed centrifuge will indicate a grossly unbalanced rotor. Stop the run immediately, remove all bottles from the rotor and check counterbalancing of the bottles in accordance with the manufacturer of your centrifuge. Most high/super centrifuges require counterbalancing within ±1.0 gram. Ultra speed, fixed angle rotors require counterbalancing better than ±0.5 gram.
Do not exceed maximum rotor speed under any circumstance. Speed reduction may be necessary because of weight considerations of tubes, adapters, condition of the rotor, or the density of the solution being centrifuged. Be sure to follow appropriate instructions contained in the rotor manual.

Do not put a rotor covered with moisture on the pre-cooled drive spindle, or it can freeze into place. Never leave the rotor on the hub for long periods. Keep mating surfaces of the rotor and spindle clean.

If any unusual vibrations, sounds or odors occur, turn off power to the centrifuge immediately and do not operate the centrifuge until the cause of the improper behavior is determined.

Do not try to lift a rotor by force or by swaying it. If not removed immediately, rotors may stick to the spindles of some high-speed centrifuges due to condensation that can quickly freeze over the spindle. Leave the rotor in the centrifuge and wait until the centrifuge comes down to room temperature. Then, try lifting the rotor again.

Never use any abrasive tools to clean the rotor. If needed, uses soft brushes and wash only with mild soap or detergent solutions. Also, do not use metal implements to remove tubes.

ROTOR PREPARATION

It is always important to visually inspect the rotor and its components before and after each run for unusual nicks, check marks or other abnormalities. Always inspect rotor seals and o-rings, and replace damaged o-rings before use.

TUBE AND BOTTLE PREPARATION:

Check the rotor manual for specifications of bottles, sealing caps and screw closures.

ROTOR CARE: CLEANING AND DISINFECTING

The rotor body does not need washing and cleaning after every run. However, periodic washing under warm water, using a mild detergent solution will help reduce the amount of salt deposits from spills and permit easy placement of sample bottles in the rotor cavities.

- Do not use any sharp objects or tools on the rotor and any of its

components. Use only soft bristle brush to remove dry salts that might be deposited in the cavities or other locations unreachable by hand.
• The rotor contains some anodized metallic components, such as the hub, lid-knob and tie-down screw. Do not allow any salts or corrosive chemicals to accumulate over these components. Wash them periodically or, as required after each run.
• Regularly check the condition of o-rings. Replace worn, cracked or damaged o-rings.
This rotor utilizes o-rings for proper sealing of the cavities to maintain atmospheric pressure in the rotor during the run. All rotor o-rings and the surfaces of the o-ring slots (they are placed in) must be kept clean, and always lightly greased, using a silicon vacuum grease.
• Air-dry all rotor components; do not wash any rotor components in a dishwasher.
Do not soak in detergent solutions for long periods, i.e. overnight.

All rotor components, including the o-rings may be autoclaved at 121°C for up to an hour. O-rings and gaskets may be left on the rotor. The rotor should be placed in the autoclave upside down. Ethanol (70%), or bleach (10%) may also be used. However, ethanol disinfecting should be done away from the centrifuge at a location, i.e., a vent hood, safe for handling flammable liquids. Wash all rotor components thoroughly with water to remove residual ethanol, bleach or other solutions.

WHAT TO DO IN CASE OF TROUBLE.

The most common problem is spillage of sample during the run from loosely capped bottles and the resulting imbalance, bent shafts and/or rotor freezing over the spindle.

If a bottle develops a significant leak in the middle of the run, there could be some damage to the drive assembly and the centrifuge chamber caused by the grossly unbalanced rotor. It is strongly recommended, therefore, that bottles are re-used only for the number of times (or less if subjected to aggressive chemicals) recommended by the manufacturer.

Do not try to lift a frozen rotor by excessive force or by swaying it. If not removed immediately, rotors may stick to the spindles of some high-speed centrifuges due to condensation that quickly freeze over the spindle. In such a case, leave the rotor in the centrifuge and let the centrifuge chamber come down to room temperature. Then, try lifting the rotor again. If that fails call the instrument manufacturer for advice and send a note to WCAC staff.