

Avanti J-26S XPI Operating Instructions

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Instrument Description and intended use

The Avanti J-26S XPI is a refrigerated centrifuge capable of generating up to 48,400 g of rotational centrifugal force with JA-20 rotor (20,000 rpm max). Typical uses include: pelleting cells from growth media, isolating organelles, clarifying suspensions (e.g. blood, nanoparticle mixtures), precipitating nucleic acids, density gradient separations (e.g. percoll or sucrose gradient), virus/bacteriophage isolation. The chamber temperature can be maintained from -10 to +40 C and the device operates at a partial vacuum (190 torr) to minimize friction during operation.

The centrifuge is intended for use by the IU Chemistry Department and their affiliates. Please contact Jonathan Karty (jkarty@iu.edu) or the A617 user group (bl-chem-a617users-l@indiana.edu) for training **BEFORE** to using this instrument.

General Guidelines

Only individuals who have been trained by one of the designated trainers, USERS MAY NOT TRAIN THEIR LABMATES!!

Only use one of the rotors provided for the J-26S XPI. These include: JA-17, JA-20, JLA-16.250, and JLA-8.1000. Manuals for the centrifuge and its rotors can be found on the A617 webpage (<https://www.chem.indiana.edu/facilities/research-facilities/biochemistry-resource-room/>).

Use centrifuge tubes rated for the RCF you intend to use. Tightly cap all tubes as the instrument runs at a partial vacuum and the gasket on the rotor may fail.

Please clean up all spills IMMEDIATELY

Contact Jonathan Karty or A617 user group listserv if there any error codes or problems with the centrifuge.

Each rotor has suggested centrifuge tubes and maximum loadings. Please consult the manual for the rotor for suggested tubes and maximum sample volumes.

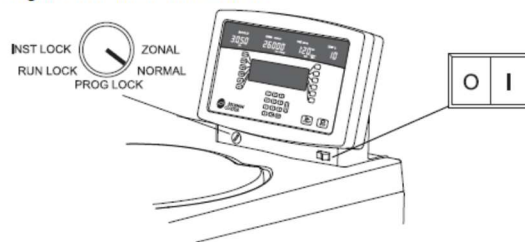
Only even numbers of tubes can be centrifuged (2, 4, 8, etc.) use a tube filled with water/density gradient fluid as a blank.

All tubes must be BALANCED (opposing tubes have nearly identical weights).

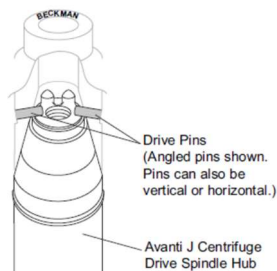
Typical Operating Procedure

1. Precool the rotor if needed by either:
 - a. Place rotor in a refrigerator/cold room for 10-30 minutes
 - b. Mount rotor in the centrifuge and run it empty with its lid closed at 2000 rpm for 10-30 minutes prior to centrifuging samples.
 - c. Note, precooling time in centrifuge must be counted in log entry.
 - d. See instruction 2 for mounting the rotor
2. Mounting the rotor (JA-17 instructions below, similar for other rotors, see their manuals)
 - a. Turn the centrifuge on (push the 1)

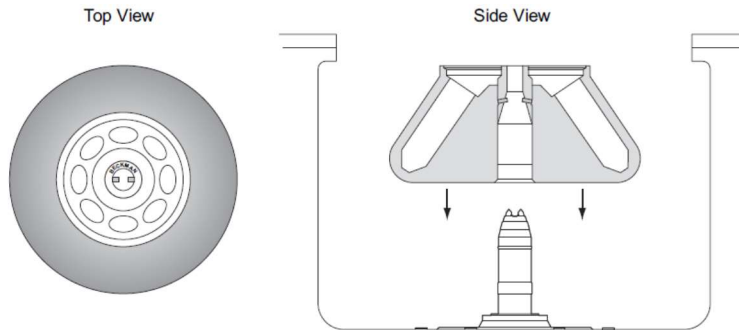
Figure 1.1 The Power Switch



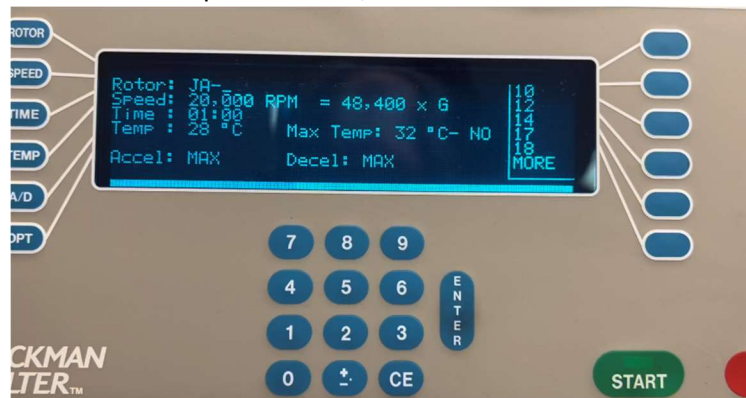
- i.
- b. Push the foot pedal to open the chamber
- c. Dry any condensation away from the chamber walls and rotor
- d. Make sure a light layer of "Spinkote" lubricant is on the metal threads of the lid
- e. Hold rotor over the center of the spindle, align the rotor so the name "Beckman" is parallel to the teeth on the spindle (see images)



i.



- ii.
- f. Lower the spindle carefully over the rotor until the drive pins rest on the top of the spindle, but not on the teeth.
- g. Turn the rotor slowly to make sure it is properly seated
- h. Place bottles into the cavities of the centrifuge
 - i. Make sure opposing tubes are balanced (nearly identical weight)
- i. Make sure o-rings on lid have a THIN layer of silicone vacuum grease.
- j. Place the lid on the rotor and tighten the knob until secure; do not overtighten.
- k. Close the chamber lid, make sure it clicks into place
- 3. Program the centrifuge with your parameters
 - a. See Avanti Operating Manual, pages 2-4 → 2-13 for detailed descriptions of parameters
 - b. Select the rotor you are using
 - i. Push the “Rotor Button” on the upper left
 - ii. Push the button that matches the rotor you loaded
 - 1. Push type button on right (e.g. JA or JLA)
 - 2. Push 17 button (4th from top on right)
 - a. press “more”, bottom button for other rotors



- iii.
- c. Press the “Speed” key (2nd from top on left) and use the keypad to enter the desired rotation rate
 - i. Note, you can use rotation speed (RPM) or relative centrifugal force (RCF) to set speed.
 - ii. Push the appropriate soft button on right to change the unit of measure
- d. Press the “Time” key and make sure HH:MM (hours:minutes) is displayed, then enter how long you wish to run for. If ω^2t shows up, hit Time again to display HH:MM.
- e. Check all parameters again and make sure chamber door is fully closed, then press enter, then press Start

- f. After about 30 seconds, make sure the ROTOR ID displayed on the screens matches the rotor you mounted in step 4
4. After a run is completed
 - a. Wait until rotor stops, then press foot pedal to open chamber.
 - i. You can end a run early by pressing stop
 - b. Remove rotor from centrifuge
 - c. Remove rotor lid to access samples
 - d. Dry any condensation from the inside of the centrifuge chamber and dry the rotor
 - e. Turn the centrifuge off
 - f. Place rotor back on the rack next to the centrifuge.