

Procedures for the SFU Protein X-Ray Diffraction Data Collection Facility

Location:

Room: SSB7158/7156,

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To turn on the X-ray machine:

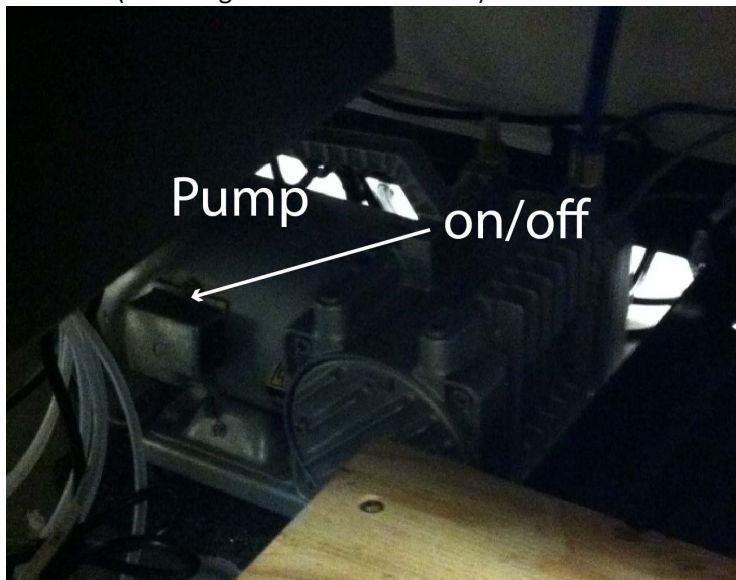
Detector:

Turn on Blue box (red button)

Pump on (reach in)



Blue Box (inside right hand side of table).



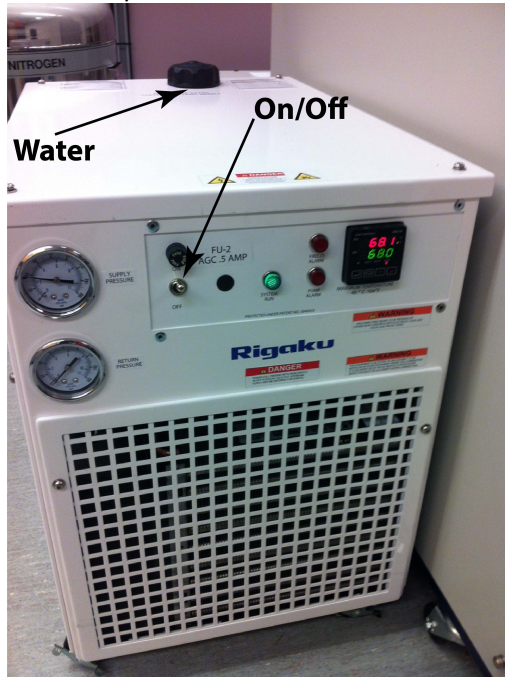
Right hand side of table, reach in and make sure back pump is on.

Generator:

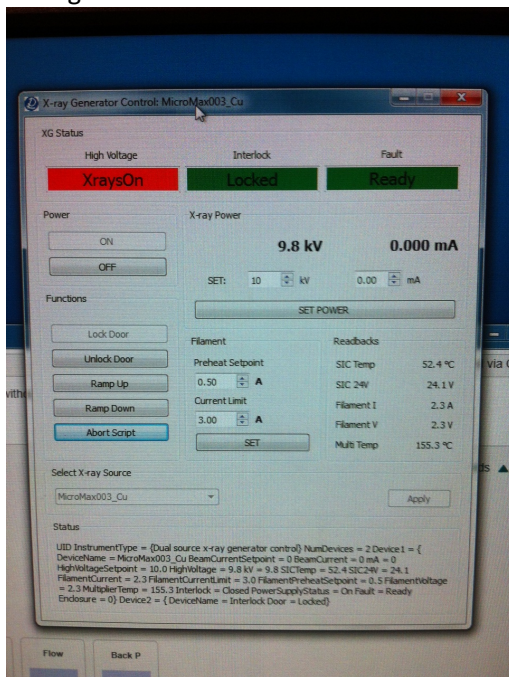
Turn on heat exchanger (silver toggle).

Open generator GUI (Spellman XG Controller) and press ramp up.

Note: Requires about ~ 1 hour to obtain stability



Heat exchanger.



Generator GUI

Cryo:

Dry air unit (big white box behind table)

Controller for oxford (inside table, middle door, top unit, switch in back of box on right side.

GUI – Cool to 100K (173C) – press on, and then cool at 200K/hr to 100K.

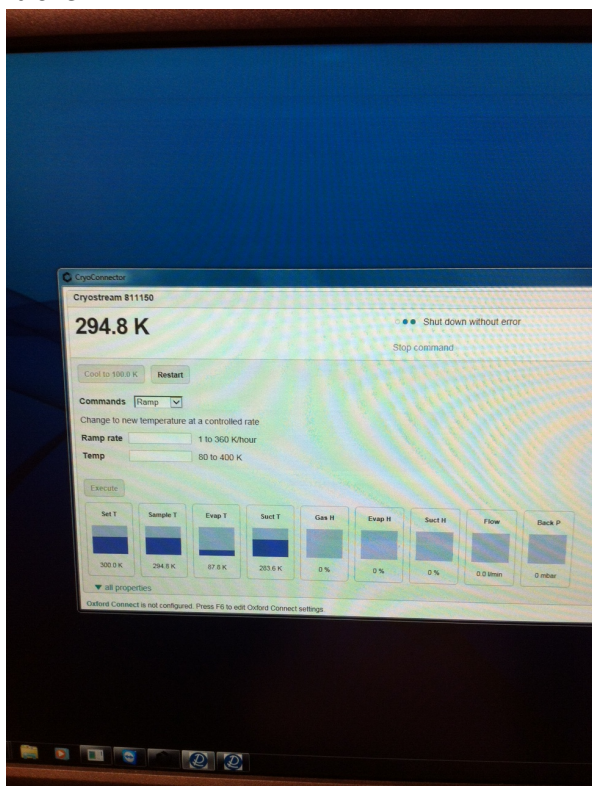
Note: It takes about 90 minutes to obtain temp and flow



Oxford Cryosystem AD51 Dry Air Unit, ~ 10-15 L/Min



Cryo Controller



Cryo GUI

To turn off the X-ray machine:

To turn off generator:

Open GUI for generator and select ramp down
Leave heat exchanger on

To turn off cryo:

Open GUI for Oxford
Ramp temp up to 300K at 200 K/hr
Turn knob on cryostat to O.

To turn off detector:

Turn off blue box

Can turn off surge protector inside of main door (left), but not necessary.

Trouble shooting

Things to check if the shutter is not working:

Plug to optics

Vacuum

Door

Things to check if you are not getting X-rays:

Button

Key

Heat-exchanger

If the initialization of the Detector is not working -

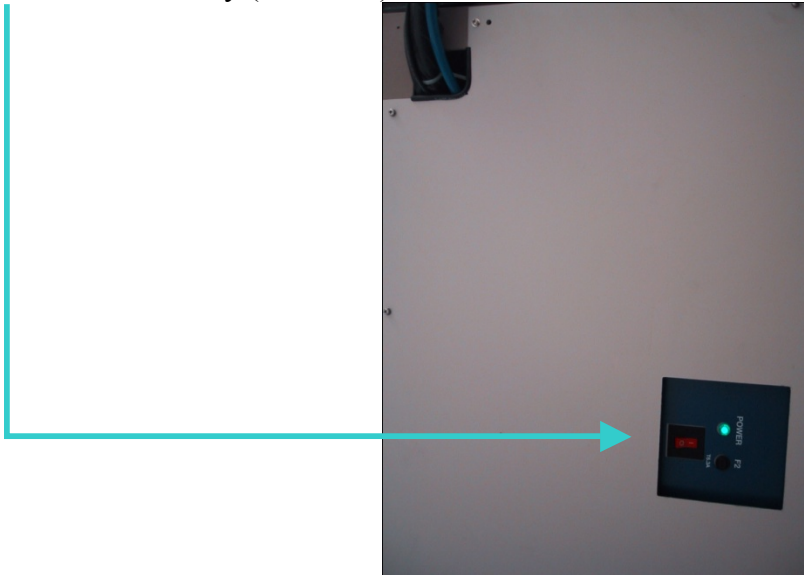
Restarting the Controller and PC

See R-AXIS IV++ CD MARKING SYSTEM INSTRUCTION MANUAL, Manual No. ME11526A03

If the detector does not seem to work properly, or if you have trouble controlling the setup from the PC, then controller/PC system should be shut down and restarted.



The shut down order is not critical but you must close all applications and turn off the computer, the "pizza box" above the PC (both are in SSB7156) and the switch on the blue part of the controller main body (SSB7158).



Leave them off for at least 15 minutes.

Turn them on in this order:

1. Blue controller
2. "Pizza box"

3. Finally, the computer. The computer must recognize the detector as a SCSI device and can't if it isn't turned on first. Log onto the PC. If you get a message saying that a new device has been detected, press "Ignore". You should now be able to continue.

Maintenance

Heat exchanger / Generator:

Top up distilled water in conditioner every week.

Change distilled water in conditioner every 6 months.

Cryo:





230L dewar of liquid nitrogen, Order a new Dewar ~ every 2 weeks.



Cryo Dewar

Top up liquid nitrogen in Cryo dewar every week to 10 days.
Dewar depth ~ 50 cm, uses about 7 cm per night.

Parts:

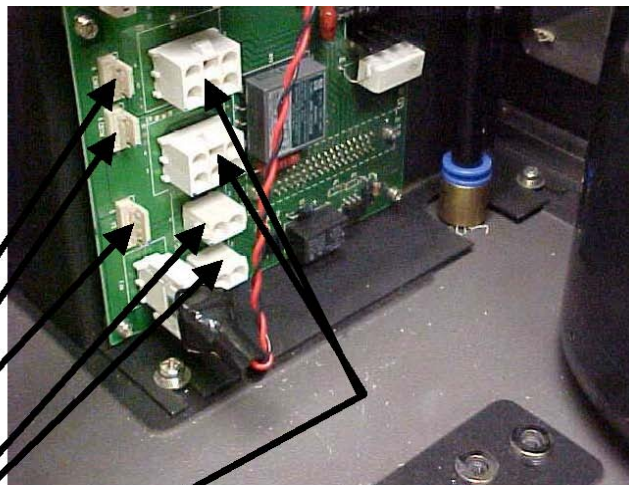
- Change filter (10-30u max) in conditioner every 6 months. (Can get at hardware store)
- Replace diaphragm in pump every 2-3 years.

RAXIS IV ++ IP Belt Replacement

Documentation derived from MSC-supplied document IP-BELT-REPLACEMENT-PROCEDURE.pdf



1. The first step in this procedure is to turn off the power at the controller and then remove the top cover, the cables from the back, and the side panels.
2. Disconnect the following plugs from PC Board A337-35-1D
3. Remove the four thumbscrews that secure the back panel of the erase lamps and remove the erase lamps.

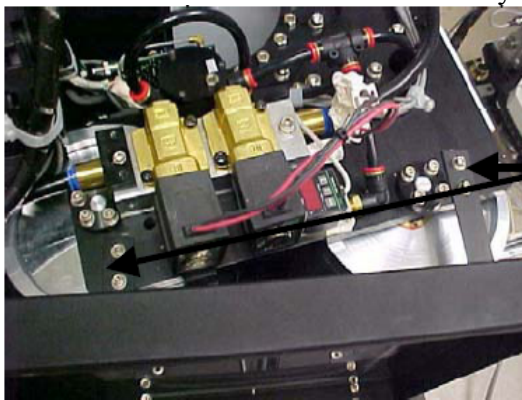


- CINX 1
- CDTM 1
- VS 1
- L1 and L2
- CD and FR

Thumbscrews

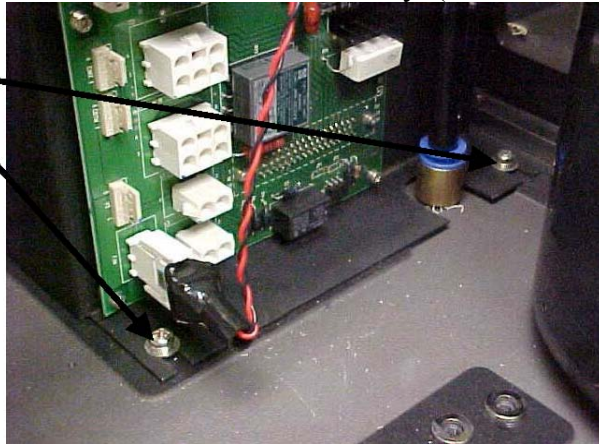


4. The remainder portion of the erase lamp housing is attached by four hex head screws to the tops of the roller plate, and by four hex head screws on the inside of the lamp housing. Remove these screws and take away the remainder of the erase lamp housing.



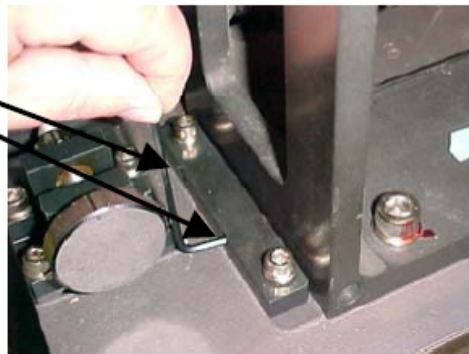


5. Remove the vacuum tube that runs from the base of the unit to the solenoids.
6. Loosen the two Phillips head screws that secure the interface unit to the base. These need only be loosened a bit to allow the interface unit to slide back and away. (DO NOT REMOVE



THE INTERFACE YET)

7. Loosen the setscrews of the pusher blocks that push the read head into position.



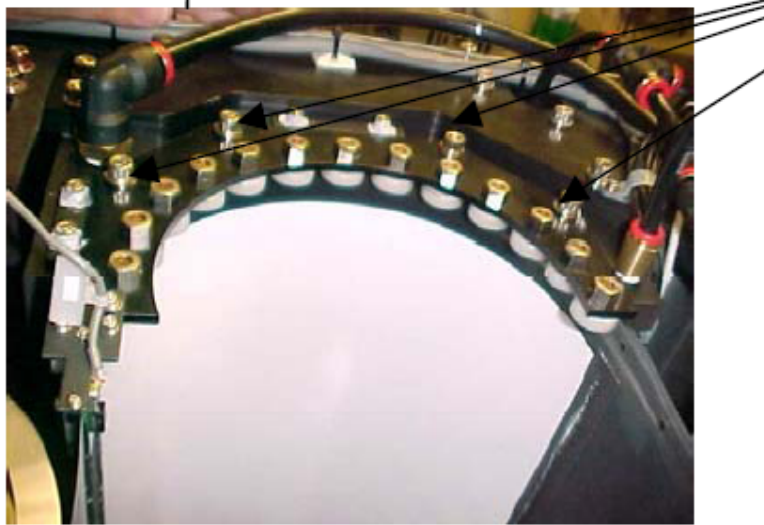
9. Rotate the read head motor until the Read head is positioned at the middle of the stage. Jumper pins two and three are shown here, this will help protect the laser from static charge.



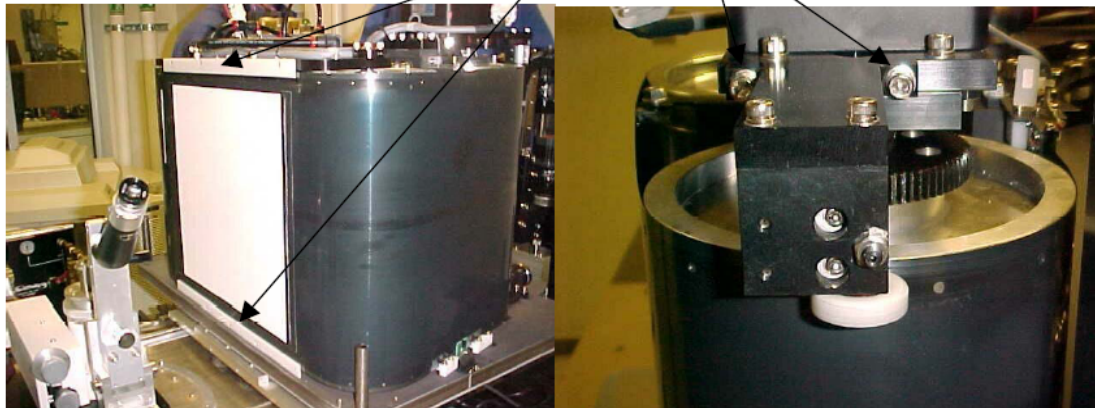
10. The Read Head is secured by Four Hex Head Screws. Loosen and leave in place until read to lift the unit way. It is best to have two people to remove the read head, one to hold and move the interface unit, the other to lift away the read head. When ready remove the hex head bolts and tilt the top of the read head away from the IP belt, then lift straight away. Set the unit on a flat stable surface, the rotate the read head until the laser assembly rests on the table surface.



11. The top set of roller is connected with four Hex Head screws, remove these screws and the top of the IP belt will be free.



12. On the front of the detector there are two plastic guides that help to guide the IP Belt. They are held in place by Phillips head Screws, remove the screws and the guides. There is also a roller guide on the drive roller, remove this.



13. Pulling straight up, the belt should now slip freely off the rollers.
 14. Using Isopropanol clean the rollers well as well as both vacuum plates. (DO NOT USE ACETONE) Acetone will destroy the silicone strips.
 15. Install the new belt. * Important* The Belt has sensor holes cut in it. The oval shaped holes are at the top, and the round at the bottom.



TOP

BOTTOM

16. Slide the belt on over the top, making sure that it fits into all the sensor slots properly. Insert the bottom of the belt in past the bottom set of rollers, replace the plastic guides in the front of the detector, this will help to hold the new belt in place.
17. Place the top set of rollers in position and insert on end screw loosely, then push the other end of the roller into place. This will push the IP belt into position. Make sure the pins on the IP belt Rollers are aligned with the holes in the belt. Replace the Hex Head Screws on the Rollers and Tighten.
18. The belt should be very close to the proper tension and should only need minor adjustment after the rest of the unit is reassembled.
19. Replace the read head in the same manner it was removed, keeping the top leaning back then gently setting it back into position.
20. Use the pusher blocks to pusher to move the Read Head into proper position, then tighten down the Hex Head bolts.
21. Remove the Jumper, and put the unit back together in the order it was taken apart.
22. Once the unit is together, initialize and perform a belt adjustment procedure.