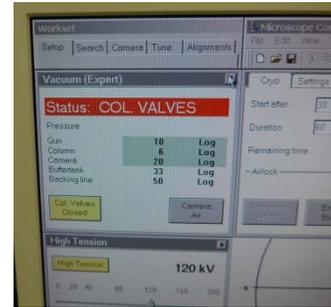


Manual: How to insert EM specimen holder

1. When you come to the TEM you first check that:
 - a. vacuum values are correct (gun below 25, column below 30, camera below 25)
 - b. High tension is on; column valves are closed
2. Fill the dewar with liquid nitrogen (depending on the length of your session you may not need to fill it to the top); insert the cooling wires gently without spill



3. **Taking the specimen holder out of the microscope** (do the movements as precise as possible, never use any excessive force):
 - a. With your left hand push gently onto the blue surface; the pull gently on the holder until it stops (about 6cm). During this movement the holder will pull back so you should not let go. There is a pin at the inside of the black plate where you grasp the holder: This **pin** is currently at a **6: O'clock** position.
 - b. As soon as you cannot pull the holder more (but be sure to not use too much force) you turn the holder anti-clockwise until it stops. The stop is after about a 120° turn and the **pin** is at a **11: O'clock** position now. (As soon as you have started the turn, the holder is stable and does not pull back so you don't need to pull anymore).
 - c. Take your hands from the holder (be sure you are in the correct position with the pin at 11: O'clock) and reposition your right hand as shown in the picture: Your **ring finger pushes against the inside of the black plate** and your **thumb pushes against the blue surface**. As you now push with the thumb there will be some resistance for the first 2 cm. Thereafter the holder will become loose and you need to gently pull it out further without losing control and touching anything inside.



4. Position the specimen holder in its outside stand use the needle to lift the grid-holding ring. Put



grid onto the opening of the holder, position it exactly and close the ring. Never touch the holder tip with your hands.

5. **Putting the specimen holder back into the microscope** (do the movements as precise as possible, never use any excessive force):

- a. Position the holder in front of the opening of the EM column with the **pin** pointing to an **11:00** position. Now insert the holder gently until the **black marker indication** is **directly in front of the opening** . If it the movement is not rather easily and smooth you maybe nee to correct the rotation slightly.



- b. At this position (holder half inserted and pin at 11.0 clock) the pumps will start and you have to wait for about 90 seconds until the pre-pump cycle is finished. If you do not insert the holder sufficiently, the pumps will start but the O-ring of the holder is **not** yet at the right position and the vacuum will crash as soon as you continue!! (**very bad!**).

- c. At the end of the pre-pump cycle the pump will stop and the red LD below the goniometer will get off (sometimes this LED will not go on or goes off prematurely: then you need to listen to the pump and still wait at least 90 seconds!). Now you are allowed to turn the holder slowly anti-clockwise until the **pin** is at the **6:00** position. At this position the holder will pull in but you need to guide it slowly in until it is fully inserted. If the red LED does not go off, check if right holder is chosen in the menu (single tilt) and confirm it. Before opening column valves check vacuum (should be as indicated above)!

