

SOP

Turn ON Procedure:

1. Turn on the red switch on the right side panel of the tool. The arrow on the knob pointing upwards indicates ON position. Computer is automatically turned on.
2. The indicator (located on top of the tool) is shows red light. The Power Lamp & Door Lamp are green.
3. After the computer is turned on (booting completed), it will display an alarm message "Emergency !! Check out the EMG button Safety sensor."
4. Press Reset button (yellow button on the right side of the computer screen).
5. The indicator light should change to yellow.
6. In this position if the door is opened, an error message "Emergency !! Check out the EMG button Safety sensor." is displayed. To remove the error message close the door & press the Reset button.
7. If you press the Door Lamp button for 3 seconds, the Door Lamp is turned off. After this, if the door is opened no error message is displayed. You can open the door.
8. Check Main Air pressure (on right side of computer screen) – min. value is 5 bar. The pressure can be increased by adjusting the regulator (black, open the left panel on the front side of tool, black colored regulator is present adjacent to two cylindrical gauges.)
9. Turn on the vacuum pump. The indicator light should turn to Green. When it is blinking means our system is ready for polishing.
10. The display on the right side of the computer screen shows the vacuum value in kilo Pascal. The recommended vacuum value is > -80 kPa. The minimum vacuum value is -60 kPa. 0 kPa is the atmospheric pressure.

Assembling Wafer carrier to the head (Right side head, R):

1. Make sure that there are 3 O-rings on the wafer carrier.
2. Check the clearance of 2 holes present on the wafer carrier by passing air through them using the N2 gun.
3. Clean the surface of the ring and rubber membrane by using lint-free cloth.
4. Lower the stopper (present behind the wafer carrier holding column).
5. To fix the wafer carrier to the head, properly align the 4 pins present on the wafer carrier with 4 slots present on the head(R). Push the wafer carrier up and then turn it left to fix the carrier head.
6. Take a gap plate of 1.5mm thickness and pour some DI water on the surface that will come in contact with the pad. Place the gap plate on top of the pad.
7. Go to Manual operation menu of the software.
8. Wafer pressure & R-ring pressure should be kept '0'.

9. Turn ON the Head(R) Down. This brings the Head(R) down so that it touches the gap plate placed on the pad.
10. Tighten the stopper (just finger tight).
11. Put the clamp and tighten the bolt using Allen key (no. 6, not very tight, just little more than finger tightening).
12. Take the head up by turning OFF the Head(R) Down button.
13. Remove the gap plate.
14. Make sure that the Wafer & R-ring pressure is '0'.
15. Turn ON the Head(R) Down button to move the head to lower position.
16. Rotate the wafer carrier by hand. Wafer carrier should rotate freely. This makes sure that there is gap between Retainer ring & Pad.
17. Enter R-ring pressure as 300g/cm² and rotate the wafer carrier by hand again. It should not rotate as R-ring pressure reduces the gap between retainer ring and pad to zero.

Removing the Wafer carrier from the Head(R):

1. Loosen the bolt of the clamp and remove the clamp.
2. Hold the Wafer carrier (with both the hand) and rotate right to remove the Wafer carrier.

Preparing the conditioner:

1. There are three pins in the conditioner. Make it fit with the holder properly and rotate left and it will be locked.
2. Go to manual process.
3. Put some speed of the platen like 93rpm. Click input
4. Head (L) speed -100
5. Head (L) pressure -4
6. Turn on oscillation
7. Supply DI water on the pad-pump 1 -ON
8. Set time -3min=180sec
9. Press Head (L) down -on
10. Press Start.
11. Flow of the DIW can be controlled by the flow meter. Open the bottom left door. There is a black circular disc at top left corner. Rotate it to make the necessary flow.
12. If the water is not coming then press the blue switch on the di water plant once.
13. When the conditioner is conditioning then the sensor on the top of it should glow red LED. Otherwise it will not rotate. If it is not glowing change the position of the sensor a little.
14. Put the Head (R) Up.

Before putting pump 1 or pump 2 pipe in Slurry:

1. Put DIW in a beaker and put the pump pipe into it and start the pump to clean it.
2. Now put the pipe into the slurry and start the pump for few seconds so that the pipe should be full of slurry only.

Difference between Manual mode and Auto mode:

1. in auto mode all the program can be written once and once it starts it will continue till the end.
2. in manual mode we can do each of the step separately and can stop any time.

To run a process:

1. Select a recipe or write your own one and save it.
2. One window come-Make it yes.
3. There are 20slot that we can save different programmer.
4. Select the recipe to be run and load the recipe.
5. Save that one.
6. go to main mode
7. Click to the Synchronize part= to make temperature value recorded from the beginning of the process.

How to hold the wafer:

8. put the wafer upside down
9. Put some DIW on back side of it.
10. Place it inside the wafer holder and press the W/Chucking button on the top right side of the machine.
11. If the LED on the switch is green then it will try to suck the wafer by vacuum.
12. Make it of by pressing once to release the vacuum and if you continuously press it then air will be bowed from it and it will help to take the wafer.
13. To see proper position of the wafer, put a dummy wafer on top of the pad and see your actual wafer through it.
14. After fitting the wafer in proper position- put the DIW and slurry pipe in the middle of the platen.

Polishing:

15. After everything is ready- press start.
16. Close the doors.
17. to see the temperature variation in graph-go to start –CMP eye-
18. If you want to see the process position at any time –go to Auto process- two yellow line will blink in between the part of the recipe which is going on.
19. After the process- open the door.

20. Take out the wafer by pressing the W/Chucking switch and holding it for 3 sec.
21. Wash the wafer properly by DIW.
22. Make it dry by blowing N2.

Sometimes after the process the wafer may be staying on top of the pad. It is fine no problem.

To change the flow of the slurry:

1. Open the bottom right door.
2. select the pump controller (pump-1/pump-2)
3. Put the pin from right to left by moving it.
4. Put the black rubber part of the pipe in between the two “^” shape part at the two side of the holder.
5. After this put the pin again back to right from left.
6. Push the side pins to down position as much as it goes-but do not apply any extra force.
7. There are 4 buttons in it.
8. press left one –called Mode to go to Set position
9. Then put Up/Down one to make high/low value of the flow.
10. 60 is a standard value. Max is 200.
11. To check the flow rate we have to put the pipe outlet into a measuring cylinder and the pipe inlet into DIW containing in a beaker.
12. flow is always double the value set in the flow meter-like if the set speed is 100- then water flow is 200ml/min
13. Never change the ratio part any time – it is fixed to 9 for pump one.

For emergency stop:

1. Press the emergency button on the right side of the machine once.
2. A window will open in the computer showing the emergency stop.
3. Then if you want you can remove some part of the wafer holder or conditioner.

To make it back to normal position:

1. Rotate the emergency switch clock wise once.
2. press the reset button

Shutting down the system:

1. Take out the conditioner from holder.
2. Take out the clamp and the wafer holder from the holder.
3. Clean it by DIW.

4. Close the software by x in the right top corner.
5. Shut down the computer.
6. Turn the main switch off – the arrow should point left.