

# PLASMATHERM WAF'R/BATCH 74 ETCH -- AUTOMATIC MODE OPERATING PROCEDURE

Rev. 12/27/01

## Notes

1. Pressing **STOP** on the **CONTROL** keyboard may silence the audible alarm.
2. If the **STOP** switch on the **Control** keyboard is pressed while a process is running, the process will be put in **hold**. Pressing **RUN** on the **Control** keyboard can restart it.
3. If the **STOP** switch on the **Control** keyboard is pressed and held for 5 seconds the process running or in **hold** will be permanently aborted.



## Venting and Loading Wafers

1. Ensure no other process is running in either chamber.
2. Ensure the **chamber select key** is turned to **CHAMBER 2** (right-hand chamber).



3. Turn the **MODE** key switch to **MANUAL OPERATION**.
4. On the **FUNCTION** keypad, press **MANUAL** and, while holding it, press **VENT**. The system will pump to base pressure for a short time and then vent to atmosphere.
5. When the **ATMOSPHERE** LED on the pressure status panel is lit, you may open the chamber and load your wafers.



- On the **FUNCTION** keypad, press and hold **MANUAL** while pressing **PUMP DOWN**. The system will pump to base pressure for a short time and then vent to atmosphere.
- The system will now be under vacuum.

### Setting Your Etch Time

- Turn the **MODE** key switch to **CHANGE STORED PARAMETERS**.
- Select the process program by pressing **PROCESS** on the **DATA** keyboard and while holding it down press the desired process number.

Process 5	CHF3/O2 Etch
Process 6	SF6 Etch
Process 8	SF6 Etch



- Press and hold **STEP** on the **DATA** panel while pressing number **5**. This is the programmed step that etch occurs.
- To input your etch time, press and hold **SET** on the **FUNCTION** panel, then press **STEP TIME**. All buttons on the **DATA** panel will light.
- Key the number pad for the desired setting. Press **ENTER** to complete the input and the **DATA** panel lights will go out.



- Proceed to Review Program or Run Program section.

## Review of Program

1. To review each step of the process selected, press and hold **STEP** while pressing a step number (1 – 8) on the **DATA** panel. This selects the programmed step. Step #9 is dedicated to venting.
2. On the **FUNCTION** panel, press and hold **READ** while pressing a function button.

Example: press and hold **READ**  
press **PRESS SETPT**

The reading will be of the pressure setpoint for that process step.

3. To change a setting, press and hold **SET** on the **FUNCTION** panel while momentarily pressing a function button. All buttons on the **DATA** panel will light. Press the number pad for the desired setting. Press **ENTER** to complete the input and the **DATA** panel lights will go out.

Example: press and hold **SET** on **FUNCTION**  
press the **PRESS SETPT**  
key the value #.### on the **DATA** panel  
press **ENTER** on the **DATA** panel

4. Read and set, if necessary, all functions to each process step.

## Run Program

1. If wafer has been loaded, turn the **MODE** key switch to **AUTOMATIC OPERATION**.
2. Select the process program by pressing **PROCESS** on the **DATA** keyboard and while holding it down press the desired process number. To set the program to step 1, press and hold the **STEP** switch then press **1**.
3. Press **RUN** on the function keypad. Hold the lid down slightly with your hand. The chamber will be pumped to base pressure (< 0.007 on the pressure status display).
4. After pressing **RUN** the system will automatically sequence your etch. An etch sequence should consist of the following steps: (Also see the programming chart).



- Step 1 Turbo pump turns on and pump down to base pressure for 3 minutes.
- Step 2 Flow oxygen flows at 10% for 1 minute.
- Step 3 Etch gases flow at setpoints with no set pressure 1 minute.
- Step 4 Flow etch gases at setpoints with pressure control at setpoint for 2 minutes.
- Step 5 Etch process - flow etch gases at setpoints, control pressure to etch setpoint, and turn on RF at etch setpoint for etch time.
- Step 6 Flow N<sub>2</sub> only at 100%, no RF, no pressure setpoint for 2 minutes.
- Step 7 Pump to base pressure - No gas flow, no RF, no pressure setpoint for 2 minutes.
- Step 8 Vent.

You may observe any parameter during the etch by pressing and holding **READ** on the **FUNCTION** keypad and while pressing the desired parameter. Read the actual value on the **DATA** display.

### **Venting and Unloading Wafers**

1. After the process time has expired the system will vent automatically. The system will pump to base pressure for a short time and then vent to atmosphere.  
 [NOTE: If the system does not vent to atmosphere, check house nitrogen supply, turn key to manual operation, and then press and **MANUAL** on the **FUNCTION** keypad while pressing **VENT.**]
2. When the **ATMOSPHERE** LED on the pressure status panel is lit, you may open the chamber and unload your wafers.



3. Close the chamber lid, press and turn **MODE** key to **MANUAL OPERATION**.
4. Hold **MANUAL** on the **FUNCTION** keypad while pressing **PUMP DOWN**. Hold the lid down slightly with your hand. The chamber will be pumped to base pressure (< 0.007 on the pressure status display).
5. Leave the chamber select key switch in the **CHAMBER 2** position.

**REMEMBER TO RECORD IN LOG BOOK**

You are to record the follow information in the logbook:

1. Name and date.
2. Time in.
3. Parameters of etch such as power, gas flows, pressure.
4. Time out.

## **NOTE: After any SF6 etch, you must run Process #7 to clean the chamber**

1. Turn the **MODE key switch** to **MANUAL**.
2. Hold **MANUAL** and press **PUMP DOWN**.
3. After reaching base pressure, turn the **MODE key switch** to **CHANGE STORED PARAMETERS**.
4. Press **PROCESS** and **7** on the **DATA keyboard**.
5. Set the **STEP TIME** in Step **4** the same as the etch time used in Process #8.
6. Turn the **MODE key switch** to **AUTOMATIC OPERATION**.
7. Check for Process #7 and Step #1. Press **RUN** on the function keypad.
8. The system will vent at the end of Process #7.
9. Turn the **MODE key switch** to **MANUAL**.
10. Hold **MANUAL** and press **PUMP DOWN**.
11. Change card to **SYSTEM UP** and complete logbook.