

## RIE #3 INSTRUCTIONS

### ACTIVATION: (First steps when you start)

- 1) Flip sign to IN USE

### SLEEP STATE: (Leave in this condition when done)

- 1) VENT Valve Closed
- 2) ROUGH Valve Closed
- 3) FORELINE Valve Open
- 4) HIVAC Valve Open
- 5) Key THROTTLE Full Open then turn switch to STOP.
- 6) Close Argon, Oxygen, and SF6 Bottles. (NEW: DO NOT TOUCH BOTTLES IN CORE so skip this whole step, RIE3 toggle switch off. Close both bottle valve and post regulator valve.)
- 7) RF Power, RF switches in OFF position, Bias Voltage turned to zero. Mode Switch on Continuous.
- 8) Flip sign to FEEL FREE TO USE

### VENT:

- 1) Make sure gases are off
- 2) Close HIVAC Valve. Wait for click/thump.
- 3) Open VENT Valve.
- 4) When orange light turns on flip open lid.  
Take care not to grab from or disturb laser.

### EVACUATE:

- 1) Close VENT Valve. Wait a few seconds.
- 2) Close FORELINE Valve. Wait a few seconds.
- 3) Open ROUGH Valve.
- 4) When roughing pressure is below 100 mTorr, close ROUGH valve.
- 5) Open FORELINE valve, wait a few seconds then Open HIVAC.

### GASES ON:

- 1) Switch AR, O2, SF6 flow on for SiN old etch. Switch on flow controllers should be the middle position. Do not use lower position. If cutting SiO2 or SiN new etch use CHF3, O2. If cutting Si use SF6, O2.
- 2) Switch on Interlock switches for AR, O2, and SF6 for SiN#1, and CHF3, O2 for SiO2 or SiN#2. SF6, O2 for Si.
- 3) Push up on setpoint switches and turn with Flathead screwdriver to flow rates of 5:10:3 for SF6, Argon, and Oxygen for SiN#1. 30:0.3 sccm of CHF3, O2 for SiO2 and SiN#2. 20:2 sccm of SF6:O2 for Si.
- 4) Set Pressure to 20 mTorr for SiN#1, 10 mT for SiO2, SiN#2 or Si. (200mTorr is absolute maximum for machine)
- 5) Turn THROTTLE valve key to close (or open) until it is about 25% (for a 20 mTorr pressure.)
- 6) Turn THROTTLE valve key to remote position.

### RF POWER:

- 1) Make sure RF Power and RF Switches are off. Select Constant Voltage On Bias Switch, Adjust Voltage to Zero.
- 2) Turn on RF switch and RF power supply power switch
- 3) Flip Observation switch to Reverse Power (this is one of the lowest switches on the system, on chamber side)
- 4) Turn Voltage up to 250 Volts (for SiN) Plasma should strike suddenly at somewhere near 100 Volts and emit a purple glow. Do not turn up voltage if reflected power exceeds 75 Watts. Use 450 V for SiO2. 250 V for Si.
- 5) Switch to Timer if desired (We want about (12 minutes for SF6 based or 30 minutes for CHF3 based) total etch for 5000A SiN or etch 250A/min for SiO2. Or 65 minutes for 1.1 microns of PECVD nitride)
- 6) Turn RF switch to continuous mode to reset timer after finished. (Plasma has already shut down if using timer)
- 7) Turn off RF power and RF switch.

### GASES OFF (NEW, SKIP THIS STEP SINCE BOTTLES ALWAYS ON):

- 1) Turn THROTTLE valve key to open, when valve reaches full open, turn key to stop to lock the valve
- 2) Switch flow controller switches to upper (off) position. Switch interlock switches to off position.