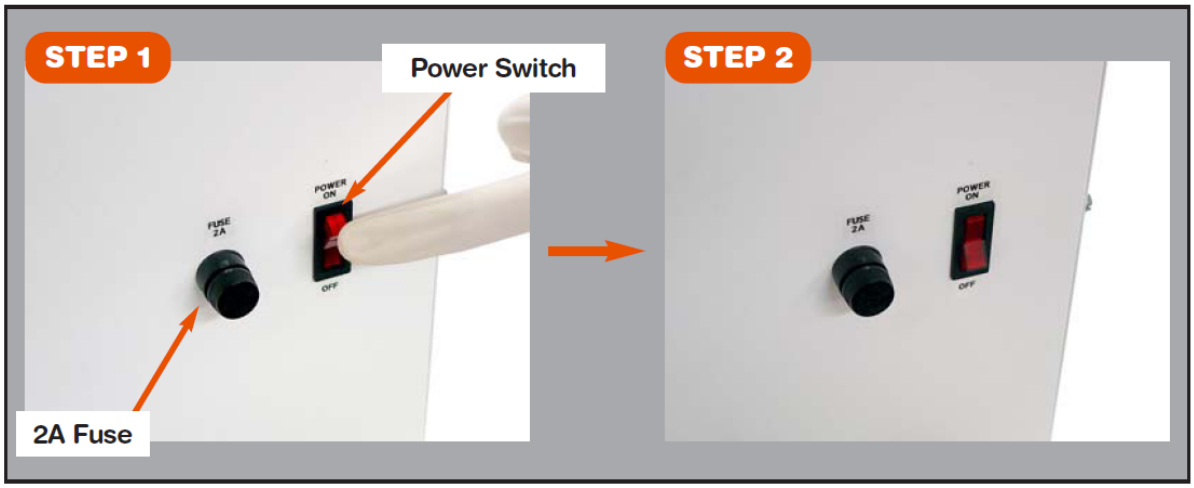
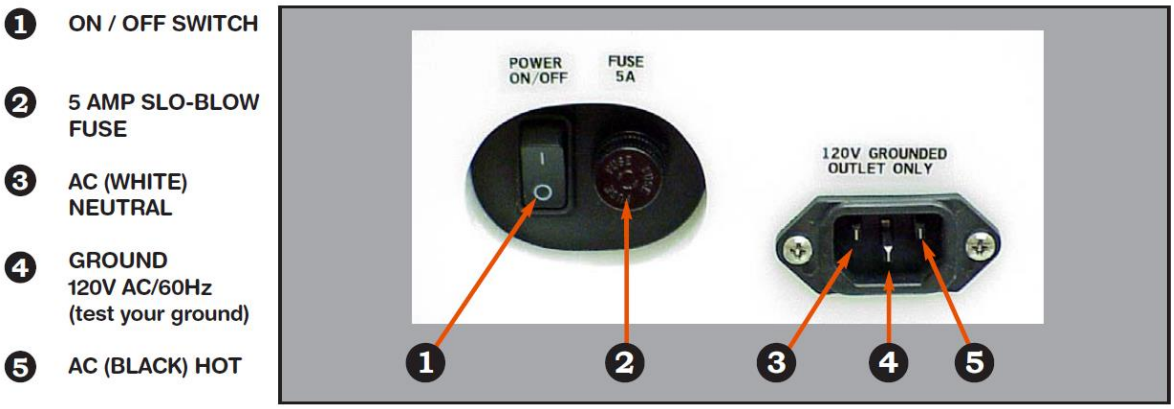
GUIDE for CPD – 815B

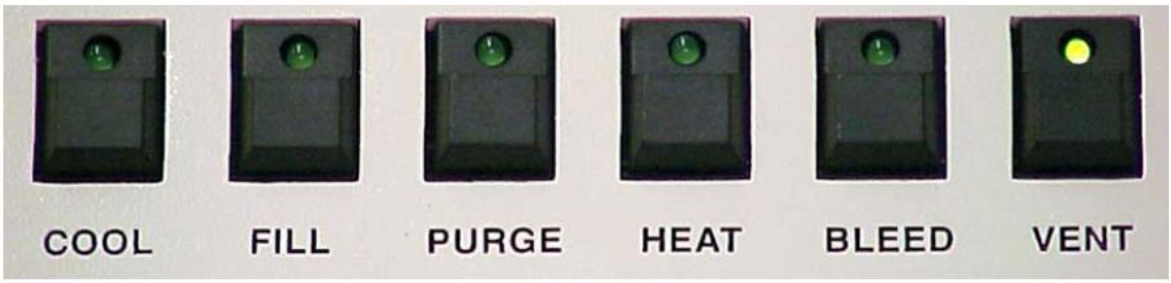
1. Turn ON the Transformer
2. Turn ON the power Strip
3. Turn SOTERTM Condenser Power Switch ON 3-5 minutes prior to process run



4. Turn power switch of the 815B “ON”. The power switch is located on the right-side panel of the 815B unit.



5. Green LED on VENT button will illuminate. This indicates the power is ON and the unit is in standing by in the VENT mode.



VENT MODE

6. Let 815B stand for 3-5 minutes.
7. Open process chamber by carefully lifting Chamber Lid and placing aside onto soft surface. Use wipes to provide convenient surface to place the lid.
8. Press the VENT button once. The VENT LED will begin to blink. This indicates that the VENT solenoid is closed and in the “STAND-BY” mode.
9. Fill the process chamber with IPA to cover your wafers.

NEVER EXPOSE CHAMBER TO ANY ACIDS!

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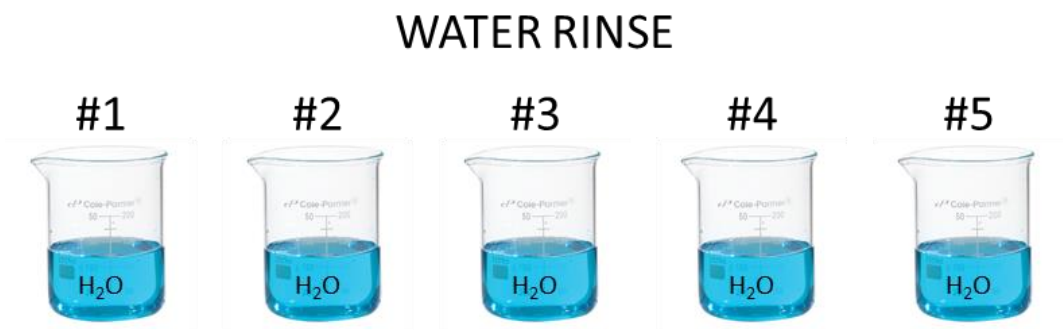
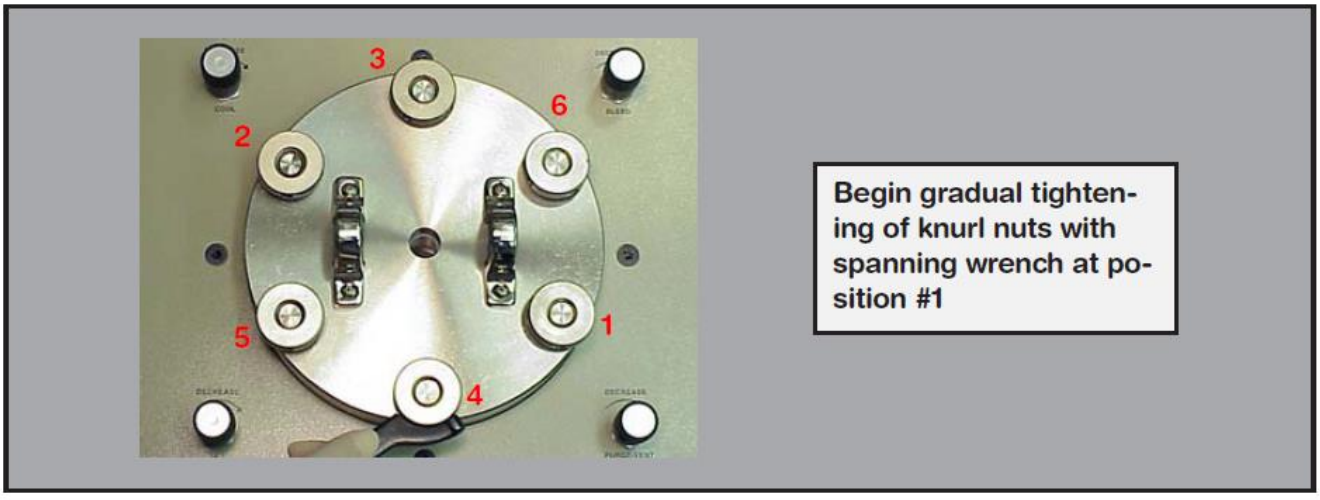
Co-authors:
Approved: 5.6.2020 by Michal Urbánek, Michal.Urbanek@ceitec.vutbr.cz

10. Sample rinsing
    a. Water rinse is required after HF release – no residual acids can go to CPD



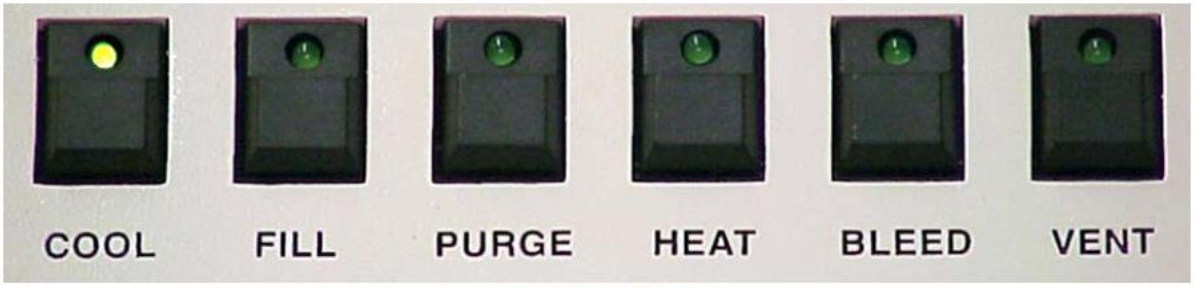
    b. Final rinse is mandatory for all samples – this is to eliminate any residual water, acids or acetone from the CPD. The rinse can be either ETHANOL, METHANOL or ISOPROPYLALCOHOL

11. You can use chamber inserts for different sample size (see APPENDIX 1 for more details about the CHAMBER INSERTS)
12. Carefully and quickly transfer your wafer(s) from your wafer container into the 815B process chamber. For the best results minimize any exposure time to air.
13. Carefully align and place the chamber lid on top of the chamber.
14. Use your hand to evenly tighten the 6-knurl nuts around the circumference of the chamber lid.
15. Use the spanning wrench and uniformly tighten each knurl nut. Tighten the nuts in the numbered sequence as shown in the picture.



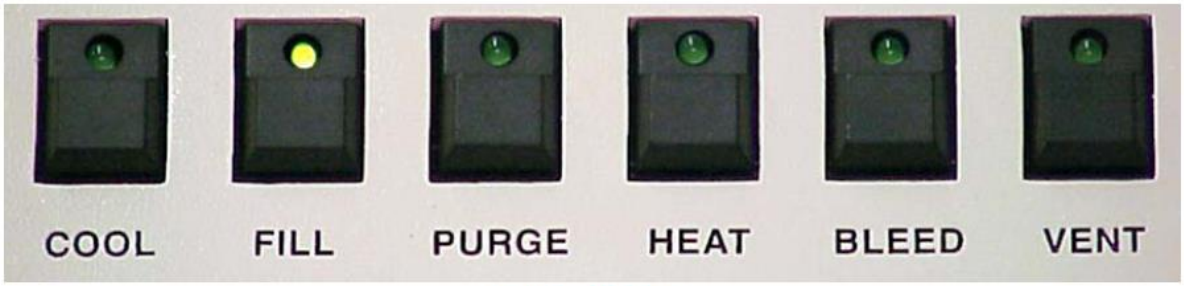
16. Repeat this rotation “Star Pattern” sequence until the nuts are unable to tighten further.
17. Write the values of CO_2 scales in to the table – CHAMBER SUPPLY and COOL SUPPLY.

18. Press the COOL button. The COOL LED light will go ON, and the VENT light will turn off. The unit will automatically continue cooling until the chamber temperature reaches 0 °C (±5 °C). At this point the cooling will automatically stop.



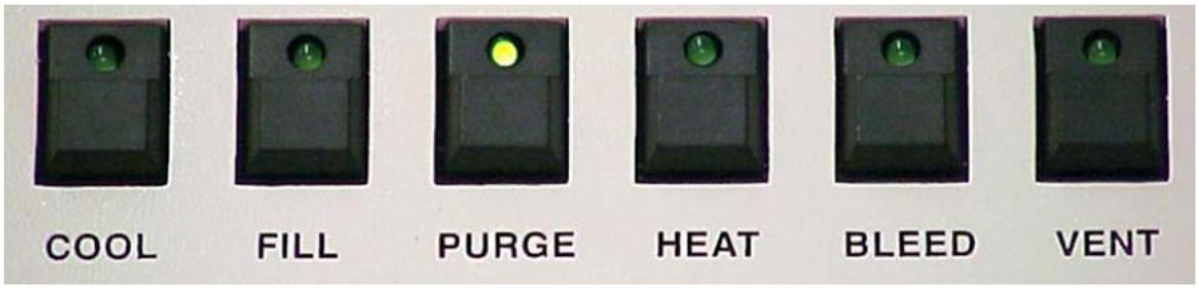
COOL MODE

19. Press the FILL button and the 815B will begin to fill the process chamber with LCO_2.



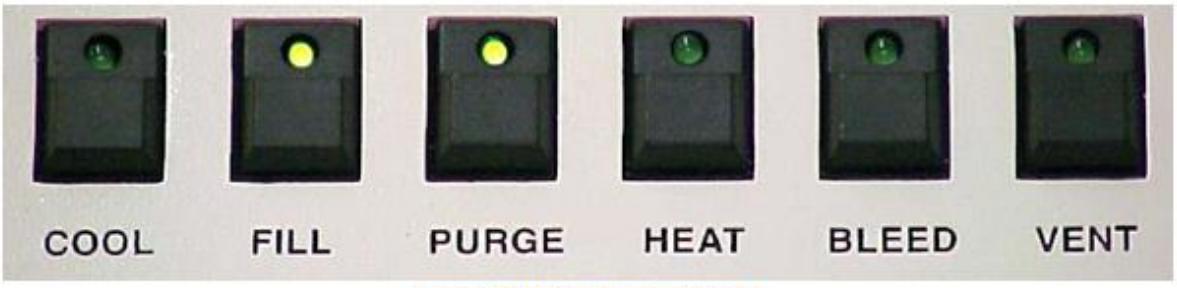
FILL MODE

20. **From this point forward the 815B unit will automatically advance through all process modes sequentially until completion**
21. The Pressure during the FILL mode should be 725-800 psi.
22. Write FILL pressure to the table.
23. After 8 minutes FILL mode expires, the unit will automatically advance into the PURGE mode. This will be indicated by the PURGE LED. The length of the PURGE mode can be adjusted by operator via the PURGE TIMER (see APPENDIX 2 for more details about the PURGE TIMER set-up)



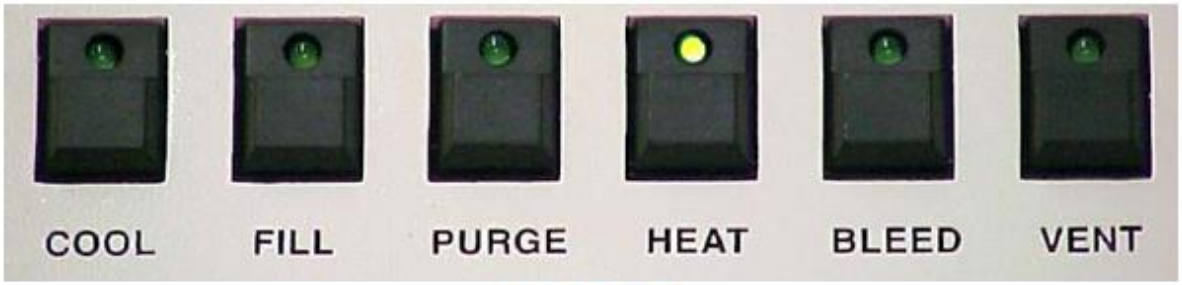
PURGE MODE

24. After the PURGE mode is completed, the Unit automatically advances into the POST-PURGE-FILL mode in which the process chamber fills with LCO_2 for an additional 4 minutes. This mode is visualized by FILL and PURGE LED's illumination.



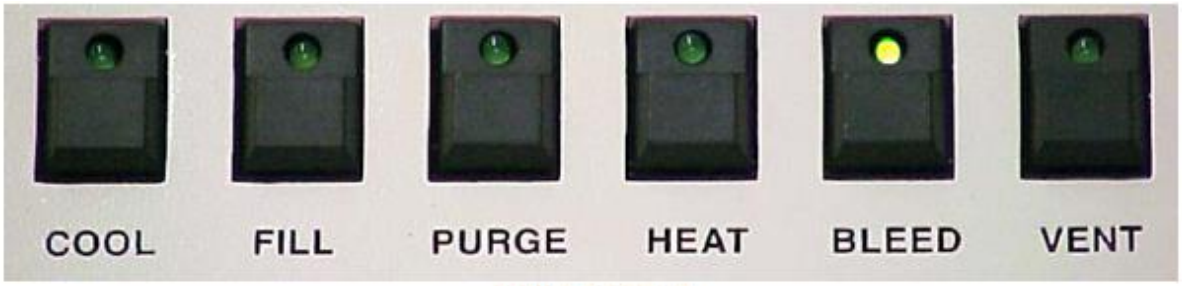
POST-PURGE-FILL MODE

25. After the POST-PURGE-FILL mode the LEDs will turn off, and the HEAT LED will illuminate. The HEAT mode the samples are carried though the “Critical Point”.



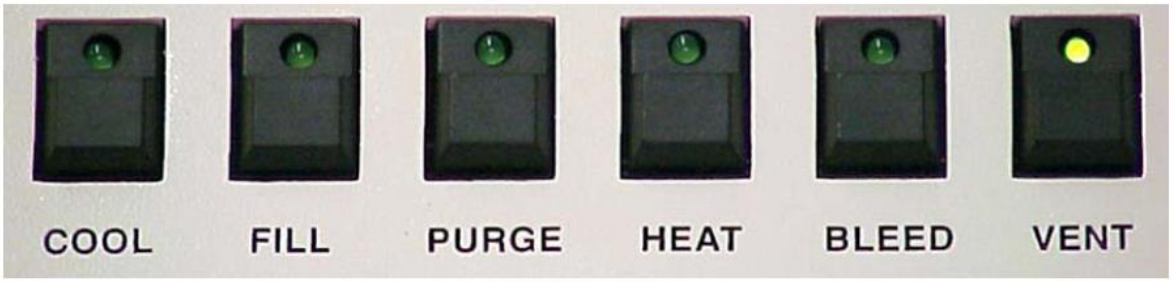
HEAT MODE

26. When the pressure should stabilize in the range of 1350 psi (± 5 %). As the temperature achieves 31 °C it is in the “critical point” where is the „Tousimis equilibrium”. The HEAT LED will begin to blink for next four minutes.
27. Write HEAT pressure to the table
28. At the end of “Tousimis Equilibrium” period the unit will automatically advance into the BLEED mode. The HEAT LED will stop blinking and the BLEED LED will illuminate.



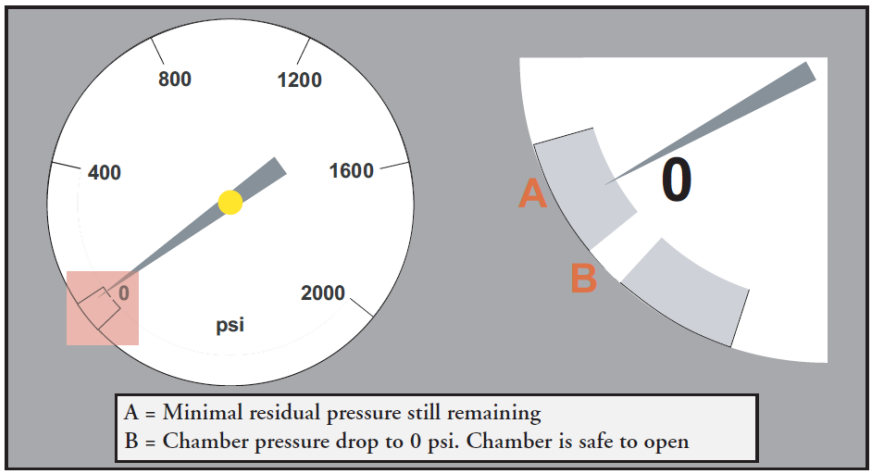
BLEED MODE

29. When the pressure gets down to 360-400 psi, the unit will automatically advance from BLEED mode to the VENT mode. The BLEED LED will turn off, while the VENT LED will illuminate



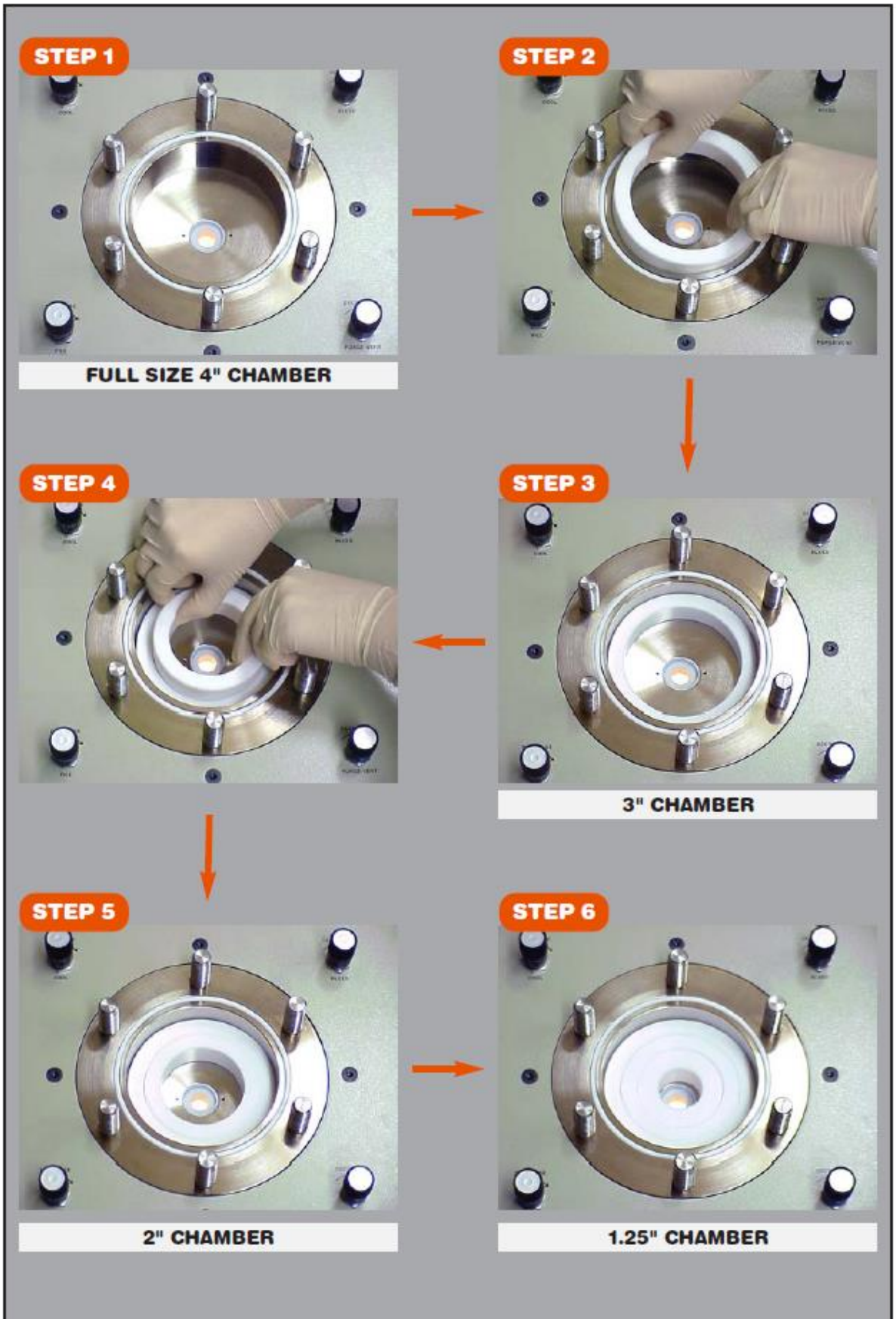
VENT MODE

30. The chamber should come to atmospheric pressure in approximately 5 minutes in the VENT mode.



31. At this point, the chamber lid may be removed by alternatively and evenly loosening all of the nuts using the spanning wrench in a “Reverse Star Pattern”.
32. The wafers can the be removed from the chamber for further processing.
33. Seal the chamber with the lid to help keep it clean and moisture free
34. Turn the 815B power off using ON/OFF switch. The VENT LED will turn off in few seconds
35. Turn SOTER™ Condenser Power Switch OFF
36. Turn OFF the power Strip
37. Turn OFF the Transformer
38. **Write the values of CO_2 scales in to the table – CHAMBER SUPPLY and COOL SUPPLY.**
39. If any of the written values is less than 60 kg, inform Jiri Zita – 9211 (Jiri.Zita@ceitec.vutbr.cz] immediately.

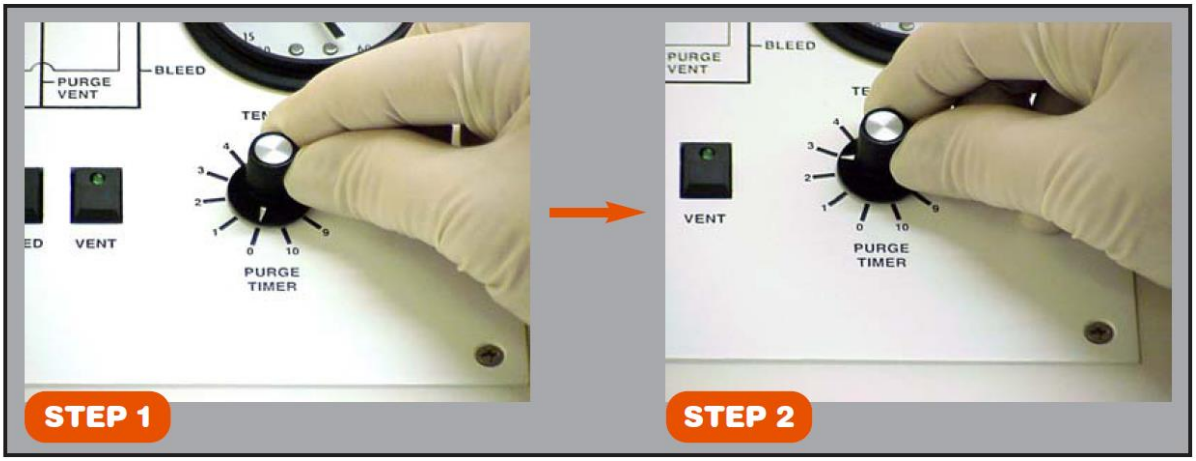
APPENDIX 1 – Chamber inserts

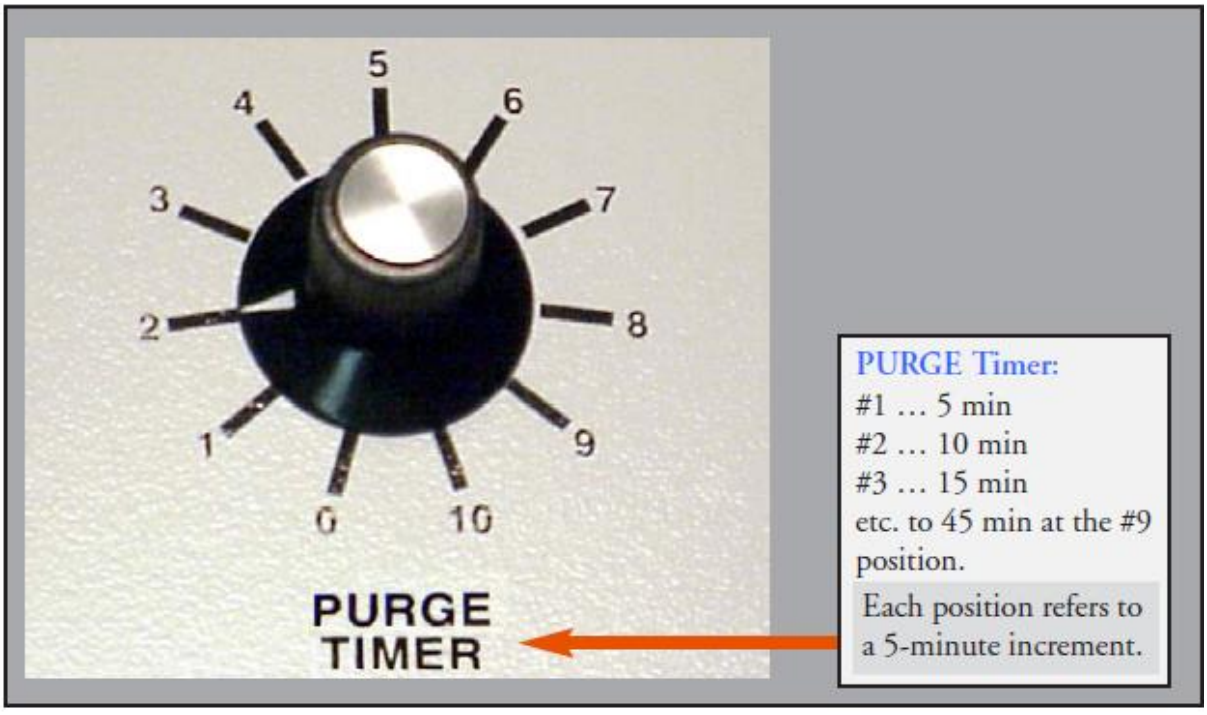


APPENDIX 2 – Setting Purge Timer

Setting the "purge timer" indicator arrow to the #1 position will give you a 5-minute purge time. The #2 position will give you a 10-minute purge time… Correspondingly, the #9 position will give you the maximum purge time capable of 45 minutes.
The "Purge Time" setting is best determined by the individual process engineer. General Purge Time guidelines for various chamber alcohol levels are the following:

- ¼ chamber = 10 minute purge time.
- ½ chamber = 15 minute purge time
- ¾ chamber = 20 minute purge time





Please use MAX purge time #3 – 15 minutes