

APPLYING VACUUM IN THE UHV CHAMBER

(With air atmosphere in both the Main and Load-lock chambers)

Abbreviations

GVC: Gate Valve Controller

VLD: Vacuum Logical Diagram

TP1: Turbo Pump 1

TP2: Turbo Pump 2

Maxi-Gauge channels and gauge

G1: High vacuum – Be double valve

G2: High vacuum - Load lock

G3: Low vacuum – Main chamber

G4: Low vacuum - Load Lock

G5: Low vacuum in rough pump

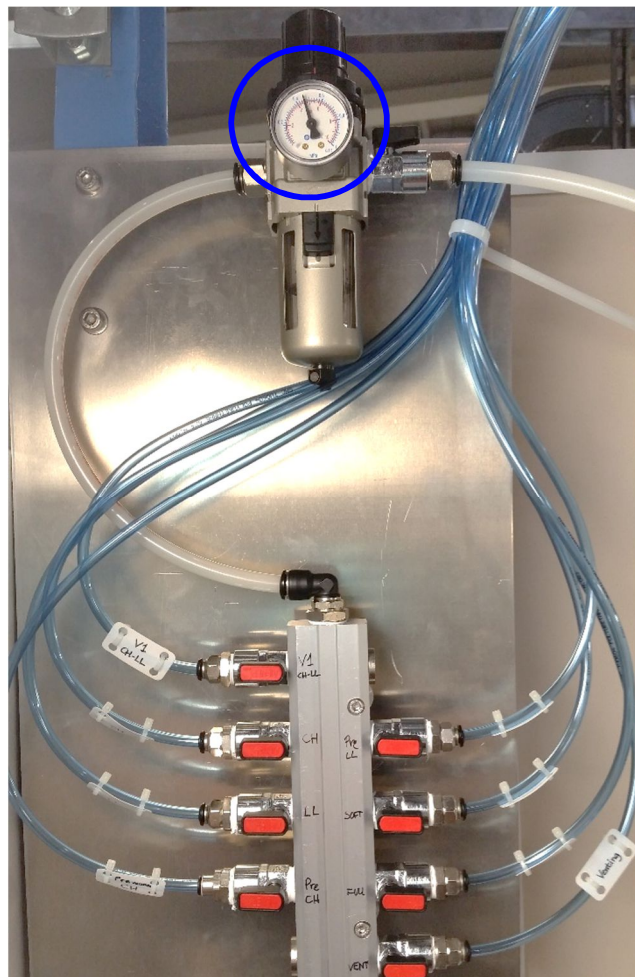
G6: High vacuum – Main chamber

P3: Rough pump

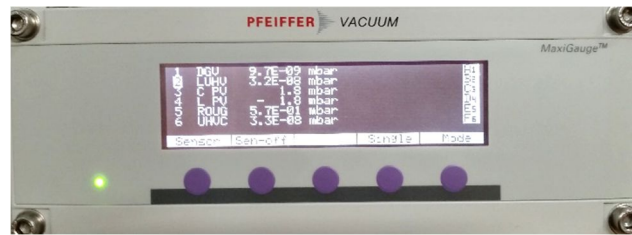
P4: Pre-Vacuum Pump

Please, kindly follow all of the next steps in the proper order:

1. Check if there is a proper provision of air pressure. It should be about 4.5 Bar.



2. Check if the pre-vacuum pumps are turned on. They are controlled by the GVC.
3. Switch on the Maxi-Gauge (from the back) and turn on the 6 sensors (from the front).



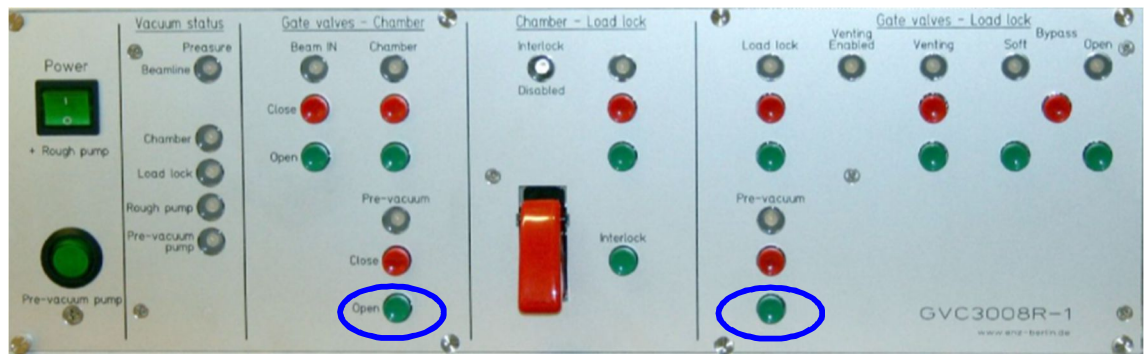
4. Turn on the power supply (green button) at the upper-left part of the GCV. This enables the operation of the rough pump (P3).



5. Check vacuum pressure in channel 5 of the Maxi-Gauge and wait until the pressure reaches a level of about 10^{-1} mbar.
6. Switch on (from the back) the two TCPs. These devices indicate the operation status of the two Turbo-Pumps.



7. Open both Pre-vacuum valves (V5 and V6). This enables the pre-vacuum for the two turbo pumps P1 and P2.



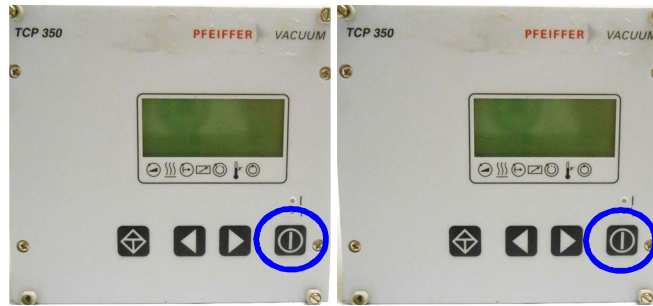
8. Check if the Chamber/Load-Lock Gate valve (V1) is open (green light). If not, activate Interlock (turning on the switch) and open the Gate Valve V1.



9. Enable the operation of the pre-vacuum pump (P4) by switching on the green button on the lower-left part of the GVC. Wait for five minutes.



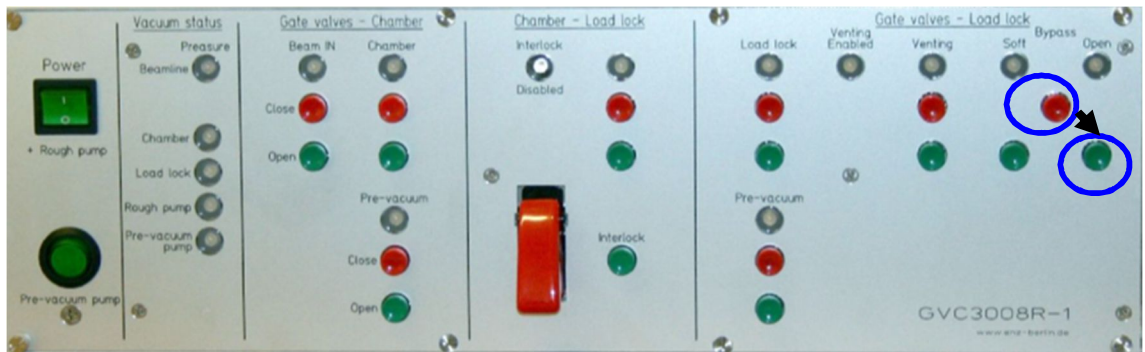
10. Enable the operation of the two TCPs. The operation settings of the two TPs are: 0.8 A, 820 Hz for the Chamber and 0.6 A, 1000 Hz for the Load-lock (It can take several minutes to reach this condition). Note that, at the beginning, the current increases up to 3 A but then after reaching 500-600 Hz rapidly drops down.



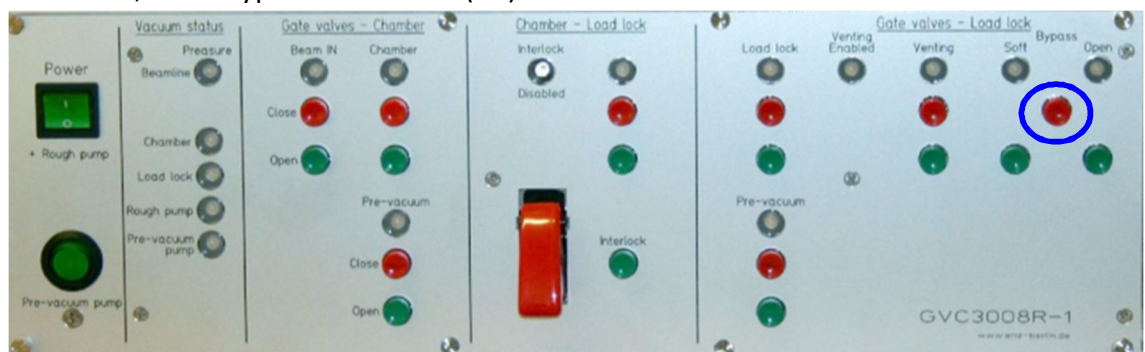
11. Enable Soft operation of the Bypass Gate valve (V9) and wait until the pressure reaches 1 mbar in channels G3 and G4 of the MaxiGauge.



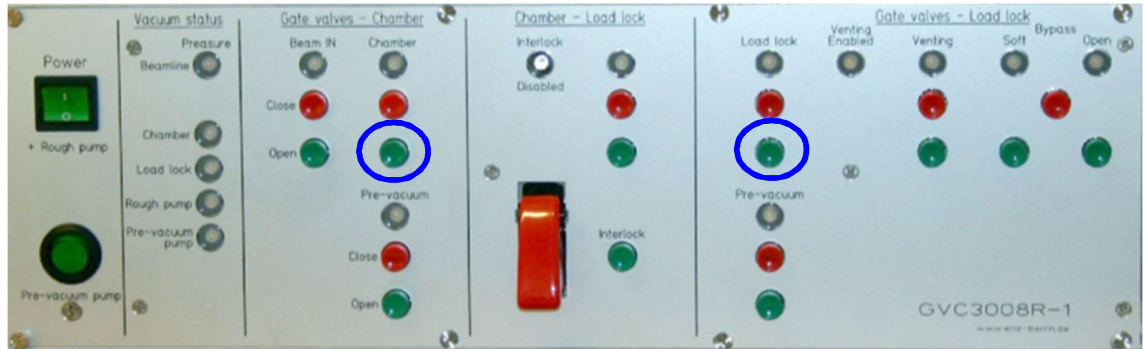
12. Close the Soft operation of the Bypass-Gate valve (V9) and enable the operation of the full Bypass until a pressure of 0.2 mbar in channels 3 and 4 of the MaxiGauge is reached. For this step, 20 minutes can be needed.



13. After that, close bypass Gate valve (V9) in the Load-lock.



14. Then open the two TP's gate valves (V2 and V3) in the Chamber and Load Lock, respectively.



15. Finally, turn off the Pre vacuum pump (green button) in the lower-left part of the GCV.



16. Even when low-vacuum conditions (10^{-3} mbar) can be reached in relative short time, reaching UHV conditions (10^{-8} mbar) can demand several hours, even more than one day.

During the normal operation of the end-station, channels 2 and 6 of the MaxiGauge should show HV levels (10^{-7} - 10^{-8} mbar).

The following is an example of the GVC status during normal operation. After applying all of the previous steps, the GVC should show open valves (green lights) in all of the valves contained in the blue inset and close valves (red lights) in the black inset. If it is not the case, please check the steps.

