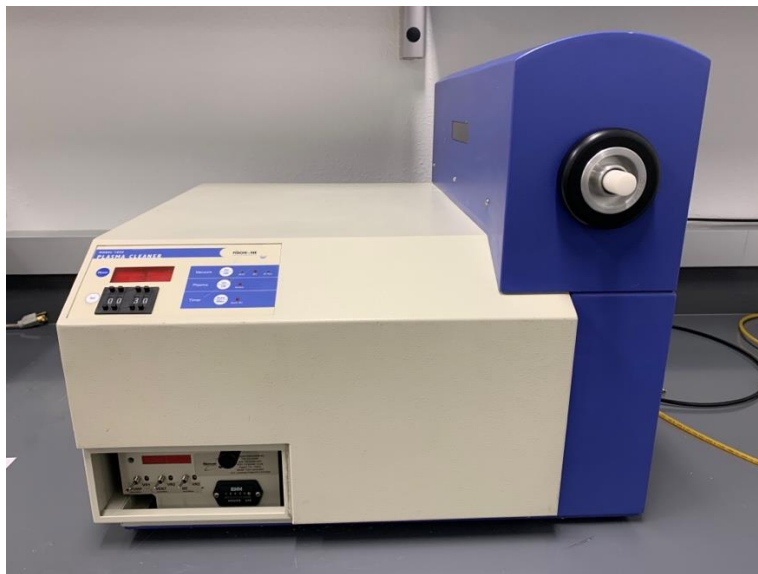


STANDARD OPERATING PROCEDURE

PLASMA CLEANER FISCHIONE 1020



Originally prepared by:

Professor Adrian Brearley and Dr. Angelica Saenz-Trevizo

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1. Scope

This document is intended to serve as a reference document for the operation of the Plasma Cleaner Fischione Model 1020 series #83 at the Nanomaterials Characterization Facility (NCF)

The document is under constant revision so check regularly for the most recent version.

2. Capabilities

The main purpose of this instrument is to clean TEM grids using an oxygen plasma to remove organics from the surface of the specimen/grid. The system uses a mixture of gases (25% oxygen – 75% argon).

3. Pre-Operation Checklist

- 3.1 Make sure that the system is found off upon arrival
- 3.2 Verify that the white Teflon rod is inserted into the chamber
- 3.3 Check that the tank is closed
- 3.4 Get familiar with service panel but do not move any buttons

4. Operation

- 4.1 Wear gloves.
- 4.2 Gently pull out the white Teflon rod that is protecting the chamber. Set aside carefully.
- 4.3 Insert the TEM holder with your grid. Align the pin to the opening.
- 4.4 Open the tank. Make sure the gas regulator in the tank has a reading of at least 200 psi. Do not adjust the gas regulator because the flow of gases is set to about 10 psi.
- 4.5 Switch ON the system by pressing the switch button located on the back panel (at the lower right corner - back).
- 4.6 Upon switching on, the roughing pump will start evacuating the chamber. **If pump does not start, press the VAC On/Off Button.** Observe that the red LED on the Vacuum Panel turns red. Additionally, note that the **red bars in the service panel (lower left)** disappear as the vacuum increases inside the chamber.
- 4.7 To establish a processing time, depress the AUTO/MAN button that appears under Timer Panel. Then, press the push buttons located above or below the digits on the black timer until the

desired processing time is displayed. When the required time has been established press the Set button on the left. The SET button will update the timer displayed in digital reader in red. Usually, 5-20 seconds are enough for gently cleaning samples but don't do 20 seconds continuously. Break the recipe in intervals of 5 seconds.

NOTE: Use the minimum time if your specimen is delicate or can react to oxygen. 30 seconds may be enough to consume the entire holey carbon layer from the grid.

4.8 Verify full vacuum is achieved (all red bars gone). **DO NOT START THE PLASMA IF RED BARS ARE STILL SEEN, EVEN IF THE HIGH VAC LED IS ON.**

4.9 Press the Plasma ON/OFF button to initiate the plasma – verify that the light purple glow of Plasma becomes visible.

NOTE: after completion of the cleaning cycle, the plasma will automatically be Turned OFF but you have to turn off the system to finish.

NOTE: If you want to duplicate the cleaning, press the reset button next to the red timer to set the timer back to zero. Set the time – Repeat steps 4.8 and 4.9.

4.10 If you process has finished, switch OFF the plasma cleaner. Press **VAC On/Off Button** to stop the Turbo Pump.

4.11 Wait a few seconds and then Press the OFF/ON switch (located at the back) and allow for chamber to ventilate (wait about 30 seconds to reach atmosphere conditions)

4.12 Gently pull out the holder out of the chamber

4.13 Insert the Teflon rod into the chamber

4.14 Close the tank to interrupt the flow of mixed gases

4.15 Record your session in the logbook and inform of any issues.

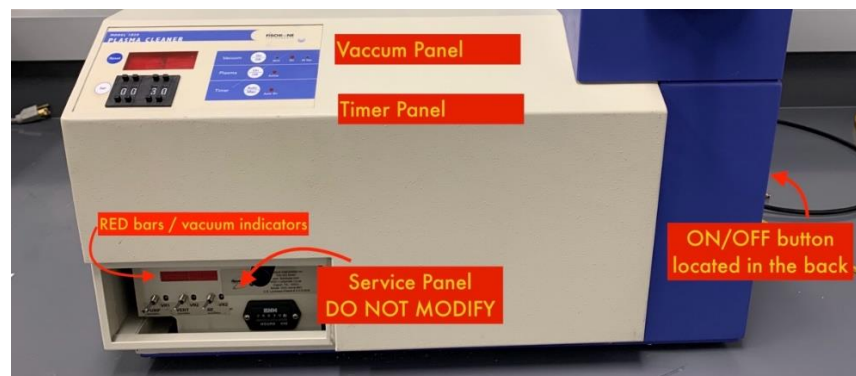


Figure 1. Image showing the Service Panel (Operated only by Staff) and main buttons of the instrument.