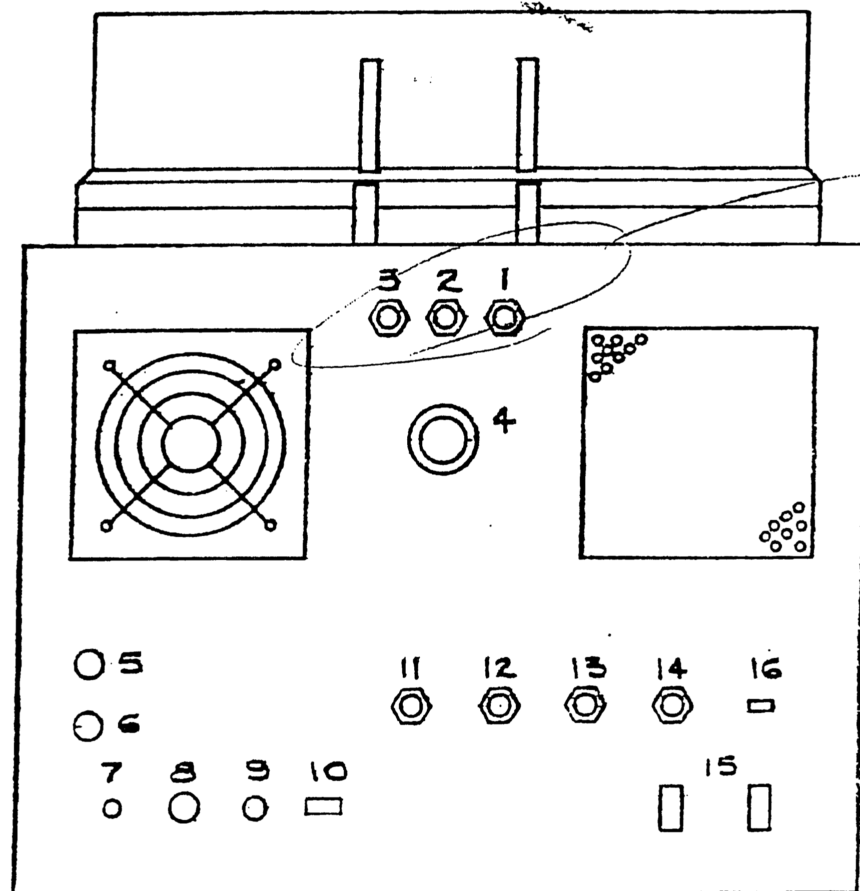
TECHNICS
PE II-A

1. WATER IN. ½GPM, 15-20 P.S.I AMB. *
2. WATER OUT. *
3. COMPRESSED AIR 70-100 P.S.I. *
4. VACUUM LINE 1½" I.D.
5. FUSE, RF GENERATOR 20AMP.
6. FUSE, RF GENERATOR 20AMP.
7. SYSTEM POWER 115VAC/20A/50-60Hz/1PH
8. FUSE, SYSTEM 20AMP
9. STRIP CHART RECORDER
10. T.C. CONNECTION PD II-A
11. GAS #2
12. GAS #1
13. VENT
14. GAS CONN. PD II-A MODULE
15. ELECT. CONN. PD II-A MODULE
16. PE II-A / PD II-A, SELECTOR

* ¼ COMPRESSION FITTING

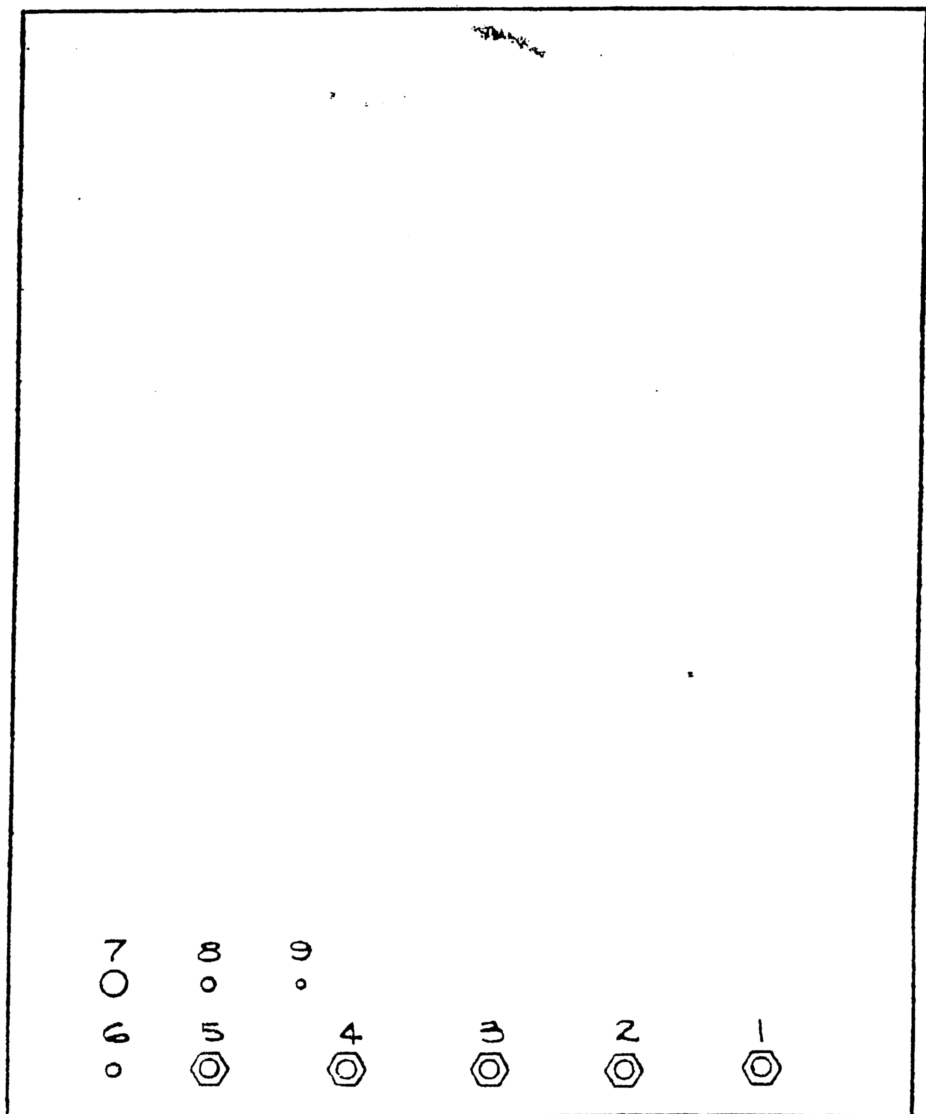


SYSTEM DIMENSIONS: 17¼ (W) x 21 (D) x 21 (H) inches (31 inches open)

TECHNICS
PD II-A

1. GAS #3 *
2. GAS #2 *
3. GAS #1 *
4. OUTPUT *
5. COMPRESSED AIR 70-100 P.S.I. *
6. SYSTEM POWER 115 VAC/20A/50-60 Hz/1 PH
7. FUSE 20 AMP.
8. ELECTRICAL CONNECTION PE II-A
9. THERMOCOUPLE to PE II-A

* 1/4 COMPRESSION FITTINGS



SYSTEM DIMENSIONS: 10(W) x 21(D) x 15(H) inches

1.1 DESCRIPTION

The Technics PlanarEtch IIA plasma system, PE-IIA, generates a low pressure, low temperature, gaseous plasma. Plasma reactions such as ashing and etching can be performed by this system.

With the addition of the Planar Deposition IIA module, PD-IIA, the PE-IIA can be converted from an etching system to a deposition system.

The system consists of a vacuum system, a gas system, an RF generator, solid state electronics, a water cooling system, a plasma treatment chamber, pneumatic air, interlocks, front panel controls and indicators.

1.2 VACUUM

The vacuum system consists of a single phase, direct drive 14 cfm pump, a pneumatic vacuum valve, and a Baratron vacuum sensor. .

The vacuum valve and sensor are attached to the baseplate of the chamber. A vacuum line extends from the valve out through the back of the system.

The vacuum pump is filled with Fomblin Y25/5 oil. Fomblin oil is an oxygen resistant, halocarbon type oil used as a safety precaution when using oxygen.

1.3 GAS

The Gas system consists of four (4) input ports on the back of the PE-IIA. It allows the user to control three (3) gas flows into the chamber and provides a chamber vent. They are labeled GAS1, GAS2, VENT and PD-IIA.

The GAS 1 and 2 ports connect directly to the manual control valves. The GAS1 and 2 lines then go to electrical valves which connect to the gas inject manifold.

The vent line goes to an electrical valve which then connects to the gas manifold.

The PD-IIA line goes directly to the gas manifold. The gas manifold then goes directly to the chamber lid, which spreads the gas radially around the electrode.

1.4 RF GENERATOR

The RF generator is a self contained module from Advance Energy Plasma Sources.

This unit provides up to 500 watts at 30 KHz frequency to the chamber electrode.

1.5 WATER COOLING

The water cooling system provides cooling for the baseplate and electrode. The water input and output connections are on the back of the PE-IIA. The input line runs thru a flow switch which connects to the baseplate. It then circles thru the baseplate and goes to the electrode. From the electrode it returns to the output connection. The system requires .5 GPM at ~~15-20 psi~~. greater than 25 PSI

1.6 PNEUMATIC AIR

The systems pneumatic air operates the vacuum valve. The drive connection is at the back of the PE-IIA. There is no return connection. 70-100 psi air is required.

1.7 INTERLOCKS

There are two side microswitches to shut off system power when the side panels are removed. This does not shut off incoming power.

The water flow switch will not apply RF power to the electrode if there is inadequate water flow.

The vacuum set points, high and low, control RF power on and GAS1 and 2 respectively.

The high setpoint is factory set at 1 torr. Once the pressure is below this setpoint, the RF power can be turned on.

The low setpoint is adjustable, but is factory set at .050 torr. Once the pressure is below this set point in automatic mode, the gas lines can be turned on.

1.8 CHAMBER

The plasma treatment chamber consists of the baseplate, the electrode assembly and the cover.

The cover has a viewport and is hinged to the baseplate. It is O ring sealed.

The electrode assembly attaches to the cover and is O ring sealed. The electrode assembly has an electrode which is separated by an insulator and a spacer from the cover.

The electrode is water cooled and the RF power from the generator is connected here.

The spacer provides the proper distance from the electrode to the baseplate which is ground, for the etching operation.

The cover has a gas connection from the inject manifold. The gas is spread radially around the electrode and is drawn in axially by the vacuum port in the center of the baseplate.

1.9 PLANAR DEPOSITION IIA (PD-IIA)

The Planar Deposition IIA module with a heated platen and a thermocouple allows the plasma etch system to be converted to a plasma deposition system.

The module contains three (3) gas lines with flow meters and controllers. The module also contains the temperature controller for the heated platen.