

## CRITICAL POINT DRYER (CPD)

The CPD needs to be precooled. Make sure the rear door of the CPD is closed. This prevents condensation from forming as the instrument cools.

The heater should initially be turned off. Check that the indicator switch is at the fine adjustment setting. (The fine adjustment knobs should be set to zero.)

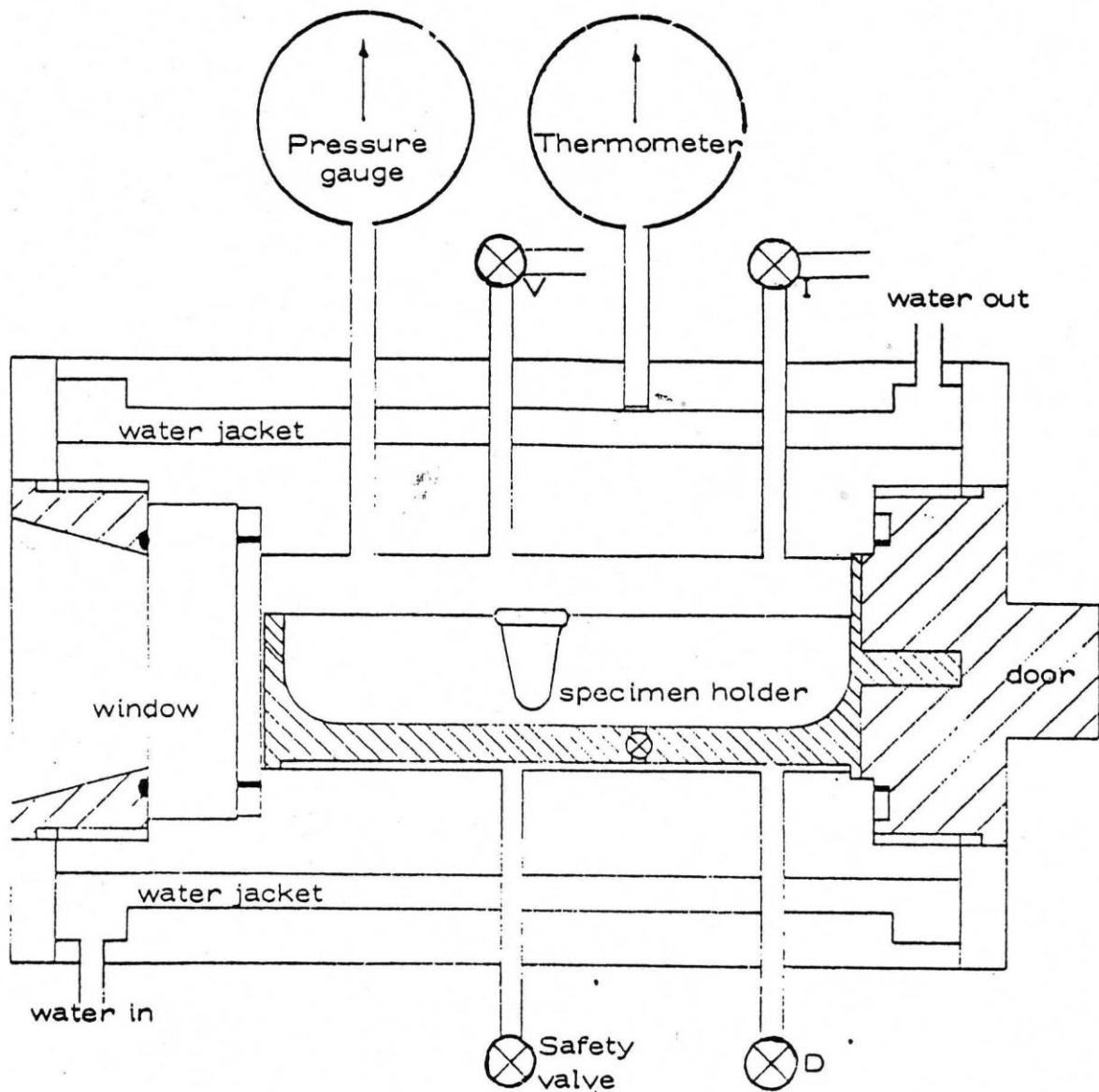
Turn on the H<sub>2</sub>O circulator and add ice from the freezer into the H<sub>2</sub>O bath. Let the CPD cool to 13°C or less before loading samples into it. (This assures that the liquid CO<sub>2</sub> will remain a liquid.)

When the instrument has cooled down, remove the back door and load the samples. Make sure samples are completely dehydrated. Change the 100% EtOH immediately before placing samples in the CPD. Replace the back door and slowly introduce liquid CO<sub>2</sub> with the inlet valve until the pressure is above 800 psi.

Next open the drain valve until a purge rate of 1.5 L/min of gas discharge is obtained. The rate will be sporadic at first, but that will become more stable as the EtOH is purged off. Maintain a 1.5 L/min flow at least 1 hour, longer if multiple samples are being run.

When the EtOH has been purged off, close the inlet valve, leaving open the drain valve. The liquid CO<sub>2</sub> level will be seen to drop. When it is almost halfway in the window, close the drain valve. (Lowering the CO<sub>2</sub> level prevents excessive pressure build-up upon heating of the chamber.)

Now remove the ice from the H<sub>2</sub>O bath. Move the indicator switch of the heater to the "B" position. This will heat the H<sub>2</sub>O to 37°C. The critical point of CO<sub>2</sub> is 1073 psi at 31.1°C. When the critical point has been obtained (check the gauges of the CPD), start venting the chamber with the drain valve. Again a 1.5 L/min flow rate is desirable. When the pressure drops to zero, remove samples, turn off heater/circulator, drain H<sub>2</sub>O from bath, and record the number of runs and your complete name on the record sheet.



Gas handling valves:

- V Vent valve
- I Inlet valve
- D Drain valve

Fig 1 Semi-scale schematic diagram of E3000 Critical Point Drying Apparatus showing relative positions of parts. The pressure vessel body is to scale; valves and gauges are shown schematically.