

Experimental Procedure: We will use the boiling-point method. The heating mantle is connected to a Variac (variable transformer); increasing the voltage increases the temperature. Switch on the Variac, at a setting of about 20–30 V. Using the vacuum pump, decrease the system pressure until the liquid begins to boil; the liquid may superheat above its boiling temperature; tapping the flask with your finger may initiate the boiling. The pressure inside the apparatus is thus equal to $P_{\text{atm}} - \Delta h$, where Δh is the difference in the heights of the mercury columns in the two arms of the manometer. Attach the empty boiling flask to the bottom of the condenser, using the jack support to hold the heating mantle beneath it. Be careful to not raise the jack too far, which could break the apparatus. Close the stopcock to the vacuum pump and observe the manometer for several minutes. Turn on the cooling water supply to the condenser, from the refrigerated circulation-water bath. Connect the system to the vacuum pump and evacuate it to 10 torr or less. Attach the flask to the condenser.