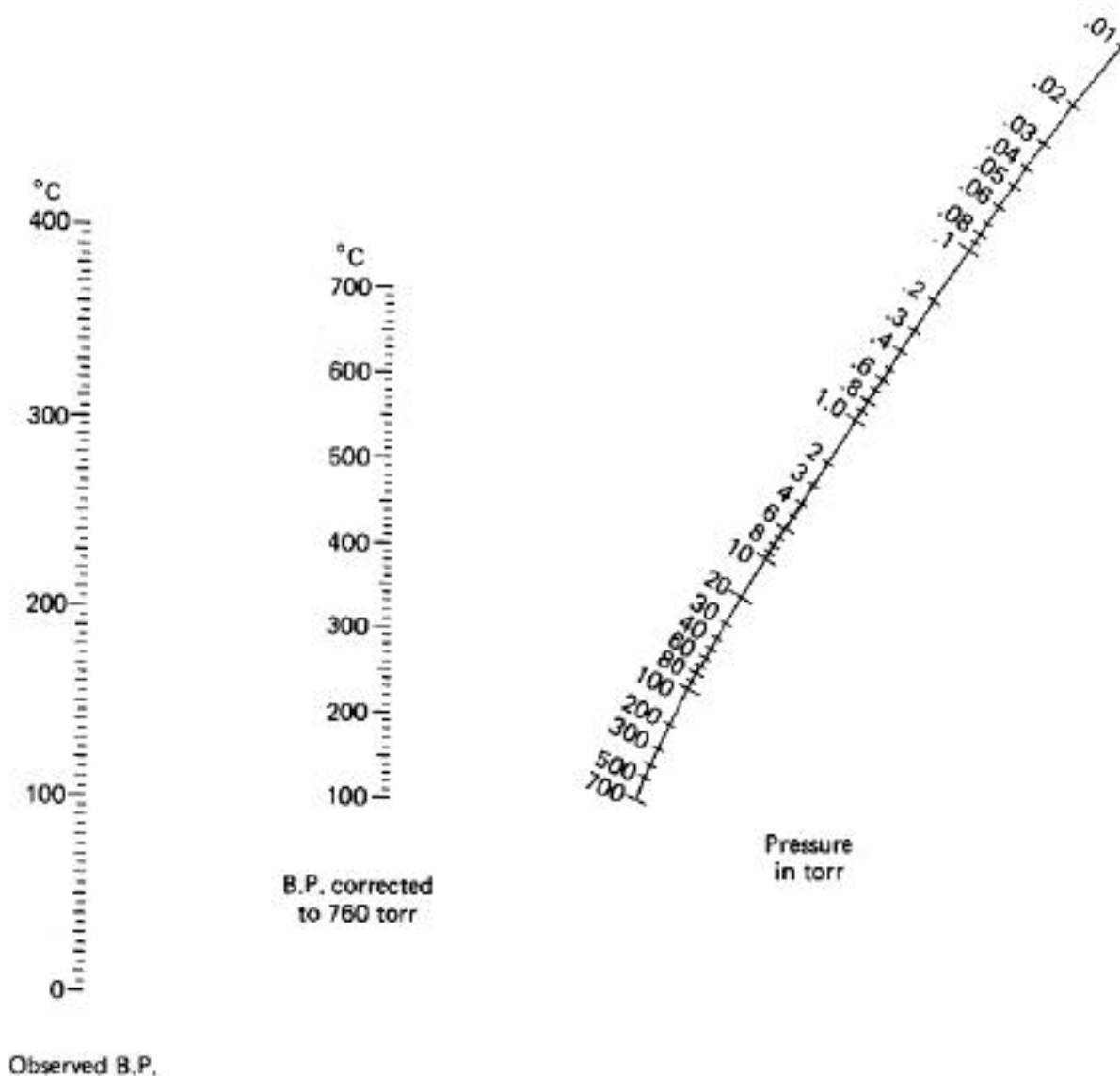


Nomograph for Calculating Boiling Points Under Vacuum



Determining the boiling point of a liquid under a certain vacuum

As an example, assume that a vacuum source pulls 20 mmHg (20 torr), and that you want to determine the boiling point of water at that vacuum. The boiling point of water at 1 atm is 100°C. With the aid of a ruler, draw a line from 20 mmHg in the pressure graph (to the right), through 100°C in the middle graph ("boiling point corrected to 760 torr", this is 1 atm), and where this line intersects the line to the left ("Observed boiling point"), take your reading which should be about 15°C. This means that at a vacuum of 20 mmHg, water will boil at 15°C..

Determining the strength of an unknown vacuum

Water is our example again. When distilling, you observe that the water comes over at a temperature of 40°C after you have waited for the temperature to stabilize. You know that the normal boiling point of water is 100°C. Draw a line through 40°C in the leftmost graph, through 100°C in the middle one, and notice where the line intersects the pressure graph. This should be about 100 mmHg. This is the pressure that the vacuum pump is producing

Note: Aspirators produce 20-30 mm Hg typically. Vacuum pumps easily pump down to <1 mm Hg.