

### T3 Mercury Barometer

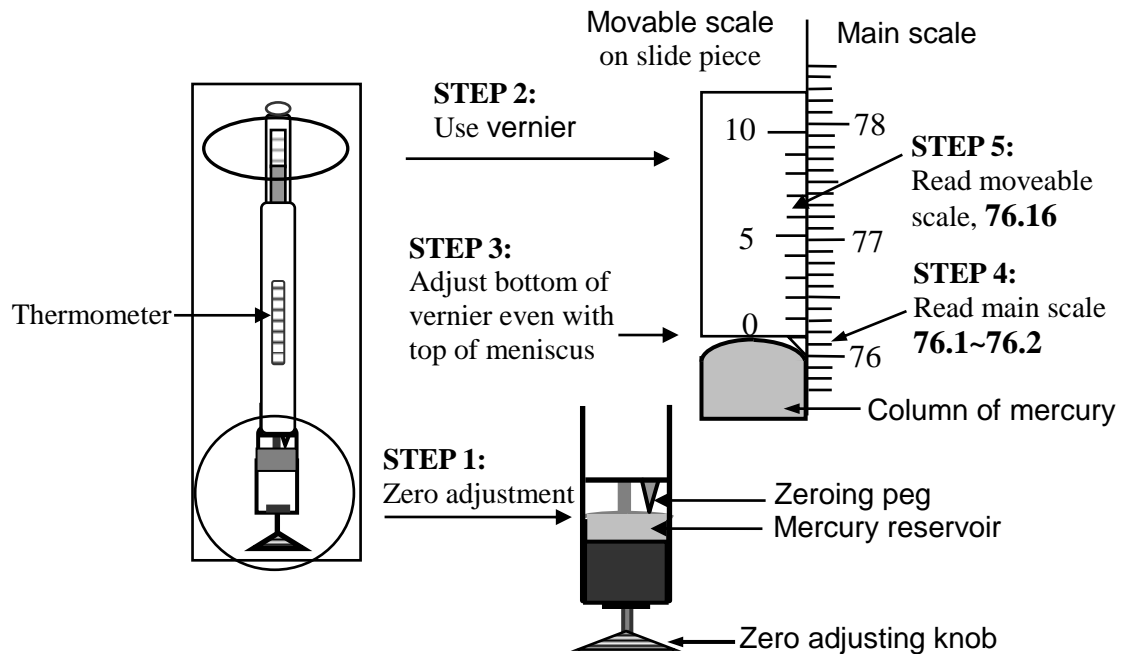


Figure T3-1 Illustration of mercury barometer

The principle of a mercury barometer is based on the experiment from E. Torricelli. The atmospheric pressure is taken by the height of the mercury column placed in the mercury reservoir. One standard atmospheric pressure (atm) is the height of 76 cm mercury column.

$$1 \text{ atm} = 76 \text{ cmHg} = 760 \text{ mmHg} = 760 \text{ torr} \quad (\text{T3-1})$$

#### Operation

- Step 1: Zero adjust  
Rotate the **Zero Adjusting Knob** to adjust the top of the mercury reservoir just touching the tip of the **Zeroing Peg**.
- Step 2: Read the height of mercury column by the **vernier**
  - Adjust the height of the **Movable Scale** so that the bottom of the slide piece is just even with the top of the meniscus.
  - Read the main scale on the right of vernier. As in Fig. T3-1, the bottom of slide piece indicates the height of mercury is between 76.1 cm and 76.2 cm.
  - Read the movable scale on the left of vernier where the lines match up with the main scale, i.e. 6 (the percentile of measurement). Therefore, the

atmospheric pressure reads 76.16 cm-Hg.

3. For more precisely measurement, one should refer to manual of barometer to make correction of temperature.

### References

1. Shugar, G. J.; Shugar, R. A.; Bauman, L.; Bauman, R. S. *Chemical Technicians' Ready Reference Handbook*; 2nd ed.; McGraw-Hill Book Co.: New York, 1981.
2. Coyne, G. S. *The Laboratory Handbook of Materials, Equipment, & Technique*; Wiley: New York, 1992.
3. <https://faraday.physics.utoronto.ca/GeneralInterest/Harrison/Barometer/Barometer.html>