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Deluxe Boyle's Law Apparatus #BOYLAW-DLX

Warning:

- **Not a toy; use only in a laboratory or educational setting.**
- **California Proposition**



65 Warning: This product can expose you to chemicals including lead, which are known to the State of California to cause cancer, birth defects, or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Introduction

This apparatus is useful to study the basics of Boyle's Law and to estimate the atmospheric pressure. It becomes a simple way to approach the experimental side of physics and to introduce at sight the concepts of vacuum, pressure, density, and more. With the tube filled with a heavy oil (such as motor oil) and connected to a closed reservoir, this apparatus allows you to study the aeriform substance in the expansion container. By raising or lowering the other tube end, compression or rarefaction of the gas is obtained.

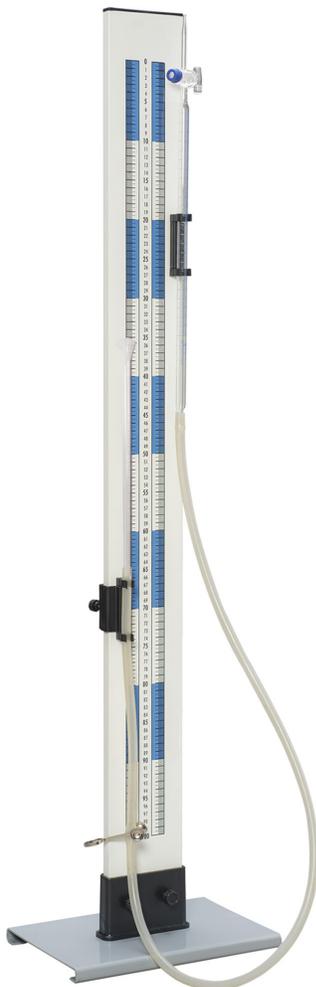
$$PV=k$$

Boyle's law states that the volume V of gas molecules is inversely proportional to its pressure P . Therefore:

$$P_1 V_1 = P_2 V_2$$

$$\frac{P_1}{P_2} = \frac{V_2}{V_1}$$

The variation of the height of the oil column implies a simultaneous change of the volume occupied by the substance.



How to Use

1. Place the apparatus vertically on a balanced and smooth surface.
2. Place the open-ended glass tube on the upper side and the closed-ended tube on the lower side.
3. Now place the funnel on the open-ended glass tube and fill the glass tube with motor oil (or some other heavy oil) until the oil level reaches the halfway point of the closed-ended glass tube.
4. Fix the slider holding the closed-ended glass tube at the lowest point of the scale and note down the coinciding point of the top of the closed-ended glass tube.
5. Now slide the open-ended glass tube by just freeing the knob provided with the slider and moving it downward.
6. Note down the height of empty space inside the open-ended glass tube and the oil level readings of the closed-end glass tube at different heights.
7. Take at least 8 readings at different points.
8. Draw a between pressure P taking it along X-axis and volume V taking it along Y-axis.

Observation Table

Sr. No.	Height of the empty space in open tube pressure (P)	Height of the mercury level in the closed tube (h1)	Top point reading of the closed tube (h2)	Height of the empty space in the closed tube (volume $V = h2 - h1$)
1				
2				
3				
4				
5				
6				
7				
8				

