

# **BOYLE'S LAW APPARATUS**

EGA001



Figure 1

## DESCRIPTION

This low cost apparatus is great for demonstrating Boyle's law (elasticity of gases). A plastic syringe is mounted on a wooden base. A piston is mounted to a platform that holds various size weights, allowing students to plot pressure versus volume of gases in the cylinder.

#### **IDENTIFICATION OF COMPONENTS**

- 1. Syringe
  - 2. Locking cap
  - 3. Top plate
  - 4. Base plate

### PRE-LAB ASSEMBLY

**SAFETY FIRST**: Be very careful as you stand one mass on top of another mass. Make sure that the masses are directly in the center of the wooden block.

#### Apparatus set up:

**SAFETY FIRST**: Carefully hold all the parts of the syringe so you do not drop it or pull the plunger out of the syringe. If you do, you will need to start over again.

- 1. Remove the Boyle's Law Apparatus from its container.
- 2. Pick up the syringe only.
- 3. Observe the syringe. Remove the cap on the bottom of the syringe by turning it counterclockwise until it comes off. Lay the cap flat on the desk.

What property of matter is inside the syringe? Record your answer.

- 4. Locate the measurement units printed on the side of the syringe.
- 5. Remove the removable part of the syringe while holding the outside of the syringe.
- 6. Observe the bottom of the syringe where the gasket is located. The blue circle at the bottom of the plastic part of the syringe will your be location mark when you draw air into the syringe.
- 7. Place the base of the apparatus that has a hole drilled in the center depression, on a table. See *Figures 2 and 3*.
- 8. Insert the bottom of the syringe into the small opening of the base. Make sure it fits tightly into small opening.
- 9. Slide the removable part of the syringe into the outer part of the syringe.
- 10. Hold the base and the outer section of the syringe with your left hand.

11. Move the removable part of the syringe up and down to pull air into the syringe. Do not remove the pumping section of the syringe. We want the syringe to hold 50 ML (cc) of air when we finish.

12. Turn the apparatus to a 90 degree angle. Screw the cap carefully onto the bottom of the syringe.

What direction are you turning the cap? Write you answer down.



Figure 2



Figure 3