

## **634-6240 (60-240) Lung Function Model**

**Introduction:** Human lungs are fascinating structures. Each is filled with hundreds of millions of tiny air sacs known as *alveoli*. These sacs have a wall 1 cell thick, which is thin enough for gases to diffuse across the membrane. Although adult human lungs are about the size of a loaf of bread, these alveoli give the lungs an effective surface area of almost 700 square feet! This is about half the size of a tennis court.

The purpose of lungs is to facilitate gas exchange in air breathing creatures. All animals that breathe air, such as mammals, birds, reptiles, amphibians and some fish, have the same basic lung structure. Birds in particular have highly developed lungs. Animals use the lungs to oxygenate the blood and release carbon dioxide into the air. The lungs work like a pump that continuously cycles fresh air in and out of an animal. However, by themselves the lungs are helpless; they only serve as reservoirs. To move the air in and out, a muscle known as the *diaphragm* is used.

The diaphragm is a muscle just below the lungs that can pull down or push up. In doing this, it can increase or decrease the volume of the chest cavity. When the volume is increased, pressure in the chest cavity is lowered, and air rushes into the lungs to equalize the pressure. When the diaphragm pushes up and decreases the volume of the chest cavity, the pressure inside increases. This means air must rush out of the lungs to equalize pressure. Curiously, the diaphragm is an example of a muscle that behaves automatically but can be voluntarily controlled. You don't have to think about breathing most of the time, but you can hold your breath if need be.

**Operation:** For obvious reasons, we do not use real lungs in our lung model. Instead, we use balloons. These simulate the function of lungs well. To 'inhale', simply pull down on the plastic skirt. You will see the balloons inflate. To 'exhale', simply push up on the skirt. The balloons will deflate. Two plastic pipes simulate the bronchial passages. The plastic skirt can be easily detached and replaced in case a balloon needs repair.

### **Warranty and Parts:**

We replace all defective or missing parts free of charge. Additional replacement parts may be ordered toll-free. We accept MasterCard, Visa, checks and School P.O.s. All products warranted to be free from defect for 90 days. Does not apply to accident, misuse or normal wear and tear. Intended for children 13 years of age and up. This item is not a toy. It may contain small parts that can be choking hazards. Adult supervision is required.

