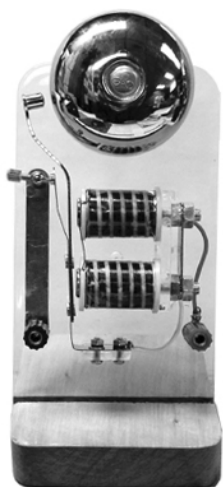


615-4015 (10-105) Electric Bell Demonstrator Instructions & Experiments



Warranty & Replacement Parts

We replace all missing or defective parts free of charge. All products are guaranteed free from defect for 90 days after sale, defined as 90 days after date of invoice. This guarantee does not include accident, misuse, or normal wear and tear.

Introduction:

An electric bell is a great instrument to demonstrate a simple electric circuit. Our 6 volt electric bell kit is a great – if noisy – addition to your classroom. Its large size and open design allows even the back row to see the operation of the moving parts and the electrical components. Complete the circuit using a low voltage DC power source and watch the circuit open and close with an audible ring.

Other materials needed:

- Hand generator:

We recommend our 20-045 Hand Generator; this allows students to manually produce the electricity needed to power the bell.

- Battery Pack:

We recommend our 10-171 Battery Pack which holds four D-cell batteries for a total operating output of 6 volts. This pack also has tapping socket to easily switch to 1.5, 3, or 4.5 volts.

- Low voltage power supply:

A low voltage DC power supply may be used to power the bell; the ideal operating voltage is 6 volts.

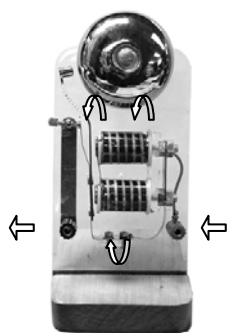
Operation:

The Electric bell demonstrator will need to be set up prior to use. After removing the parts from the package, slide the bottom of the bell into the slot on the wooden base. The bell may now be viewed from an upright position. Next, attach a power source to the positive and negative terminals (see diagram). The bell will operate best with a 6 volt power supply. The bell may operate at voltages as low as 1.5, but may experience intermittent stalling. Our 20-045 hand generator will produce around 5 volts of direct current, and is a nice addition to the demonstration. A DC power supply may be used to demonstrate performance differences at different voltages. Do not exceed 6 volts. A switch may be placed in between the bell and the power source to add control to the demonstration, the Science First 10-101 Banana Plug Switch works well for this application. There is an adjustment screw on the upper left hand side of the bell (see diagram). Loosen the thumb screw on the top of the post. Now you may adjust the screw on the left hand side. This adjustment will shorten or lengthen the swing of the clapper arm. Experiment with this adjustment when using multiple voltages. This adjustment may be used to vary the speed and volume of the bell as well.

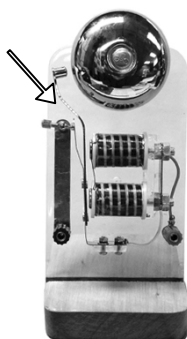
How it works:

The Electric Bell Demonstrator shows a simple electric circuit at work. The circuit begins as power is supplied to the terminals, the circuit is closed and the electromagnet coils become powered (follow the arrows in the diagram below).

- Elastic collisions
- Inelastic collisions



As the electromagnet coils become powered, the clapper arm is pulled towards the magnet contacts and the bell dome is rang.



As the clapper is pulled towards the electromagnet it no longer touches the adjustment screw, and the circuit is broken. This results in the power going to

the electromagnet to be cut off. Without the magnet pulling the clapper towards it, it springs back into contact with the adjustment screw. The circuit is re-established and the entire process begins again.

