

INSTRUCTIONAL GUIDE

Contents

- Genecon Hand Crank Generator
- Instructional Guide

Recommended for activities:

- [Ohm's Law Experiment Kit \(P6-8011\)](#)
- [1 Farad Capacitor \(P6-8012\)](#)
- [2.5 V Miniature Bulbs \(Pack of 10\) \(P6-1408\)](#)



Background

Turn the handle clockwise and the red clip will be the positive pole, and the black clip will be the negative pole. Reverse the rotation of the handle to change the direction of the current so the red clip will be the negative pole and the black will be the positive pole. Turning the handle faster or slower will vary the power output of the generator.

Resistive heating and electrolysis experiments require significantly more current which is achieved by turning the handle more quickly. Lower output is required for experiments using small bulbs and LEDs since they do not require high current or voltage. It is good practice to start out turning the handle slowly and increase speed if necessary.

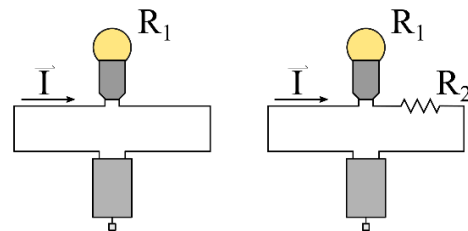
Note: Depending on the specifications of miniature bulbs and LEDs (rated voltage, current consumption) they might not light properly. Turning the handle too fast can damage bulbs and LEDs.

***Recommended miniature bulb spec: Rated Voltage 2.5V. Current consumption 0.11A**

How it works

When a miniature bulb is connected directly to the small DC motor (acting as a generator in this case), current I flows uninhibited through R_1 following the equation:

$$\text{Current } I = \frac{\text{Voltage } V}{\text{Resistance } R_1}$$



If another resistive component such as a light bulb, small fan, motor, or resistor is included in series, R_2 is added to R_1 . With more resistance, less current flows through the circuit, described by the equation:

$$\text{Current } I = \frac{\text{Voltage } V}{\text{Resistance } R_1 + R_2}$$

Safety

- When connecting several generators in series, very high voltage will be generated and there's a risk of getting shocked.
- The polarity will change according to the handle turning direction, please make sure to check the polarity prior to connecting to avoid damaging electrical components
- When the generator is loaded electrically, do not turn the handle in high speed or change direction suddenly. It may damage the gears.

Related Products

Electrostatic High-Voltage Genecon (P6-2640) This hands-on alternative to traditional "Van de Graaff" generators allows electrical discharge experiments to be performed in the classroom with far greater ease and less cost. Gently turn the handle to generate more than 10,000V of high voltage static electricity!

Series / Parallel Bulb Board (P6-1120) No more wire nests! The five mini bulbs can be quickly arranged in series, parallel, or complex circuits, simply by adjusting the busbars.