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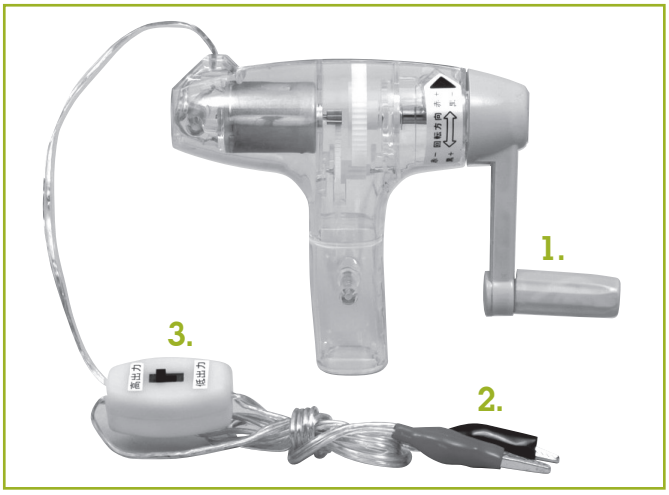
Instructional Guide

Deluxe Hand Crank Generator

Product# P6-2560



Part Names

1. Hand Crank Generator
2. Alligator Clips
3. Output power control switch

Specification

Max voltage: 15V (no-load)
Max current: 02.A (low output, short)
1.5A (high output, short)

Features

- DC output that can be substituted for batteries.
- Depending on the direction you turn the handle, you can change positive and negative polarities.
- You can turn the motor or light up the miniature light bulb.
- Using the Output Control Switch, breakage of a miniature bulb or the LED light can be prevented.

Output Power Control Switch

Output Power ON

Output Power OFF

Usage

Turn the handle to generate power

- Turn the handle clockwise and the red clip will be the positive pole, and the black clip will be the negative pole.
- Turn the handle counterclockwise and the black clip will be the positive pole, and the red clip will be the negative pole.

Check the Output Power Control Switch

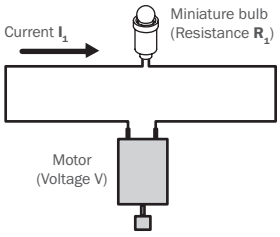
- When you switch to the “High output”, the output power control turns OFF and high current flows into the connected devices. “High output” mode is suitable for high current requiring experiments such as heating experiments or water electrolysis.
- When you switch to the “Low output”, the output power control turns ON and the current flows into connected devices is inhibited. Experiments such as lighting up LEDs or miniature bulbs are suitable for “low output” mode so that prevents damaging devices.

* Depending on the spec of miniature bulbs and LEDs (rated voltage, current consumption) they might not light properly. Turning the handle too fast can cause damage to the bulbs and LEDs.

* **Recommended miniature bulb spec: Rated Voltage 2.2V. Current consumption 0.11A**

How the Output Power Control Switch Works:

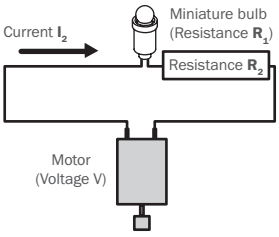
High Output Mode:



When a miniature bulb is connected directly to the motor of the generator, Current I_1 flows according to Resistance R_1 of the bulb.

$$\text{Current } I_1 = \frac{\text{Voltage V}}{\text{Resistance } R_1}$$

Low Output Mode:



When it’s low output mode, R_2 is connected to the motor of the generator inside of the switch series, and the current flow into the miniature bulb is smaller.

$$\text{Current } I_2 = \frac{\text{Voltage V}}{\text{Resistance } R_1 + \text{Resistance } R_2}$$

Caution

- 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.
- When the generator is loaded electrically, do not turn the handle in high speed or change direction suddenly. It may damage the gears.

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