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## Discovery 1012583

# Discovery #MINDBLOWN Action Circuitry Electronic Experiment Complete STEM Set

Brand: Discovery | Model: 1012583

## INTRODUCTION

This instruction manual provides detailed guidance for assembling and operating your Discovery #MINDBLOWN Action Circuitry Electronic Experiment Complete STEM Set. This kit is designed to introduce users to the fundamental principles of electricity, circuitry, and engineering through engaging, hands-on experiments. It encourages exploration of science, technology, engineering, and mathematics (STEM) concepts.

## SAFETY INFORMATION

- Always read the entire instruction manual before beginning assembly or operation.
- This kit contains small parts and is not suitable for children under 3 years of age. Recommended for ages 8+.
- Ensure all wiring connections are secure and correct before inserting batteries.
- Only connect wires of the same color as indicated in the instructions to prevent damage.
- Requires 2 AA batteries (not included). Ensure batteries are inserted with correct polarity (+/-).
- Do not short-circuit the battery compartment.

## WHAT'S IN THE Box

Your Discovery #MINDBLOWN Action Circuitry Electronic Experiment Complete STEM Set includes:

- 3 x Plastic Breadboard
- 3 x Battery Compartment
- 9 x Spring Connector
- 1 x Plastic Rocket
- 1 x Launch Button
- 2 x On/Off Switch
- 1 x Plastic Robot

- 1 x Plastic Blower
- 1 x Foam Ball
- Instruction Manual



## FASCINATING FACTS COMPLETE THE CIRCUIT

An electric circuit is like a racetrack made of conductors that electrons can speed through. A battery or other power source provides electrons that move across the circuit. When the electrons reach a device like a light bulb, computer or a refrigerator, their charge is converted in useful ways. A conductor has to travel from the power source to the device and back again so the electrons can complete their cycle!

**3  
MODULES  
IN ALL!**

Image: Overview of the kit components, showing plastic breadboards, battery compartments, spring connectors, a plastic rocket, a launch button, on/off switches, a plastic robot, a plastic blower, and a foam ball.

### SETUP AND ASSEMBLY

Follow these steps to set up your experiment circuits. Refer to the wiring diagrams in the included manual for specific connections.

- 1. Battery Installation:** Insert 2 AA batteries (not included) into each battery compartment, ensuring correct polarity (+/-).
- 2. Connecting Wires:** Connect the bare metal ends of the wires to the spring connectors.
- 3. Breadboard Placement:** Insert the spring connectors with attached wires onto the plastic breadboard.

- 4. Forming Gaps:** Gently bend the spring connectors to create a small gap between the springs.
- 5. Wire Insertion:** Insert the bare metal wire between the gap of the spring connectors. Ensure the bare metal wire is in contact with the metal springs, not the plastic caps.
- 6. Color Matching:** Always connect wires of the same color (e.g., orange to orange, blue to blue) as per the experiment diagrams to ensure proper circuit function.



Image: Detailed view of connecting wires and components on the breadboard, highlighting the hands-on assembly process.

## OPERATING INSTRUCTIONS: EXPERIMENTS

This kit allows you to build and explore various electronic circuits. Here are some of the key experiments you can perform:

### 1. Rocket Launch Experiment

Assemble the circuit for the rocket launch module according to the provided diagrams. Once connected, press the launch button to activate the rocket.

## ROCKET LAUNCH



Image: The rocket launch module in action, with a child's hand pressing the launch button.

## 2. Spinning Robot Experiment

Construct the circuit for the spinning robot. Flip the designated switch to power the robot and observe its motion.

## ROBOT SPINNER



Image: The spinning robot module, demonstrating its operational state with glowing eyes.

### 3. Floating Ball Experiment

Build the circuit for the floating ball module. Turn on the power to activate the blower, which will cause the foam ball to levitate above it.

## FLOATING BALL

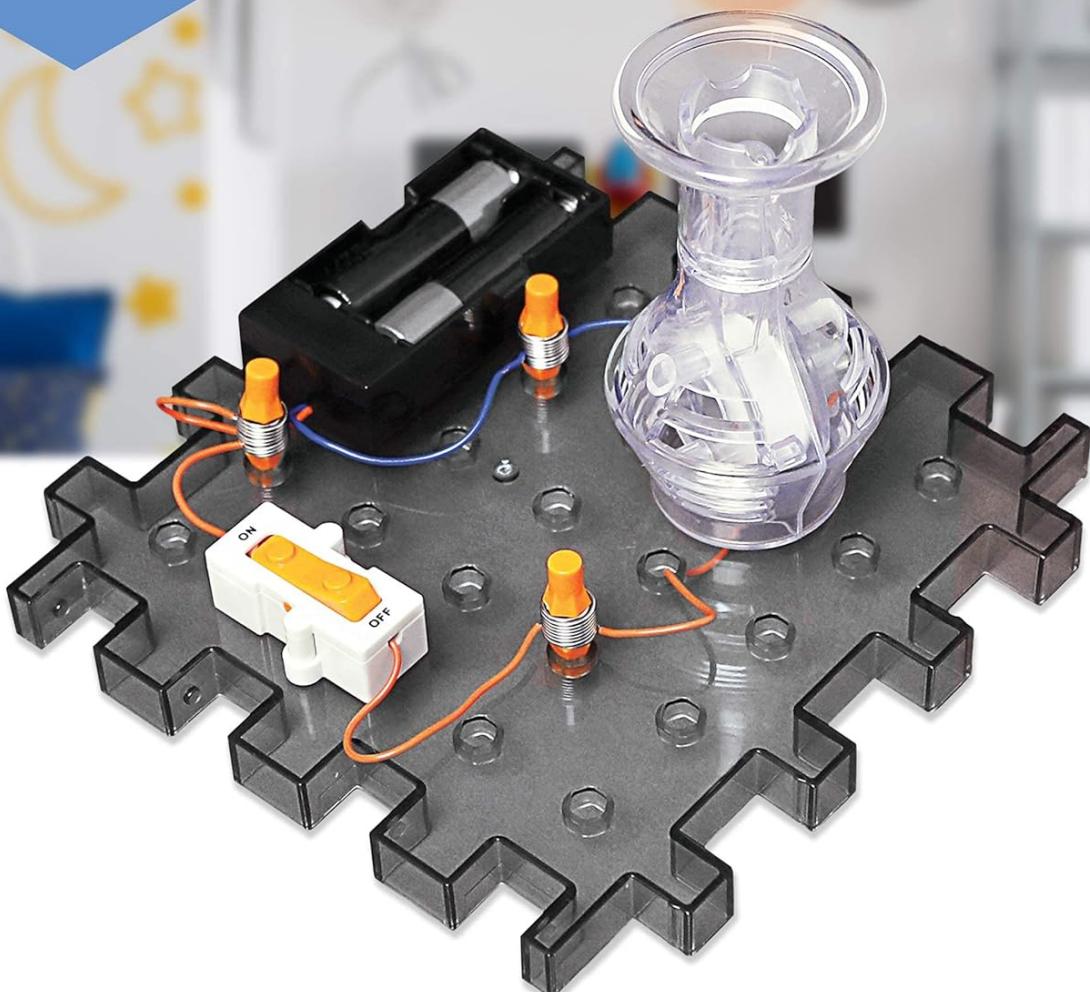


Image: The floating ball experiment in progress, showing the foam ball suspended by the air current from the blower.

## 4. Wire Trap Experiment

This experiment challenges your precision. Connect the wire trap component to a circuit that includes a siren. The objective is to guide a metal hook along a shaped wire without making contact. If the hook touches the wire, the siren will sound, indicating a connection has been made.

Your browser does not support the video tag.

Video: Demonstration of the Wire Trap Experiment, showing a child carefully guiding a metal hook along a shaped wire. If the hook touches the wire, a siren sounds.

## Combining Circuits

The breadboards are designed to connect, allowing you to combine multiple experiments into one large, complex circuit. Experiment with different configurations to observe new interactions and learn advanced circuitry concepts.



Image: A fully assembled Action Circuitry set, showcasing multiple experiment modules interconnected on the breadboards.

## GLOSSARY OF TERMS

Familiarize yourself with these key terms related to electricity and circuitry:

- **Conductor:** A material that allows electric current to flow through it easily. Metals like copper and silver are excellent conductors.
- **Current:** The flow of electric charge.
- **Electron:** A negatively charged subatomic particle that orbits the nucleus of an atom. The movement of electrons creates electric current.
- **Insulator:** A material that resists the flow of electric current.
- **LED (Light Emitting Diode):** A semiconductor light source that emits light when current flows through it.
- **Motor:** A device that converts electrical energy into mechanical energy (motion).
- **Circuit:** A closed loop through which electric current can flow.

- **Breadboard:** A construction base used for prototyping electronics without soldering.
- **Switch:** A component that can make or break an electrical circuit, controlling the flow of current.

## TROUBLESHOOTING

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- **Experiment Not Working:**
  - Check all wire connections to ensure they are secure and match the diagrams in the manual.
  - Verify that the bare metal wires are in contact with the metal springs and not the plastic caps.
  - Ensure batteries are inserted correctly with the proper polarity (+/-).
  - Confirm that the on/off switch is in the "ON" position.
  - Replace old batteries with new ones if necessary.
- **Siren Not Sounding (Wire Trap):**
  - Make sure the metal hook is making direct contact with the shaped wire.
  - Check all connections in the siren circuit.

## SPECIFICATIONS

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- **Product Dimensions:** 3.35 x 9.53 x 12.56 inches
- **Item Weight:** 1.61 pounds
- **Model Number:** 1012583
- **Recommended Age:** 8+ years
- **Batteries Required:** 2 AA batteries (not included)
- **Manufacturer:** MerchSource
- **Release Date:** September 12, 2020

## WARRANTY AND SUPPORT

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For warranty information or technical support regarding your Discovery #MINDBLOWN Action Circuitry Electronic Experiment Complete STEM Set, please refer to the contact details provided on the product packaging or visit the official Discovery #MINDBLOWN website.