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Poraxy 4 Set STEM Kits

Poraxy 4 Set STEM Kits User Manual

Model: 4 Set STEM Kits

1. INTRODUCTION

The Poraxy 4 Set STEM Kits provide an engaging and educational experience for children. This kit includes components to build four distinct scientific models: an Oil Field Pumping Unit, a Hyperbolic Model, a Vacuum Cleaner, and a Wind Power Station. Designed to foster creativity, imagination, and practical skills, these kits allow users to explore principles of science, technology, engineering, and mathematics through hands-on assembly and experimentation.



Figure 1.1: Overview of the four assembled Poraxy STEM Kits.

2. SAFETY INFORMATION

- **Adult Supervision:** Adult supervision is recommended during assembly and operation, especially for younger children, due to small parts and electrical components.
- **Small Parts:** This kit contains small parts which may pose a choking hazard. Keep away from children under 3 years of age.
- **Battery Safety:** Use only the specified battery type (typically AA batteries, not included). Do not mix old and new batteries, or different types of batteries. Insert batteries with correct polarity. Remove batteries if the kit will not be used for an extended period.
- **Electrical Components:** Handle wires and motors carefully. Do not short-circuit battery terminals.
- **Material Safety:** The wooden components are made from safe, pollutant-free wood. Avoid exposing components to water or extreme temperatures.

3. KIT CONTENTS

Each Poraxy 4 Set STEM Kit package typically includes:

- Pre-cut wooden 3D puzzle pieces for four different models.
- Motors, wires, battery holders, and other electrical components.
- Small screws, fasteners, and a mini screwdriver.
- Detailed instruction manuals for each individual model.



Figure 3.1: Example of kit components.



Figure 3.2: Individual instruction manuals for each model.

4. ASSEMBLY AND OPERATING INSTRUCTIONS

Each kit comes with its own detailed, step-by-step instructions. Please refer to the specific manual for each model for precise assembly. The general steps below apply to all models.

General Assembly Steps:

1. **Unpack Components:** Carefully remove all wooden pieces and other components from their packaging.
2. **Identify Parts:** Match the wooden pieces and electrical components to the diagrams in the specific model's instruction manual.
3. **Assemble Wooden Structure:** Follow the numbered steps in the manual to connect the wooden pieces. Ensure all connections are secure.
4. **Install Electrical Components:** Connect motors, battery holders, and switches as indicated in the manual. Pay close attention to wire connections and polarity.
5. **Insert Batteries:** Once assembly is complete, insert the required batteries (not included) into the battery

holder, ensuring correct polarity.

4.1. Oil Field Pumping Unit

This model demonstrates the mechanism of an oil pump. Assemble the wooden structure, then connect the motor and the syringe mechanism as per the instructions. Fill the small cup with water to simulate oil for operation.



Figure 4.1: Assembled Oil Field Pumping Unit.

Operation:

Once assembled and batteries are installed, activate the switch. Observe how the motor drives the pumping arm, simulating the extraction of liquid from the reservoir.

4.2. Wind Power Station

This model illustrates how wind energy can be converted into electrical energy to power a light. Assemble the house structure, fan, motor, and battery holder.



Figure 4.2: Assembled Wind Power Station.

Operation:

With batteries installed, turn on the switch. The fan blades will spin, and the integrated light in the house model will illuminate, demonstrating the principle of a wind-powered generator.

4.3. Vacuum Cleaner

This model demonstrates basic suction principles. Assemble the wooden casing and integrate the motor and fan components to create an airflow system.

Wind power station



Figure 4.3: Assembled Vacuum Cleaner.

Operation:

After assembly and battery insertion, activate the switch. The fan inside will create suction, allowing the model to pick up small, lightweight debris like confetti.

4.4. Hyperbolic Model

This model demonstrates principles of physics related to motion and balance. Assemble the wooden frame and the rotating components as detailed in the instructions.

Vacuum cleaner

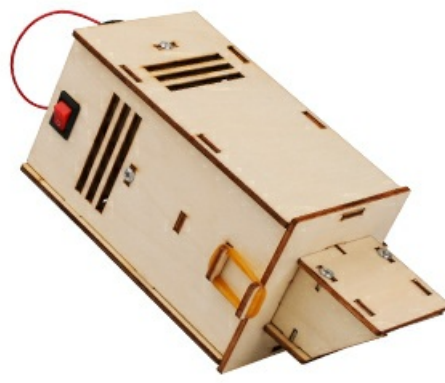


Figure 4.4: Assembled Hyperbolic Model.

Operation:

Once assembled and powered, the model will demonstrate rotational motion and the visual effect of a hyperbola, illustrating concepts of geometry and mechanics.

5. MAINTENANCE

- **Cleaning:** Wipe wooden surfaces with a dry, soft cloth. Avoid using water or chemical cleaners.
- **Storage:** Store the assembled models in a dry place away from direct sunlight and extreme temperatures to prevent warping or damage to components.
- **Battery Removal:** Remove batteries from the battery holder if the kit will not be used for an extended period to prevent leakage and corrosion.
- **Component Check:** Periodically check all connections and components for looseness or damage. Tighten screws if necessary.

6. TROUBLESHOOTING

| Problem | Possible Cause | Solution |
|--|---|---|
| Model does not operate (motor not spinning, light not turning on). | <ul style="list-style-type: none">• Batteries are dead or inserted incorrectly.• Loose wire connection.• Switch is off or faulty. | <ul style="list-style-type: none">• Replace batteries with new ones, ensuring correct polarity.• Check all wire connections and re-secure them.• Ensure the switch is in the 'ON' position. |
| Wooden pieces do not fit together. | <ul style="list-style-type: none">• Incorrect piece selection.• Obstruction in the slot. | <ul style="list-style-type: none">• Refer to the instruction manual to verify correct piece.• Gently clear any debris from the slots. Do not force pieces. |
| Model operates weakly or inconsistently. | <ul style="list-style-type: none">• Low battery power.• Loose connections.• Friction in moving parts. | <ul style="list-style-type: none">• Replace batteries.• Check and secure all electrical connections.• Ensure moving parts are not obstructed and move freely. |

7. SPECIFICATIONS

- **Product Dimensions:** 8 x 6 x 2 inches (packaging)
- **Item Weight:** 1.48 pounds
- **Recommended Age:** 8 - 12 years
- **Material:** Wood, various electronic components
- **Power Source:** Batteries (not included, specific type per model)

8. WARRANTY INFORMATION

Specific warranty details for the Poraxy 4 Set STEM Kits are not provided in the product information. Please refer to the retailer's return policy or contact Poraxy customer support for warranty inquiries.

9. SUPPORT INFORMATION

For further assistance or questions regarding your Poraxy 4 Set STEM Kits, please contact the seller or refer to the official Poraxy website. Specific contact details were not available in the provided product information.

10. OFFICIAL PRODUCT VIDEOS

No official product videos from the seller were found in the provided information for this item.

