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› Discovery Mindblown DIY Robotic Arm with Hydraulics Instruction Manual

Discovery Kids 1423000921

Discovery Mindblown DIY Robotic Arm with Hydraulics

Model: 1423000921

INTRODUCTION

The Discovery Mindblown DIY Robotic Arm with Hydraulics is a 176-piece building set designed to introduce users to the principles of hydraulic power and mechanical engineering. This kit allows for the construction of a functional robotic arm that operates using pressurized liquids, requiring no batteries. The assembled arm features a 6-lever control panel for gripping and moving objects.

This manual provides detailed instructions for assembly, operation, maintenance, and troubleshooting to ensure a successful and educational experience.



Figure 1: The Discovery Mindblown Hydraulic Robotic Arm in operation, demonstrating its gripping capability.

SAFETY INFORMATION

Warning: Choking Hazard - Small Parts. Not for children under 3 years.

WARNING INSIDE BOX ON BAG: Plastic bags can be dangerous. To avoid danger of suffocation, keep this bag away from babies and children. Do not use in cribs, beds, carriages or playpens. The thin film may cling to nose and mouth and prevent breathing. This bag is not a toy.

WARNING INSIDE BOX ON PAMPHLET: Not intended for children under 8 years of age. Do not use attachments of any kind. Only use this product for its intended purpose. Thoroughly inspect products before every use. If the product appears worn, frayed/splintered, cracked, or broken in any manner, discontinue use and discard immediately. Read and follow all instructions in the manual before use.

SETUP AND ASSEMBLY

Assembly of the Discovery Mindblown Hydraulic Robotic Arm requires careful attention to detail. Follow these steps to

construct the arm correctly.

1. Unboxing and Part Identification

- Carefully open the packaging and remove all components.
- Lay out all 176 pieces and compare them against the parts list provided in the kit's instruction booklet to ensure all parts are present.
- Familiarize yourself with the different components, such as the base, arm segments, claw, tubes, and control levers.



Figure 2: All components of the 176-piece DIY building set.

2. Arm Assembly

- Follow the step-by-step diagrams in the included instruction manual to connect the various arm segments.
- Ensure all connections are secure. Some parts may require firm pressure to snap into place.
- Pay close attention to the orientation of each piece as indicated in the diagrams.

3. Hydraulic System Setup

- Connect the clear tubes to the hydraulic cylinders and the control panel levers as shown in the instructions.
- Fill the hydraulic cylinders with water. It is crucial to remove all air bubbles from the system for optimal performance.
- Ensure all tube connections are tight to prevent leaks.



HYDROPOWERED

This Hydraulic Arm is run on hydraulic technology that requires no batteries or power source. Onboard 6-lever control panel, with a 20-inch vertical reach and advanced claw grips and lifts.



Figure 3: Detail of the 6-lever control panel and hydraulic connections.

4. Final Assembly and Testing

- Attach the assembled arm to the base. Verify that the arm rotates freely and is securely mounted.
- Test each lever on the control panel to ensure the corresponding arm segment or claw moves as expected.
- If any movement is restricted or a lever does not function, recheck the hydraulic connections and ensure no air is trapped in the system.

OPERATING INSTRUCTIONS

The robotic arm is operated entirely by hydraulic power through a 6-lever control panel. No batteries are required.

1. **Positioning:** Place the robotic arm on a stable, flat surface.
2. **Lever Control:** Each of the six levers on the control panel corresponds to a specific movement of the robotic arm:
 - Two levers control the opening and closing of the claw.
 - Other levers control the rotation of the base, and the articulation of the arm segments (shoulder, elbow, wrist).
3. **Movement:** Gently push or pull the levers to initiate movement. The hydraulic system transfers force from the levers to the arm's joints, allowing for precise control.
4. **Gripping Objects:** Use the claw control levers to open and close the claw. Practice picking up small, lightweight objects to develop dexterity.
5. **Range of Motion:** The arm has a vertical reach of approximately 20 inches. Explore its full range of motion to understand its capabilities.



Figure 4: The robotic arm demonstrating its open claw mechanism.

MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your hydraulic robotic arm.

- **Cleaning:** Wipe the arm and control panel with a soft, damp cloth. Avoid using harsh chemicals or abrasive cleaners.
- **Water Levels:** Periodically check the water levels in the hydraulic cylinders. If water evaporates, carefully refill them, ensuring no air bubbles are introduced.
- **Leak Checks:** Regularly inspect all tube connections for any signs of leakage. Tighten connections if necessary.
- **Storage:** When not in use, store the robotic arm in a clean, dry place away from direct sunlight and extreme temperatures.

- **Component Inspection:** Before each use, inspect all parts for wear, cracks, or damage. Replace any broken components immediately to prevent malfunction.

TROUBLESHOOTING

If you encounter issues with your robotic arm, refer to the following troubleshooting guide:

Problem	Possible Cause	Solution
Arm or claw does not move or moves sluggishly.	Air bubbles in the hydraulic system; insufficient water; loose tube connections.	Refill cylinders with water, ensuring no air bubbles remain. Check and tighten all tube connections.
Water leaks from connections.	Loose or improperly seated tubes/collars.	Ensure all tubes are fully inserted and collars are securely fastened. If leaks persist, check for damaged tubes or connectors.
Arm segments or base are unstable/collapse.	Improper assembly; unsecured connections.	Review assembly instructions carefully. Ensure all snap-fit connections are fully engaged and the arm is securely attached to the base.
Levers on control panel do not operate smoothly.	Friction in the lever mechanism; misaligned parts.	Check for any obstructions or misaligned parts in the lever mechanism. Ensure all moving parts are clean.

SPECIFICATIONS

- **Model Number:** 1423000921
- **UPC:** 843479113112
- **Brand:** Discovery Kids
- **Product Dimensions (L x W x H):** 52 x 30.5 x 31 Centimetres (20.47 inches)
- **Item Weight:** 966 g
- **Material Type:** Plastic
- **Recommended Age:** 10 - 99 years
- **Educational Objective:** STEM (Science, Technology, Engineering, Mathematics)
- **Power Source:** Hydraulic (No batteries required)
- **Included Components:** Hydraulic Arm Kit (176 pieces)

WARRANTY AND SUPPORT

For any questions, concerns, or support regarding your Discovery Mindblown DIY Robotic Arm with Hydraulics, please refer to the contact information provided in the original product packaging or visit the official Discovery Kids website for customer service details.

Please retain your proof of purchase for any warranty claims, if applicable. Specific warranty terms and conditions may vary by region and retailer.

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