

LEGO 45681

LEGO Education SPIKE Prime Expansion Set (45681) Instruction Manual

Enhance your robotics and STEAM learning experience.

INTRODUCTION

The LEGO Education SPIKE Prime Expansion Set (45681) is designed to complement the SPIKE Prime Set (45678), providing over 600 additional LEGO elements to facilitate more complex and advanced robotic creations. This set is intended to further develop students' interest in STEAM (Science, Technology, Engineering, Arts, and Mathematics) concepts and prepare them for robotics competitions.

This manual provides essential information for the proper setup, operation, and maintenance of your expansion set components.

KEY COMPONENTS

The expansion set includes a variety of specialized elements to enhance your building and programming capabilities:

- **Color Sensor:** Detects colors and light intensity, enabling robots to react to their environment.
- **Large Motor:** Provides powerful and precise movement for advanced mechanisms.
- **Maker Plate:** A versatile building plate for custom attachments and designs.
- Over 600 additional LEGO Technic and System elements for structural integrity and creative designs.



An example of a robot built using the LEGO Education SPIKE Prime Expansion Set, showcasing the integration of various components like the Color Sensor, Large Motor, and Maker Plate. This image illustrates the potential for complex designs and functional mechanisms.

SETUP AND ASSEMBLY

The SPIKE Prime Expansion Set is designed to be used in conjunction with the main LEGO Education SPIKE Prime Set (45678). It does not function as a standalone product.

1. **Unpack Components:** Carefully remove all LEGO elements from their packaging. Organize them by type or color for easier assembly.
2. **Refer to Building Instructions:** For specific models and designs, refer to the digital building instructions available within the free LEGO Education SPIKE App. The app provides step-by-step guides for integrating expansion set elements into your SPIKE Prime creations.
3. **Connect to SPIKE Prime Hub:** Sensors and motors from the expansion set connect directly to the ports on the SPIKE Prime Hub (from the main set). Ensure connections are secure.
4. **Software Installation:** Ensure the LEGO Education SPIKE App is installed on your compatible device (computer, tablet). This app is essential for programming and controlling your models.

OPERATING INSTRUCTIONS

Operation of models built with the expansion set relies on the LEGO Education SPIKE App and the SPIKE Prime Hub.

Using the SPIKE App:

- **Programming Interface:** The app features a drag-and-drop coding interface based on Scratch, allowing users to create programs for their robots.

- **Connecting to Hub:** Connect your device to the SPIKE Prime Hub via Bluetooth or USB cable as instructed in the app.
- **Running Programs:** Once connected, upload your program to the Hub and press the green button on the Hub or the 'Start' button in the app to execute.

Component-Specific Operation:

- **Color Sensor:** Use programming blocks in the SPIKE App to read color values (e.g., red, blue, green, no color) or light intensity. Calibrate the sensor in different lighting conditions for optimal performance.
- **Large Motor:** Control motor speed, direction, and rotation (degrees or rotations) using dedicated programming blocks. Ensure gears and axles are properly aligned for smooth operation.
- **Maker Plate:** This element is primarily for structural integration. Ensure any custom attachments are securely fastened and do not interfere with the movement of other components.

MAINTENANCE AND CARE

Proper care ensures the longevity and functionality of your LEGO Education SPIKE Prime Expansion Set.

- **Cleaning:** Clean LEGO elements with a mild soap solution and lukewarm water. Rinse thoroughly and air dry. Do not use hot water, harsh chemicals, or abrasive materials.
- **Storage:** Store all components in a clean, dry place away from direct sunlight and extreme temperatures. Use the original storage box or a similar container to keep parts organized and prevent loss.
- **Handling:** Avoid dropping or applying excessive force to the elements, especially sensors and motors, as this can cause damage.
- **Electronic Components:** Keep the Color Sensor and Large Motor dry. Do not submerge them in water.

TROUBLESHOOTING

If you encounter issues with your SPIKE Prime Expansion Set, consider the following common solutions:

- **Component Not Responding:**
 - Ensure the component (sensor/motor) is securely connected to the correct port on the SPIKE Prime Hub.
 - Check your program in the SPIKE App to verify that the correct port is selected and the programming blocks are configured properly.
 - Test the component on a different port or with a simple test program.
- **Inaccurate Sensor Readings:**
 - **Color Sensor:** Ensure the sensor lens is clean. Calibrate the sensor in the specific lighting conditions of your environment using the SPIKE App. Avoid shadows or direct bright lights that might interfere.
- **Motor Not Moving Smoothly:**
 - Check for any obstructions or friction in the mechanical assembly.
 - Ensure gears are properly meshed and axles are not bent.
 - Verify the motor is receiving sufficient power from the Hub (ensure Hub battery is charged).
- **App Connectivity Issues:**
 - Ensure Bluetooth is enabled on your device and the SPIKE Prime Hub.
 - Restart both the SPIKE App and the SPIKE Prime Hub.
 - Try connecting via a USB cable if Bluetooth connection is unstable.

PRODUCT SPECIFICATIONS

Brand Name	LEGO
Model Number	45681
Number of Pieces	604
Item Dimensions (L x W x H)	14.57 x 9.84 x 3.54 inches
Item Weight	2.4 pounds
Material Type	Plastic
Educational Objective	Construction Skills, STEAM Learning
Compatibility	Requires LEGO Education SPIKE Prime Set (45678)

WARRANTY AND SUPPORT

LEGO Education products are manufactured to high-quality standards. For specific warranty information, please refer to the documentation included with your original LEGO Education SPIKE Prime Set (45678) or visit the official LEGO Education website.

For technical support, troubleshooting assistance, or inquiries about replacement parts, please contact LEGO Education customer service through their official website. Online resources, including FAQs and community forums, are also available to help you maximize your learning experience.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page’s manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question