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## 3B Scientific U8501000

# 3B Scientific U8501000 Student Experiment Kit - Mechanics User Manual

Model: U8501000

## 1. INTRODUCTION

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The 3B Scientific U8501000 Student Experiment Kit (SEK) - Mechanics is designed to facilitate the execution of 23 fundamental student experiments in classical mechanics. This kit provides a comprehensive set of equipment for educational purposes, enabling hands-on learning and exploration of mechanical principles. It is intended for use in educational settings, accompanied by the provided student and instructor manuals for detailed experiment procedures.

## 2. PRODUCT OVERVIEW AND COMPONENTS

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The U8501000 kit comes in a durable plastic box with a transparent lid and a foam insert designed to securely hold all components. Below is an image of the kit and a detailed list of its contents.



**Figure 1:** The 3B Scientific U8501000 Student Experiment Kit for Mechanics, showcasing the various components neatly organized within its protective case.

### **Kit Contents:**

- 2 stand rods with external and internal thread, 400 mm
- 1 stand rod with external thread, 400 mm
- 2 stand rods, 110 mm
- 2 double clamps
- 1 beam balance
- 2 weighing pans with holders
- 1 scale for balance
- 1 axle rod for pulleys
- 1 rolling pin with add-on weights
- 1 block and tackle with two pulleys and two hooks
- 1 block and tackle with two pulleys and one hook
- 1 multiple pulley
- 1 plastic pulley, 40 mm
- 4 weights, 25 grams

- 1 weight, 50 grams
- 1 weight, 100 grams
- 1 magnetic base
- 1 adjustable bracket
- 2 s-shaped hooks, 1 gram
- 2 s-shaped hooks, 2 grams
- 1 s-shaped hook, 5 grams
- 1 body for friction and inertia experiments
- 1 set of plastic strips for friction experiment
- 1 dynamometer 1 Newton
- 1 dynamometer 2 Newtons
- 1 leaf spring, 330 mm
- 1 coil spring with 2 eyelets, approximate 5.25 nano per meter
- 100 m of twine
- 2 pointers
- 1 measuring cylinder
- 1 stand base for measuring cylinder
- 3 strips of velour paper
- 1 set square

### 3. SETUP

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1. **Unpacking:** Carefully remove all components from the plastic box. Verify that all items listed in Section 2 are present and undamaged.
2. **Preparation:** Ensure a stable and clear workspace. The experiments are designed to be performed on a Student Experiment Kit base plate (U8408035), which is sold separately.
3. **Component Familiarization:** Before beginning any experiment, familiarize yourself with each component and its function as described in the accompanying experiment manuals.
4. **Initial Assembly:** For general use, basic stand setups may be required. Assemble stand rods and clamps as needed for stability, referring to the specific experiment instructions for detailed configurations.

### 4. OPERATING INSTRUCTIONS

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This kit is designed for conducting 23 distinct experiments in classical mechanics. Detailed instructions for each experiment are provided in the comprehensive student and instructor experiment manuals that accompany this kit.

- **Refer to Manuals:** Always consult the specific experiment manual for step-by-step procedures, safety guidelines, and expected outcomes for each of the 23 experiments.
- **Safety First:** Adhere to all safety precautions outlined in the experiment manuals and general laboratory safety practices.
- **Accurate Measurements:** Use the provided measuring tools (e.g., dynamometers, measuring cylinder) carefully to ensure accurate data collection.
- **Systematic Approach:** Follow the experimental steps systematically to achieve reliable results and a clear understanding of the principles demonstrated.

## 5. MAINTENANCE

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Proper maintenance ensures the longevity and accuracy of your experiment kit components.

- **Cleaning:** After each use, clean all components with a soft, dry cloth. For plastic or metal parts, a slightly damp cloth with mild soap can be used, followed by thorough drying. Avoid abrasive cleaners or solvents.
- **Storage:** Store all components back in their designated cut-outs within the foam insert of the plastic box. This protects them from damage and keeps the kit organized.
- **Inspection:** Periodically inspect components for any signs of wear, damage, or corrosion. Replace any damaged parts to maintain experimental integrity and safety.
- **Twine:** Keep the twine neatly wound to prevent tangling.

## 6. TROUBLESHOOTING

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If you encounter issues during an experiment, consider the following general troubleshooting steps:

- **Review Instructions:** Double-check the specific experiment instructions in the manual to ensure all steps have been followed correctly.
- **Component Placement:** Verify that all components are correctly assembled and positioned according to the experiment diagram.
- **Connections:** Ensure all connections (e.g., strings, clamps) are secure and free from obstruction.
- **Calibration:** For measuring instruments like dynamometers or balances, ensure they are properly zeroed or calibrated before use.
- **Environmental Factors:** Consider if external factors like drafts or vibrations are affecting sensitive measurements.
- **Missing Parts:** Confirm all necessary parts for the specific experiment are present and accounted for.

## 7. SPECIFICATIONS

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| Attribute             | Value                       |
|-----------------------|-----------------------------|
| Brand Name            | 3B Scientific               |
| Model Number          | U8501000                    |
| Educational Objective | Mechanical skills           |
| Material Type         | Paper, Plastic              |
| Item Dimensions       | 8.27 x 13.78 x 17.72 inches |
| Item Weight           | 8 Pounds                    |
| Assembly Required     | No (for the kit itself)     |
| Number of Experiments | 23                          |

## 8. WARRANTY AND SUPPORT

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For detailed information regarding product warranty, please refer to the official documentation provided

with your purchase or visit the 3B Scientific website.

Should you require technical support or have questions about specific components or experiments, please contact 3B Scientific customer service through their official channels.

**Manufacturer:** 3B Scientific

**Website:** [www.3bscientific.com](http://www.3bscientific.com) (*Note: This is a general placeholder for the manufacturer's website. Please verify the correct support link.*)