

**Instruction Sheet  
for the PASCO  
Model ME-8752**

## PHOTOGATE PENDULUM SET

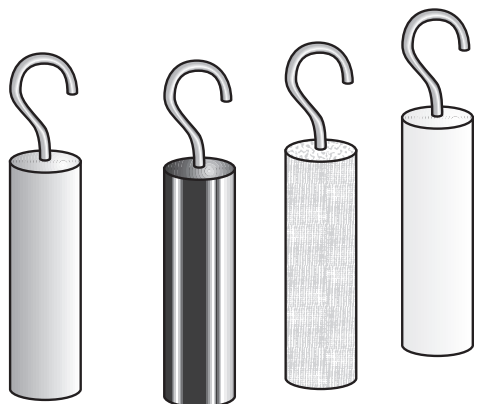


Figure 1: Equipment included

### Introduction

The PASCO ME-8752 Photogate Pendulum Set is designed for use with either the ME-9204B Accessory Photogate or the ME-9498A Photogate Head. The photogate can then be used with a computer and interface to time the period of the various pendula very precisely. The set contains four cylindrical pendula identical in size and made of different materials: brass, aluminum, plastic and wood. This set can also be used as a multipurpose pendulum set without the use of interfaces or sensors.

### Equipment

#### INCLUDED

- Brass Pendulum
- Aluminum Pendulum
- Plastic Pendulum
- Wood Pendulum

### ADDITIONAL REQUIRED

- *ScienceWorkshop* Interface and DataStudio software
- Accessory Photogate (ME-9204B) or Photogate Head (ME-9498A)
- Base and Support Rod (ME-9355)
- Pendulum Clamp (SE-9443) or other horizontal support for ring stand.
- Physics String (SE-8050)

### Setup Procedure

#### Classic Pendulum Experiments

The various pendula can be suspended from a ring stand using a Pendulum Clamp (SE-9443). The photogate is blocked each time the pendulum passes through the photogate. Three successive blocks of the photogate would constitute one period of the pendulum.

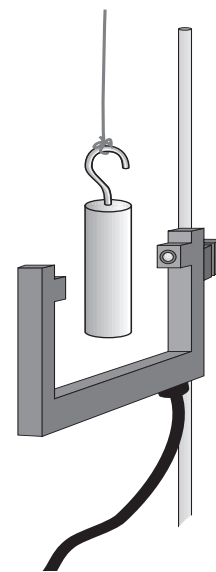


Figure 2: Suspend pendula from string

### Measuring the Period of a Pendulum:

#### ScienceWorkshop:

Drag the digital sensor icon to a digital channel on the interface. A dialog box will appear prompting you for the type of sensor you would like. Scroll

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down the list until you find Photogate & Pendulum. Choose this option by either double clicking or selecting and clicking the ok button.

### DataStudio:

When using DataStudio software, the pendulum timing mode must be created in the Setup window.

1. Click on the Timers button to activate the Timer Setup window.
2. Type Pendulum Timer in the Label box.
3. Use the pick box to choose the Blocked option three times.

This will measure the amount of time from the first blocked state to the third blocked state of the photogate, which corresponds to one period of the pendulum. Finally, click on the Done button and Pendulum Timer will appear in the data window. This data (Pendulum Timer) can now be placed into any DataStudio display, although a digits display is probably most useful.

Using this experimental setup, students can investigate the relationships between length and period, mass and period, and amplitude and period. In all cases, the effects of air resistance are held constant since the shape and size of the pendula are identical.

**Note:** This instruction sheet was written assuming that the user is familiar with *ScienceWorkshop* or DataStudio. Users can gain familiarity by working through the tutorials provided with *ScienceWorkshop* or from DataStudio's Online Help.

## Limited Warranty

PASCO scientific warrants the product to be free from defects in materials and workmanship for a period of one year from the date of shipment to the customer. PASCO will repair or replace, at its option, any part of the product which is deemed to be defective in material or workmanship. The warranty does not cover damage to the product caused by abuse or improper use. Determination of whether a product failure is the result of a manufacturing defect or improper use by the customer shall be made solely by PASCO scientific. Responsibility for the return of equipment for warranty repair belongs to the customer. Equipment must be properly packed to prevent damage and shipped postage or freight prepaid. (Damage caused by improper packing of the equipment for return shipment will not be covered by the warranty.) Shipping costs for returning the equipment after repair will be paid by PASCO scientific.

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