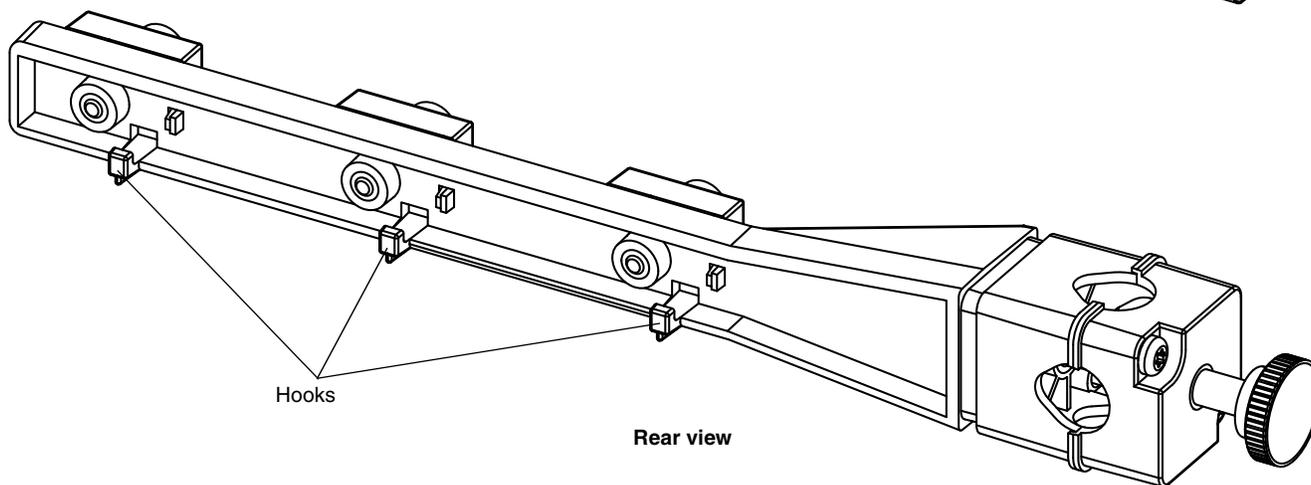
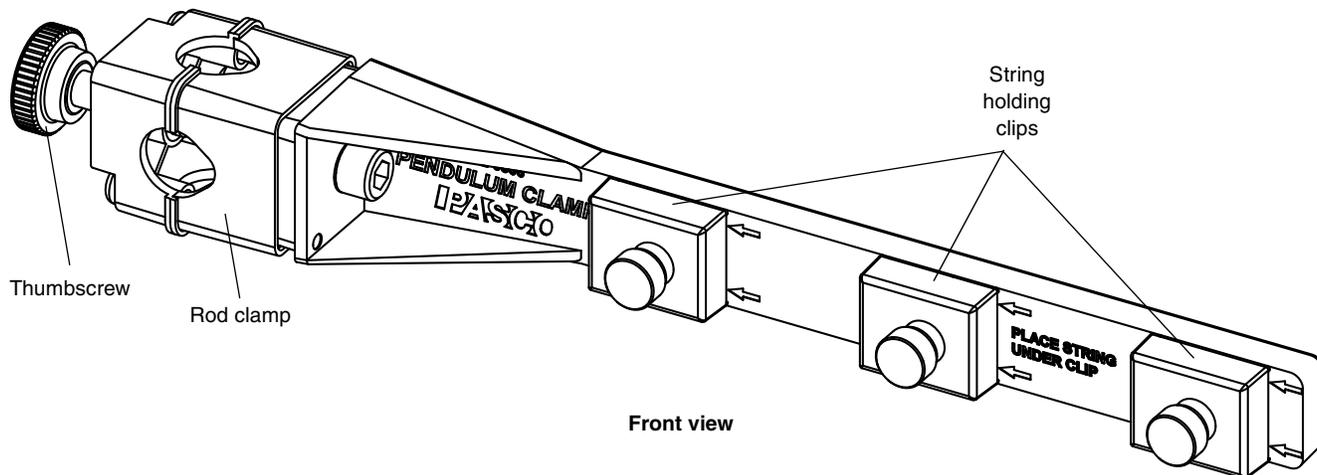




# Pendulum Clamp

ME-9506



## Equipment

Included Item	Part number
Pendulum Clamp	ME-9506
Thumbscrew, 1/4-20 x 0.88 in	617-016

<b>Recommended Items*</b>	<b>Part number</b>
Photogate Pendulum Set	ME-8752
PASCO Stopwatch	ME-1234
Braided Physics String	SE-8050
Hooked Mass Set	SE-8759

<b>Clamps and Bases*</b>	<b>Part number</b>
Large Table Clamp	ME-9472
Aluminum Table Clamp	ME-8995
Large Rod Base	ME-8735
Small "A" Base	ME-8976
Base and Support Rod	ME-9355
Small Tripod Base and Rod	SE-9451

<b>Rods, Stainless Steel, 12.5 mm diameter*</b>	<b>Part number</b>
25 cm Rod, threaded	ME-8988
60 cm Rod, threaded	ME-8977
45 cm Rod, non-threaded	ME-8736
90 cm Rod, non-threaded	ME-8738
120 cm Rod, non-threaded	ME-8741

<b>Springs*</b>	<b>Part number</b>
Demonstration Spring Set	ME-9866
Equal Length Spring Set	ME-8970
Hooke's Law Spring Set	SE-8749
IDS Spring Set	ME-8999
Multi-Length Spring Set	ME-6848
Series/Parallel Springs	ME-6842

\*See the PASCO catalog or [www.pasco.com](http://www.pasco.com)

## Introduction

The ME-9506 Pendulum Clamp is designed to fit on a support rod up to 12.5 mm (1/2 inch) in diameter. The clamp has three clips for holding strings and three hooks for holding springs.

## Recommended Equipment

Photogate Pendulum Set: This set includes a length of braided physics string and four pendula of the same size but with different masses and materials (brass, aluminum, plastic, wood). The Photogate Pendulum Set is designed for use with a PASCO photogate such as the ME-9204B Accessory Photogate or the ME-9498A Photogate Head. The PASCO photogate can be connected to a computer through a PASCO interface for recording and displaying data, or connected to a standalone timer such as the ME-8930 Smart Timer or the ME-9215B Photogate Timer.

**PASCO Stopwatch:** This stopwatch is designed specifically for science timing and uses a single “AA” battery. The liquid crystal display is visible indoors and outdoors and the display can be set to two different modes (MM:SS.SS or decimal). The precision is 0.1 seconds up to 3599.99 seconds or 1 second up to 359999 seconds.

**Braided Physics String:** This string resists stretching and will not unravel. It withstands up to 133 newtons of force and has a linear density of 0.26 grams per meter. Each roll has 320 meters of string.

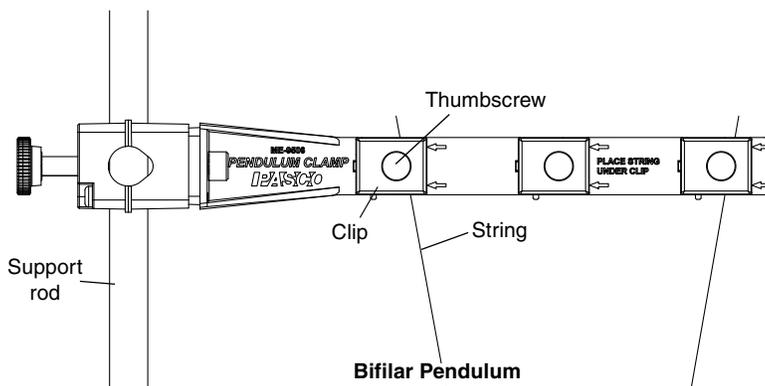
**Hooked Mass Set:** The masses have a cylindrical shape and range from 10 grams to 1000 grams (1 kg). The set includes a molded plastic storage tray.

## Usage

### Bifilar Pendulum

Mount the Pendulum Clamp on a support rod. Get a piece of string or thread that is a little more than twice as long as the longest length of the pendulum you wish to make.

Loosen the thumbscrews of the first and third clips on the clamp and slip the ends of the string or thread under the edge of the clips. Note that each clip is designed so that the string or thread is held under the edge that is the farthest from the rod clamp. Arrows next to each clip point the way. Tighten the thumbscrews to hold the string in place.



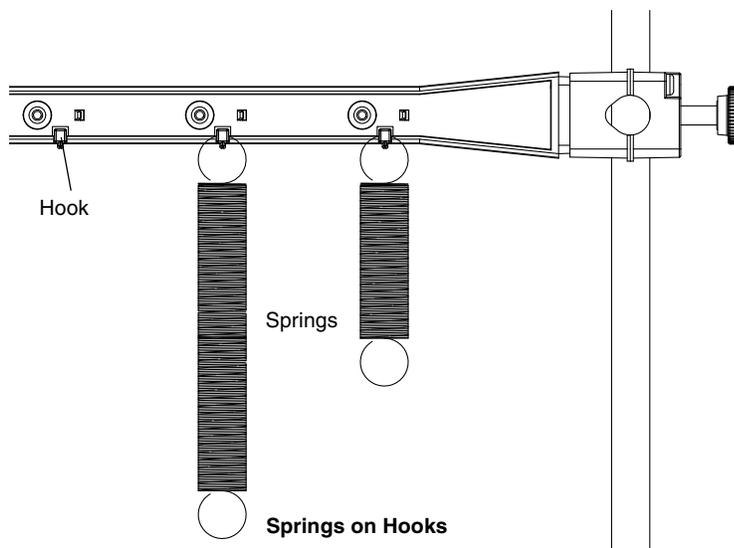
Suspend a pendulum bob from the center of the string so that the string makes a “V” shape. The bifilar arrangement has an advantage because the pendulum bob will swing back-and-forth along a single plane.

### Single or Multiple Setup

Of course, one, two or three separate pendula can be suspended from the pendulum clamp at the same time. To adjust the length of the pendulum string, loosen the thumbscrew slightly and adjust the string. Tighten the thumbscrew to hold the string in place.

### Springs

Hang springs from the hooks on the rear side of the pendulum clamp as shown.



## Pendulum and Photogate

One way to measure the period of a pendulum is to connect a PASCO Photogate to a timer or computer interface. Let the pendulum bob interrupt the photogate's infrared beam as it swings to-and-fro.

Mount the Pendulum Clamp on a support rod. Attach a Photogate Head to a pulley support rod and clamp the pulley support rod to the support rod.

Suspend a bifilar pendulum from the pendulum clamp and adjust the photogate head so that the center of the pendulum bob moves through the infrared beam of the photogate.

**NOTE:** Start the pendulum swinging, but don't start recording data until the pendulum is swinging smoothly with no "wobble".

## Technical Support

For assistance with any PASCO product, contact PASCO at:

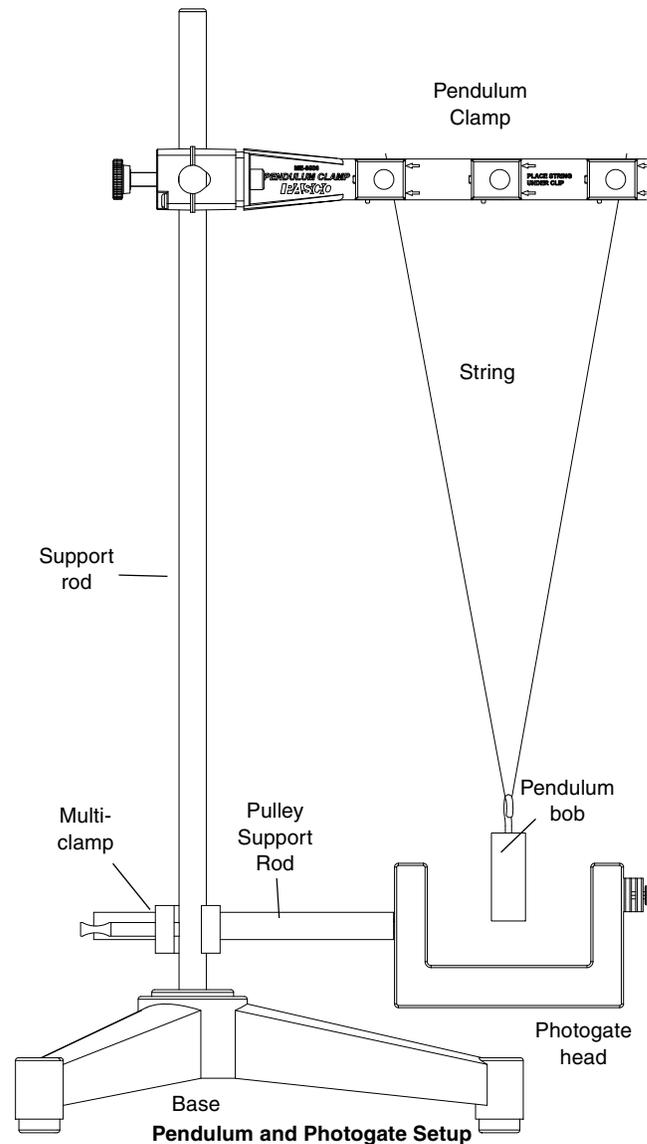
Address: PASCO scientific  
10101 Foothills Blvd.  
Roseville, CA 95747-7100

Phone: 916-786-3800 (worldwide)  
800-772-8700 (U.S.)

Fax: (916) 786-7565

Web: [www.pasco.com](http://www.pasco.com)

Email: [support@pasco.com](mailto:support@pasco.com)



For more information about the Pendulum Clamp and the latest revision of this Instruction Sheet, visit the PASCO web site at [www.pasco.com](http://www.pasco.com) and enter ME-9506 in the Search window.

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