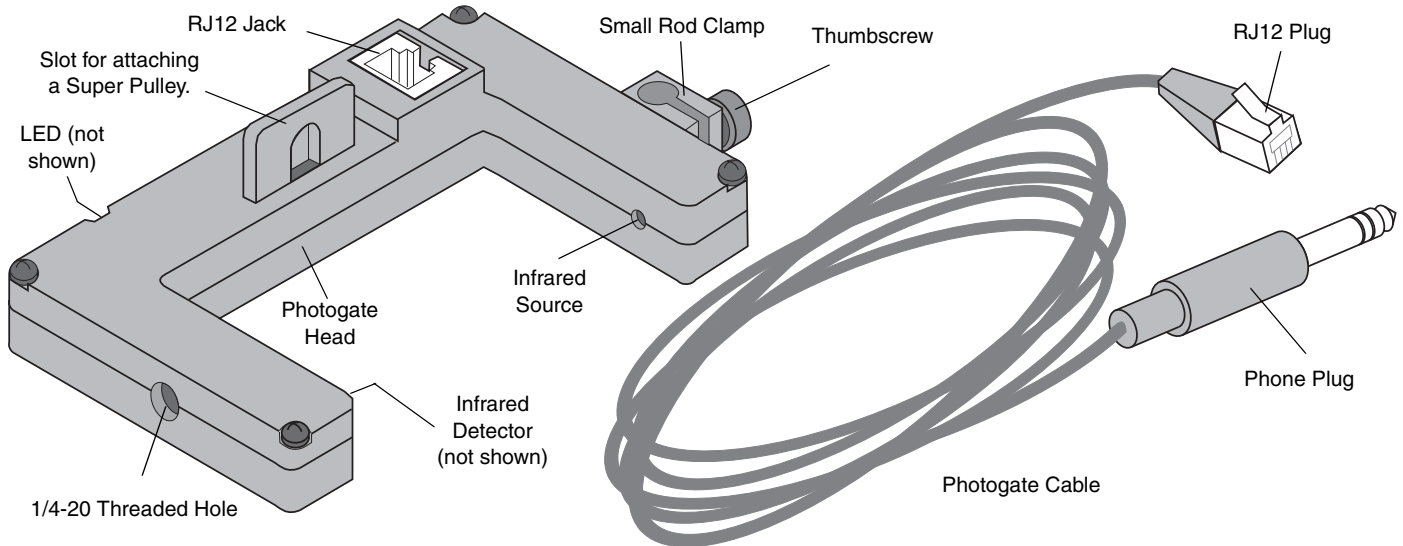




# Photogate Head

ME-9498A



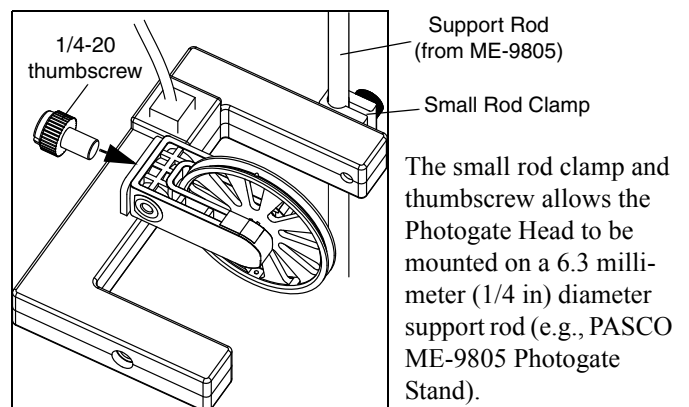
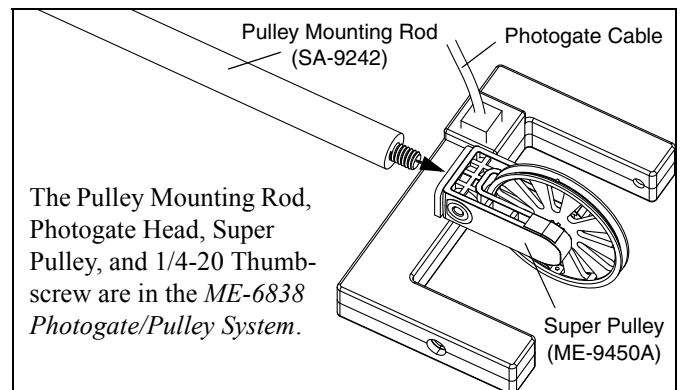
## Introduction

The PASCO ME-9498A Photogate Head has a narrow infrared beam and a fast fall time that provide very accurate signals for timing. When the infrared beam between the source and detector is blocked, the output voltage of the photogate is low, and the red LED (light emitting diode) on the photogate goes on. When the beam is not blocked, the output voltage is high, and the LED is off.

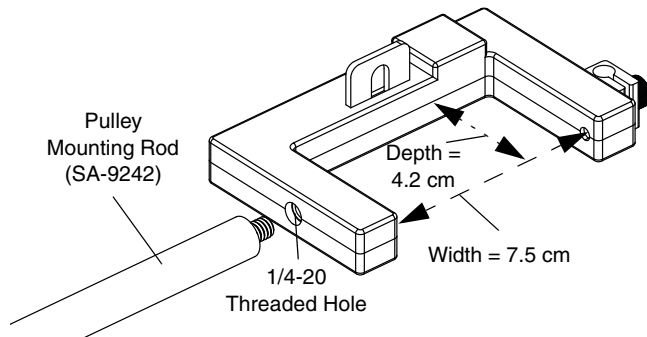
The cable included with the Photogate Head is detachable from the unit. One end of the cable is a RJ12 telephone plug that connects to the RJ12 jack in the photogate housing. At the other end, a stereo phone plug connects directly into a PASCO Photogate Timer (ME-9206B and ME-9215B), PASCO Smart Timer (ME-8930), or into any PASCO interface with digital channels or a PASPORT Digital Adapter (PS-2159). See the PASCO web site at [www.pasco.com](http://www.pasco.com) for more information.

## Additional Features

The raised slot on the housing provides a seat for attaching a PASCO ME-9450A Super Pulley using a PASCO SA-9242 Pulley Mounting Rod or a 1/4-20 0.375 inch thumbscrew.

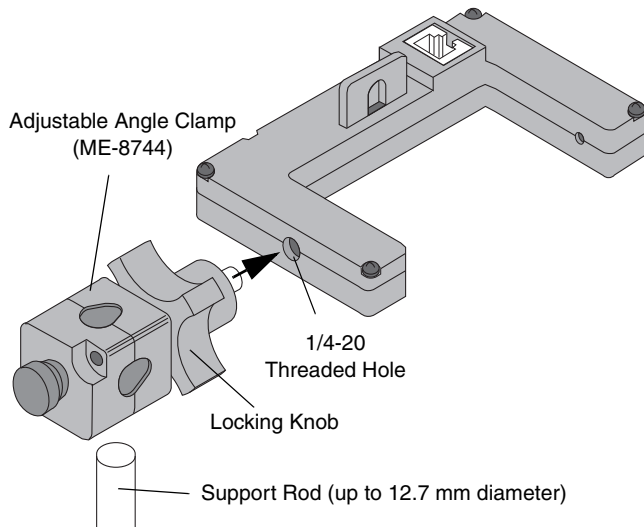


The Photogate Head can be attached to the PASCO SA-9242 Pulley Mounting Rod. This 14 cm long (6 in) by 9.5 mm (3/8 in) diameter rod fits into the 1/4-20 threaded hole in the photogate housing opposite the side of the small rod clamp..



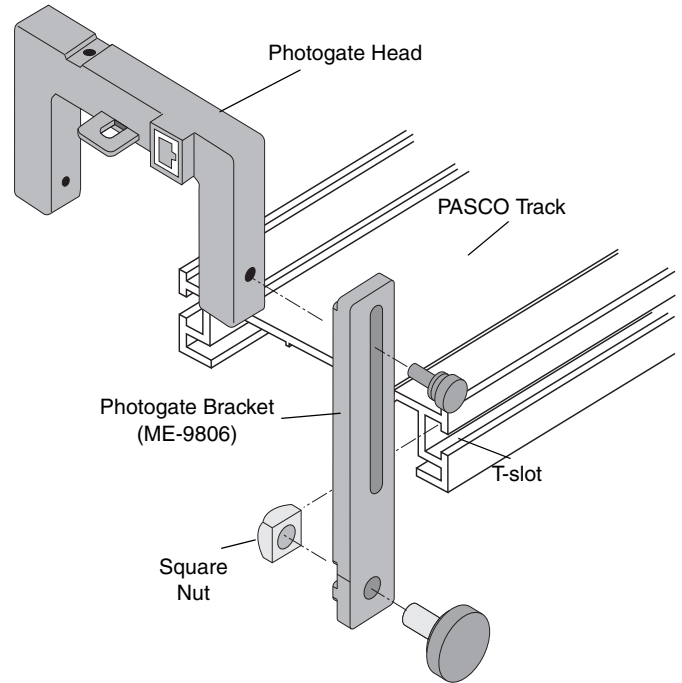
The open space for the Photogate Head is 7.5 cm wide and 4.2 cm deep.

The Photogate Head can be mounted on a support rod of up to 12.7 millimeter (1/2 in) in diameter by attaching a PASCO ME-8744 Adjustable Angle Clamp. It is necessary to remove the "mobile" part of the adjustable angle clamp from the clamp assembly and secure the "fixed" part of the clamp assembly to the 1/4-20 threaded hole in the photogate housing opposite the side of the small rod clamp. Rotate the equipment to the correct orientation and then secure it with the locking knob on the clamp assembly.



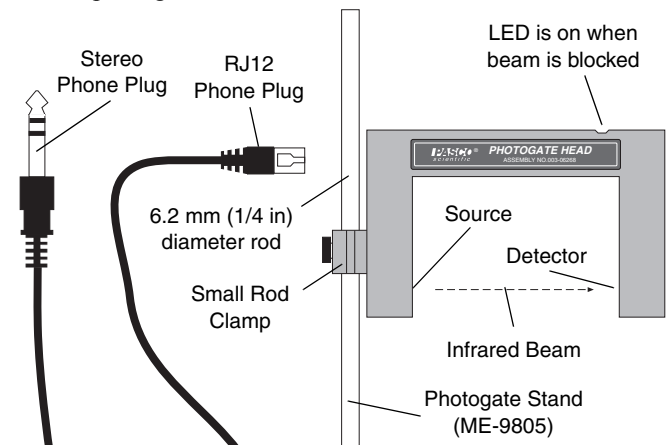
The Photogate Head can also be attached to the side of a PASCO Track with a ME-9806 Photogate Bracket (set of 2). Slide the square nut on the Photogate Bracket into the T-slot on the side of the PASCO Track. It is necessary to remove the small rod clamp from the Photogate Head. (Save the clamp assembly for later use.)

Use the short thumbscrew from the bracket assembly for attaching the photogate to the mounting bracket.



### Operation

1. Attach the Photogate Head to a support rod, clamp, or mounting bracket.
2. Position the photogate so the object to be timed will pass through the photogate, blocking the infrared beam. To minimize parallax error, pass the object as close to the infrared detector as possible, with the line of travel perpendicular to the beam. Loosen the small rod clamp thumbscrew to change the angle or height of the photogate.
3. Plug the RJ12 phone plug from the cable assembly into the modular phone jack on the photogate housing.
4. Plug the stereo phone plug at the other end of the cable assembly into the timer, adapter, or interface.
5. Test the operation of the photogate by watching the LED on the photogate as the beam is blocked.



## Experiments

Refer to the experiment guide that comes with your PASCO equipment (e.g., Introductory Dynamics System).

## Photogate Specifications

**Photogate Width and Depth:** 7.5 by 4.2 cm

**Detector rise time:** < 500 nanoseconds (ns)

**Detector fall time:** < 50 ns

**Timing Resolution:** 0.1 milliseconds

**Parallax error:** For an object passing within 1 centimeter (cm) of the detector, with a velocity less than 10 m/s, the difference between the true and effective length is less than 1 mm.

**Power requirements:** 5 VDC  $\pm$  5% at 45 mA

**Infrared source:** Peak at 880 nm

## Additional Equipment Available:

- ME-9204B Accessory Photogate (includes ME-9498A Photogate Head and ME-9805 Photogate Stand)
- ME-9805 Photogate Stand (includes base and 6.3 mm (1/4 in) diameter support rod)
- ME-9806 Photogate Brackets (set of 2) for PASCO Tracks
- ME-6821A Photogate Mounting Bracket for PASCO Projectile Launchers
- ME-9450A Super Pulley\*
- SE-9242 Pulley Mounting Rod\*
- ME-9355 Base and Support Rod (includes tripod base and 12.7 mm (1/2 in) diameter 45 cm long support rod)
- ME-9377 Picket Fence
- ME-8744 Adjustable Angle Clamp
- ME-8752 Photogate Pendulum Set (includes four different pendula)
- ME-6664 Photogate Tape Set (includes flexible picket fence tape and tape guide)

\*Included in the ME-6838 Photogate/Pulley System along with a Photogate Head and 1/4-20 Thumbscrew

See the PASCO catalog or web site at [www.pasco.com](http://www.pasco.com) for more information about the Photogate Head. For example, you can download instruction manuals for the Accessory Photogate, Picket Fence, Photogate Pendulum Set, and Photogate Tape Set.

## 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 Photogate Head and the latest revision of this Instruction Sheet, visit:

[www.pasco.com/go?ME-9498A](http://www.pasco.com/go?ME-9498A)

**Limited Warranty** For a description of the product warranty, see the PASCO catalog.

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