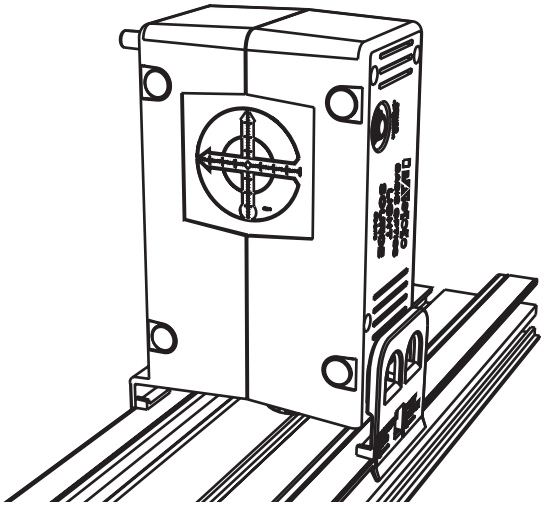
Basic Optics Light Source

OS-8470



Included Equipment	Part Number
Basic Optics Light Source	OS-8470
Universal AC Adapter	540-072
Spare Bulb (stored under access cover)	526-035

Introduction

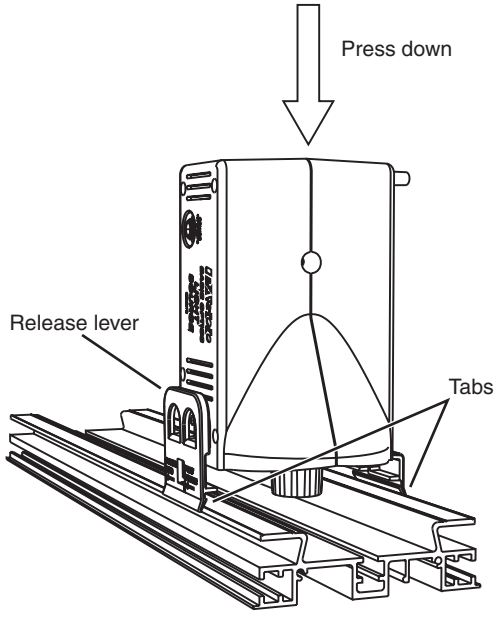
The OS-8470 Basic Optics Light Source is suitable for a variety of experiments and demonstrations. You can place it in three different orientations on a tabletop or mount it on a PASCO Basic Optics Bench or Dynamics Optics Carriage. It functions as a bright point source, an illuminated crossed-arrow object, a primary-color source, and a ray box with up to five parallel rays.

Equipment Setup

Power

Connect the included universal AC adapter to the light source's power port. Plug the adapter into a power outlet (100 to 240 VAC).

Optics Bench or Carriage Mounting

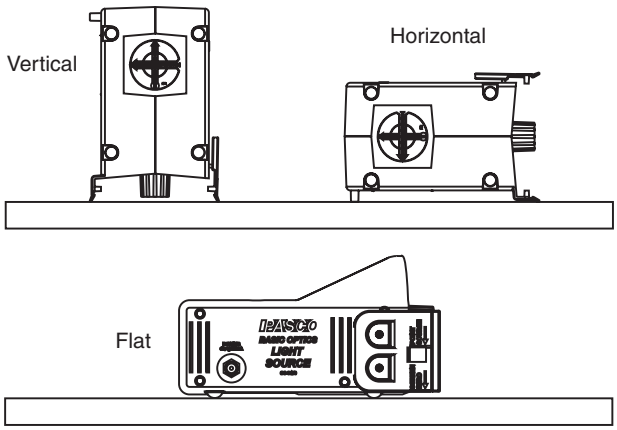


To mount the light source on a Basic Optics Bench, place it vertically on the bench and press down; the outer tabs of the light source snap into the side slots of the bench. (Attach the light source to a Dynamics Optics Carriage in the same way.) Marks on the tabs indicate the horizontal positions of the point

source and object screen. To detach the light source, squeeze the release lever and pull up.

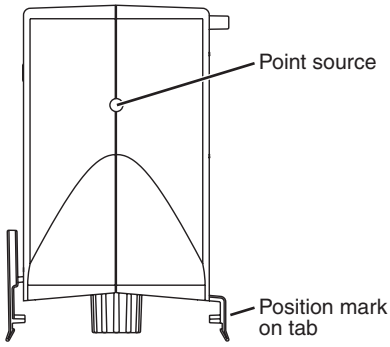
Tabletop Placement

The light source can be placed on a tabletop in three ways: vertically, horizontally, and flat, as illustrated below.



Tabletop placement

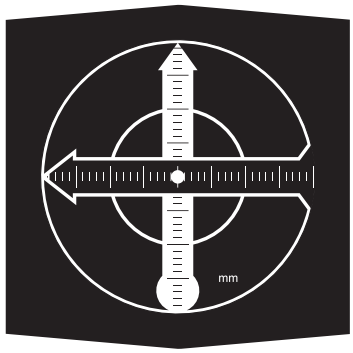
Point Source



The halogen bulb's filament viewed "end on" closely approximates a true point source. It projects light through the round opening in the case, but its actual location is about 3 cm behind the outer surface of the case, as indicated by marks on the tabs.

To use the point source, mount the unit on an optics bench or carriage (see above), or place it vertically or horizontally on a tabletop.

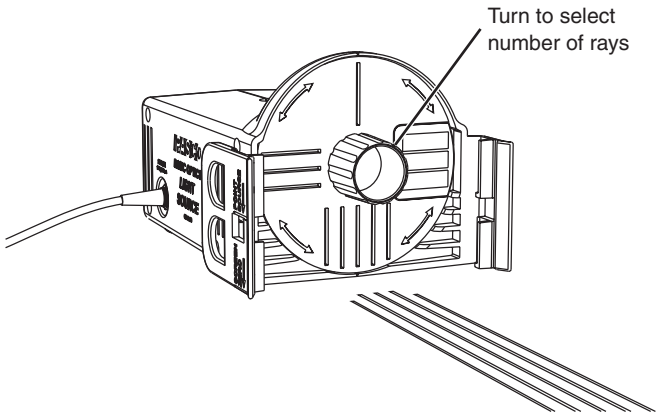
Illuminated Object



The object is a backlit, translucent screen with crossed arrows printed on it. The pattern is asymmetrical so you can tell if images formed with lenses and mirror are reversed or inverted. Millimeter scales on both arrows allow you to measure the magnification of an image even if the entire image is not visible.

To use the illuminated object, mount the light source on an optics bench or carriage (see above), or place it vertically or horizontally on a tabletop.

Ray Box

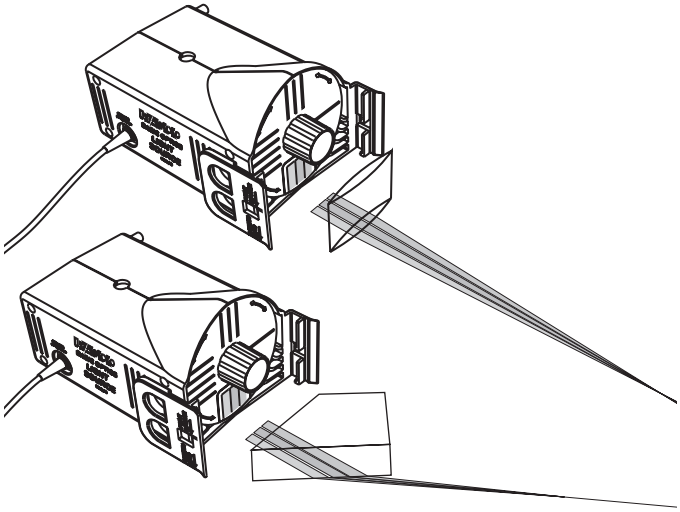


Ray wheel in 5-ray position

To use the light source as a ray box, place the unit flat on a table top. Turn the wheel to select one, three, or five parallel rays projected onto the table. A sheet of white paper placed flat on the table makes the rays easier to see and allows you to trace them with a pencil.

Use prisms, mirrors, and cylindrical lenses (such as those included in the OS-8516A Ray Optics Kit) to study how the rays are refracted and reflected.

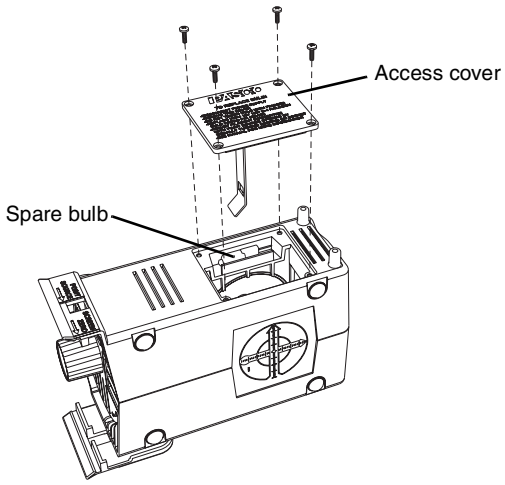
Primary Colors



Place the light source flat on a sheet of white paper and turn the wheel so that the colored bars are in the lowest position. Red, green, and blue parallel beams are projected onto the paper or a vertical surface placed in front of the light source.

Use a prism or convergent cylindrical lens to combine all three colors. Block one of the beams with a pencil to see the combination of two colors.

Bulb Replacement



The light source includes a spare bulb, which is stored under the access cover. Use a #0 Phillips screwdriver to unfasten the screws securing the access cover and remove the cover. Remove the old bulb by pulling it straight out. Install the new bulb by pushing it straight into the socket. Align it approximately with the round opening in the case; then proceed to the alignment instructions below.

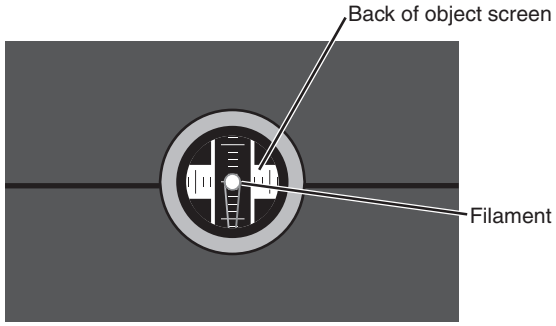
⚠ ***Caution:*** *If the burned-out bulb has been in use recently, it may be hot. Allow it to cool before removing it.*

Important: *Handle the replacement bulb with clean tissue paper and avoid touching it. Oils transferred from your skin to the bulb may cause the glass to overheat and break. If the new bulb has been touched, clean it with alcohol before installing it.*

Bulb Alignment

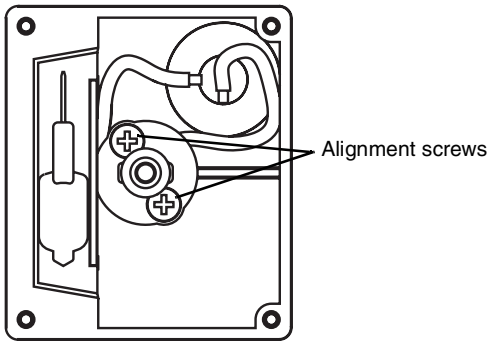
To produce parallel rays, the filament of the bulb must be located on the imaginary line running through the center of the round opening and the center of the crossed-arrow object screen.

To check the alignment, with the light source un-powered, look into the unit through the round opening. Viewed end-on, the filament looks like a small loop. Sight through the filament to the center of the crossed-arrow object (viewed from the back). If the filament does not appear in the center of the round opening, then it is out of alignment. It is helpful to tape a pair of crossed threads over the opening to mark its center.



View into round opening showing the properly aligned filament

To adjust the alignment, use a Phillips screwdriver to turn the screws on the light bulb socket. To move the filament up or down (as you are looking down through the access hatch) turn both screws equally in the same direction. To move the filament side-to-side, turn the screws by the same amount in opposite directions.



View into access hatch

Specifications

Bulb type	G4 halogen, 12 V, 10 W
Input Power (to included AC Adapter)	100 to 240 VAC, 50 to 60 Hz
Dimensions	16 cm × 10 cm × 9 cm

Troubleshooting

Problem	Solution
Bulb does not illuminate when the AC adapter is connected.	Ensure that the AC adapter is plugged into an operating power outlet. Replace bulb with included spare. Test the output of the adapter; it should be 12 VDC.
Rays are not parallel or do not appear as thin, straight lines of light.	Check and adjust bulb alignment.

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

Email: support@pasco.com

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

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