

KLAUS HÜNIG

# The Blacklight Pyramid

*Cardboard kit  
for a device  
for exposing  
solar photographic  
paper*

**Folds flat  
Easy to store**

**37cm high  
Exposure area  
22 x 22cm  
(for A5 format)**

**Including  
Blacklight Zoom Torch**  
Requires 1 AA battery  
(not included)



# AstroMedia

Hands-on Science Series

# The Blacklight Pyramid

## Cardboard kit for a device for exposing solar photographic paper

Solar photo paper is based on the cyanotype printing process, a photographic process developed as early as 1842. The basis is a paper coated with two non-toxic chemicals and it uses normal tap water as a developer and fixative.

Exposure is usually made with sunlight, more precisely: the blue and UVA components of sunlight. However, if the Sun is not shining, an artificial light source can also be used, provided it has a sufficiently high proportion of UVA. This is the case with AstroMedia's Blacklight Zoom Torch. For safety reasons, their UVA radiation is weaker than that of natural sunlight, which is compensated for by a longer exposure time.

With this simple kit for a pyramid-like lamp holder it is possible to position the Blacklight Zoom Torch in such a way that it uniformly illuminates an area of 22 x 22 cm. This is sufficient up to A5 format.

The blacklight pyramid can be folded flat when not in use and is therefore very easy to store, despite its size.

### This kit contains:

- 4 cut-out sheets made of 400 g/sqm printing cardboard
- 2 cut-out sheets made of 300 g/sqm printing cardboard
- 1 Blacklight Zoom Torch; requires 1 AA battery (not included)

Please note the information on safety and disposal of electronic devices on the instructions for the Blacklight Zoom Torch.

### What else is needed for assembly:

- A large (about A3, solid, and level work surface)
- A good pair of scissors
- A ruler and a blunt knife or similar for creasing, ideally a so-called bone folder
- A good glue. Solvent-based all-purpose glue dries faster than water-based solvent-free glue and does not warp the cardboard
- Some adhesive tape

## Please read before starting:

1. Each part is labeled with its name and one of the letters A through G (e.g. like this: [A]). Identical parts bear the same names and letters.
2. The areas to be glued are marked in light grey. Please note that they are sometimes reduced in size to avoid unwanted protruding edges. There are symbols like this on the glue areas: A2[ ->]. This indicates which part should be glued here.
3. The parts should be cut out as precisely as possible along the outline.

## Building Instructions

*Please read each step fully before commencing*

### Parts A, B and C: The Side Panels

*The four side walls of the pyramid each consist of a lower part [A], an upper part [B], and a connecting piece [C]. The four parts [A] differ in the labelling, the four parts [B] and [C] are identical.*

#### Step 1:

Cut out a lower side wall part [A], an upper side wall part [B], and a connecting piece [C].

#### Step 2:

Push the two wall parts together with the unprinted side facing downwards so that they form an elongated triangle with a blunt point. The grey glue areas for the connecting piece meet and form a rectangle onto which piece [C] fits snugly. Glue it in place to connect parts [A] and [B].

#### Step 3:

Repeat Step 2 with the remaining parts [A], [B] and [C] until all four side panels are complete.

## Parts D and E: The edge connections

*In order to make a collapsible pyramid out of the four walls, they have to be connected to each other at the edges.*

### Step 4:

Cut out the four top and bottom edge connecting pieces [D] and [E]. The two dashed lines running down the middle are grooved and folded back sharply. A narrow ridge remains between the two groove lines.

### Step 5:

Put two of the pyramid walls with the insides back to back flush on top of each other and, as a test without glue, slide one of the upper edge connecting pieces [D] over the marked glue area as far as possible. At the bottom, the edge joint abuts the joint of the side panel. At the top, where the grey glue areas are, it is flush with the upper edges of the walls. The edge connecting piece is then glued in place. **Tip:** *to make sure that the two walls do not slip when glueing, they can be temporarily fixed to one another on the other side with pegs or some adhesive tape.*

### Step 6:

Glue one of the lower edge joints [E] over the lower edges of the two walls in the same way. After drying, check that the walls can be opened and closed along the edge connections.

### Step 7:

Repeat steps 5 and 6 with the two remaining side panels.

*Now the two pyramid halves must be joined to form a complete pyramid using the remaining edge connections:*

### Step 8:

Open both pyramid halves and place them back to back flush on top of each other.

### Step 9:

Now join the edges of the two halves with the top and bottom edge connecting pieces [D] and [E] in the same way as in steps 5 and 6.

## Parts F and G: The edge reinforcements

### Step 10:

Cut out the four upper and lower edge reinforcements [F] and [G] and glue them onto the marked areas on the four pyramid walls. The pyramid itself is now complete.

## Part H: The mount for the Blacklight Zoom Torch

*The Blacklight Zoom Torch requires a secure holder when inserted into the pyramid opening at the top. It prevents it from slipping in and at the same time ensures that it is exactly vertical. This can be a strong elastic band wrapped several times around the zoom element of the lamp or the cardboard strip [H], which is wrapped around the lamp like a collar.*

### Step 11:

Cut out the cardboard strip of the torch holder [H] and pull it over the edge of a table or similar several times with the back side down so that it can be easily bent into a round shape. As a test, wind the strip around the ribbed part of the movable zoom element of the lamp under tension. Then stick its end with a piece of adhesive tape to the torch as indicated. Then roll it up tightly around the torch adding a bit of glue as you go to form a bracket around the zoom element. If the torch is now inserted into the opening of the pyramid with the lens part first, the edges may have to be bent apart slightly. The torch then rests with the bracket on these edges and should be exactly vertical so that the inner base is evenly illuminated.

**Now the blacklight pyramid is finished.**

**Congratulations on this simple but reliable solar photo paper exposure device that allows you to produce prints without sunlight.**

## Questions and Answers

Q: When I turn on the blacklight, I can see into the pyramid through the small openings on the edges. Is that correct?

A: Yes, that is correct. You can see if the torch is on without having to remove it from the pyramid. Ambient light entering through the small openings does not affect the exposure.

Q: Is the radiation from the Blacklight Zoom Torch dangerous?

A: The UVA radiation contained in the blacklight, with which the solar photo paper is exposed, is significantly weaker than that of natural sunlight and is often used for decorative purposes, e.g. in clubs. But just as you must never look directly at the Sun, you should also avoid looking directly at a blacklight source, so as not to damage the sensitive retina of the eye.

Q: How do I find the right exposure time?

A: The easiest way to do this is to try it out, like this: Divide a piece of solar photo paper into six small pieces and write on the back how long they should be exposed: 5, 7, 9, 11, 13, and 15 minutes. Then the piece that is to be exposed for 15 minutes is placed under the pyramid with a support (e.g. a coin) and the blacklight torch is switched on. After two minutes the piece for 13 minutes of exposure is added, after a further 2 minutes that for 11 minutes of exposure etc. and after the last piece has been added the pieces are exposed for another 5 minutes. Then all 6 pieces are developed and it is immediately clear which one was best exposed.

We wish you lots of fun and beautiful solar photographs with the blacklight pyramid!  
We look forward to your comments, questions, suggestions or other messages to [info@astromedia.de](mailto:info@astromedia.de) and especially to pictures of solar artworks.



**Examples of  
Solar Photography**