

3D Printed Pinhole 35 mm

User guide

Necessary equipment :

- A printed and assembled pinhole camera (consult assembly instructions)
- A 35mm camera film (colored or black and white)
- An exposure meter (or a simple smartphone with an application such as "lightmeter")
- A cross-head screw driver
- A piece of scotch tape

First step - Load the film :

- Unscrew the 4 screws located at the back of the camera,
- Remove both strips and buttons,
- Place the camera primer in the receiving reel,
- Tape the ensembles,
- Place the film in its housing located on the left and the reel on the right,
- Place black the buttons and the strips,
- Close the camera back,
- Make sure the shutter (obturator) is well closed,
- Rotate the right button one and a half turn (counterclockwise),
- The pinhole camera is ready for its first photo !

Second step - Take photos :

Since the exposure time is fairly long, it is imperative that the camera is on a stable support, ideally a tripod. However it is possible to take shots rapidly by using a flash, by exposing the subject closely and by pushing the development of a black and white film (1600-3200 iso). We shall see here only the classic technique of shot taking, using the tripod !

- Once the subject is found and the camera fixed, measure the exposure time,
- Use the table grid above to obtain the right exposure time,
- Slide the shutter,
- Count the necessary exposure time,
- Close back the shutter,
- Rotate the right button one turn (counterclockwise),
- The pinhole camera is ready for another shot !

Third step- remove the film:

After having taken all the shots, the button should be blocked, not allowing you to rotate it around further, perfect it is time to rewind the film !

- Rotate the left button (counterclockwise) until it blocks,
- Unscrew the four screws of the back of the camera,
- remove both buttons and strips, the reel and the film,
- Remove the scotch tape off of the primer,
- Finish rewinding the film by hand.

You may now bring your film to your local photograph shop to develop it !

The hole can be poked on a piece of aluminum from a soda can using the tip of a sewing needle. Verify using a magnifying glass the diameter of the hole and its roundness, the clarity of your final results depend on it !

This table grid allows you to find the necessary time exposure to correctly expose your photos, it is defined for a pinhole camera with a hole of 0,25mm and a focus distance of 31mm, giving an opening of $f/124$.

Conditions	EV	Sensitivity (ISO)			
		100	200	400	800
Sunny, sea, mountains	16	1/4 s	1/9 s	1/18 s	1/36 s
Sunny	15	1/2 s	1/4 s	1/9 s	1/18 s
Covered sun	14	1 s	1/2 s	1/4 s	1/9 s
Scattered clouds	13	3 s	1 s	1/2 s	1/4 s
Covered skies, shady	12	5 s	3 s	1 s	1/2 s
Rainy	11	11 s	5 s	3 s	1 s
Landscape at sunset	10	22 s	11 s	5 s	3 s
Landscape after sunset	9	1 min	22 s	11 s	5 s
City by night, indoor sports	8	2 min 30 s	1 min	22 s	11 s
Bright indoors	7	6 min	2 min 30 s	1 min	22 s
Lit indoors	6	11 min 30	6 min	2 min 30 s	1 min
Dark indoors	5	30 min	11 min 30	6 min	2 min 30 s
Candlelight	4	1 h 15 min	30 min	11 min 30 s	6 min
Fireworks	3	3 h	1 h 15 min	30 min	11 min 30s

Source : <http://henrythomas.pagesperso-orange.fr/resources/exposition.html>