

High speed Pinhole Pictures by Flash

From the tables on the next page the correct time for a pinhole picture can be derived. The result is a long time even in sunlight. For color pictures have a green, blue, or red tint depending on the time required to “burn” an image in the film or color photographic paper. Therefore the practical film and/or paper is black and white. This allows for the using of the films five or more stops of latitude, and no color shift, also in the dark room burning and dodging to enhance the final picture.

With ASA 400 film a normal f22 at 1/125 of a second. With a pinhole camera with f330 “lens” the corrected value is by the table is +8 f-stops (+8 = X 256), thus $1/125 = 0.008 \text{ sec} \times 256 = 2.05 \text{ seconds}$. Corrected for reciprocity failure, the result is $2.05 \text{ sec} \times 1.3 \text{ equals } 2.7 \text{ seconds}$ for shutter time. This example is for full sunlight at about noontime. In the early morning, late after noon, or open shade another loss three f-stops. $F22 - 3 \text{ f-stops} = f8$. After pinhole time correction for f330, with +11 stops or $2000 \times .008 \text{ sec}$ [original shutter speed] = 16 seconds X 2.0 [reciprocity correction] = 32 seconds. Not counting the color shift, if color film or paper was used.

Lighting Strobe at full power at 2.6 feet to subject, the shutter time can equal 1/1,000 of a second. If the pinhole is of the correct size, all objects in front of the camera are in focus, as well as the film of the pinhole. This translates the pinhole camera has no depth of field. Plus the height of the object on the film is a direct ratio of object size in front of the “lens” to the films distance behind the “lens”. Therefore 6-inch object at 12 inches from “lens” will make an image of 2.5 inches in a 4x5 pinhole camera. No apparent depth of field in the picture. **Lighting Strobe's** 1/1,000 of light time, and no color film shift. The pinhole camera can be camera for short shutter time close-up nature pictures, or small object pictures with correct visual perspective for the camera’s lens view, with available light enhancement for large f-stop values.

Sunlight can be used as a “fill flash”, if the (distant) background is to have any detail or color in the picture. Sunlight added at – 2 stops supply ambiance to the picture. For the example f8 at 1/125 for ASA 400 film the total time would be f8 to f180 or +8 stop corrected total time = 2.7 sec. A saving of over 10 seconds, by using the **Lighting Strobe**, and a sharper picture, for outside nature picture.

Pinhole camera correction factor with known f-stop value

Steps to correct the f-stop and shutter for pinhole cameras.

1. Take an light meter reading for ASA of film in the pinhole camera.
2. On chart below on OLD F# find light meter's f-stop, go to the right and stop at the pinhole cameras f-stop.
the number at the cross point is the f-stop or shutter time increases change as $2^{\Delta \text{F-stop difference}} \times \text{the meter read time}$.
3. With a fixed f-stop the shutter time is the only variable for the film. With the + f-stop value go to the f-stop multiplication factor table. This number is how many times the meter reading value needs to multiplied for new shutter time.
4. If the time is grater than 1 second, reciprocity failure correction is also required for shutter time. See Reciprocity correction table below. Multiply new shutter value by the reciprocity failure value for corrected shutter time.

		N E W F- S T O P														
		f5.6	f8	f11	f16	f22	f32	f45	f64	f90	f128	f180	f256	f360	f512	f720
O L D F #	f5.6	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10	+11	+12	+13	+14
	f8	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10	+11	+12	+13
	f11	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10	+11	+12
	f16	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10	+11
	f22	-3	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
	f32	-4	-3	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9
	f45	-5	-4	-3	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8
f64	-6	-5	-4	-3	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	

F-stop Multiplication factor table				
0 = X 1	+3 = X 8	+6 = X 64	+9 = X 512	+12 = X 4,000
+1 = X 2	+4 = X 16	+7 = X 128	+10 = X 1,000	+13 = X 8,000
+2 = X 4	+5 = X 32	+8 = X 256	+11 = X 2,000	+14 = X 16,000

Time	Seconds
1/250	0.004
1/125	0.008
1/60	0.016
1/30	0.033
1/15	0.066

Suggested Reciprocity Failure Correction Table					Check Film or Paper for characteristic
1 sec = X 1.2	8 sec = X 1.7	1 min = X 2.8	10 min = X 5.0	1.25 hour = X 9.3	
2 sec = X 1.3	10 sec = X 1.8	2 min = X 3.3	20 min = X 5.9	1.50 hour = X 9.7	
4 sec = X 1.4	20 sec = X 2.1	4 min = X 3.9	40 min = X 7.0	1.75 hour = X 10.1	
6 sec = X 1.6	40 sec = X 2.5	6 min = X 4.2	1.0 hour = X 8.8	2.0 hour = X 10.5	