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Shutter Speed Chart and Tips on How to Master It

In photography, light is controlled by the “exposure triangle”, which is made up of ISO, aperture, and shutter speed. These three components act together to determine exposure and understanding how they work will help take your photography to the next level.

Photography is all about light. The amount of light hitting your sensor (or film if you are using a film camera) will determine how bright or dark your image is. Understanding light is the key to producing compelling photos.

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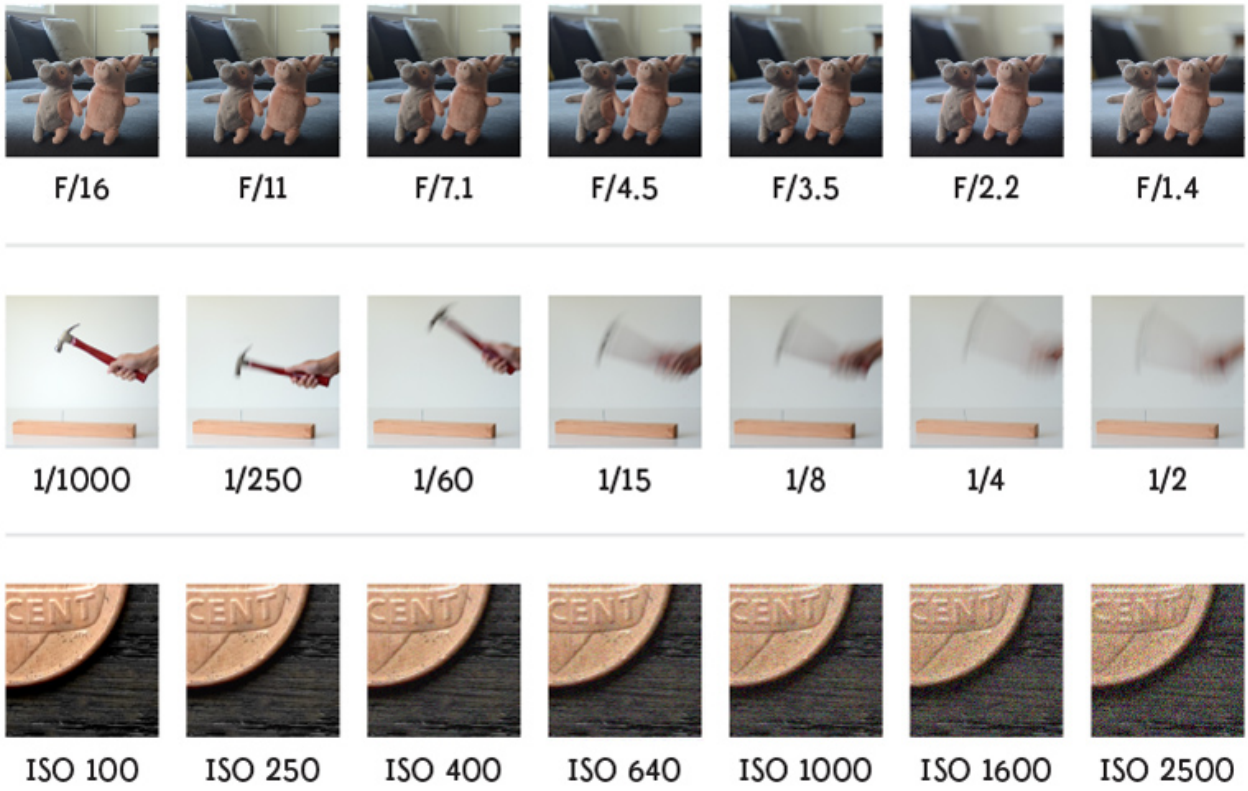
What Is Shutter Speed: Understanding ISO and Aperture

ISO is how sensitive your sensor is to light. Higher ISOs allow a sensor to absorb more light—but they also introduce more noise to the photo. Aperture is a measure of the amount of light allowed to hit an image sensor. The wider the aperture, the shallower the depth of field, and the more light that comes in.



Shutter speed is how long your shutter remains open.

Shutter speeds generally range from as fast as 1/4000th of a second to as long as 30 seconds. A fast shutter speed lets in less light and gives the effect of freezing an object in motion. Fast shutter speeds (such as 1/2000th of a second) are especially useful in bright light or when trying to capture photos of things that are moving fast, such as athletes and wildlife. Slower shutter speeds are good in low light when you need to let more light in or any time you want the effect of blur and movement. All those pictures you've seen of waterfalls and rivers that are blurred to oblivion? Those were taken with slow shutter speeds (and probably ND filters—which we'll talk about later).

How It Works

ISO, shutter speed, and aperture work together to determine exposure. When you make an adjustment to one, you need to make the opposite adjustment to one of the others if you want to maintain consistent exposure. Say, for example, you have your exposure dialed in but you decide you want a faster shutter speed to freeze the frame even more. Increasing the shutter speed will mean that less light will be

hitting your sensor. To compensate for this, you will need to use a wider aperture or higher ISO to keep a correct exposure.

Most digital cameras let you control shutter speed and aperture in 1/3, 1/2, and full stop increments. Each has its own advantages and which one you choose to use is largely a matter of preference. Most cameras come with 1/3rd stop increments as the default setting and a very large number of photographers never stray from it. Shooting in 1/3rd increments has the advantage of letting you fine-tune your exposure while 1/2 stop increments tend to be a little more intuitive.

Selecting the right shutter speed largely comes down to knowing what your subject is and what your goal is in taking the photo. For example, if you're taking photos of athletes you may want to use a very fast shutter speed to freeze the action or a longer one to add a little bit of blur and give the feeling of motion.

This chart gives you an idea of what various shutter speeds can be used for. Keep in mind, however, that this is only a starting point and that these values still need to be balanced against aperture and ISO to make sure that enough light is hitting the sensor. A fast shutter speed won't work in low light situations due to the lack of light and a super long exposure won't work in bright light without the use of a filter. This chart is just a starting point.

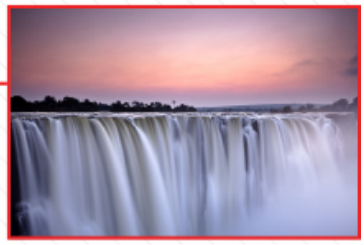
Suggested Shutter Speeds

Shutter Speed	Use	Notes
1/4000	Freezing very fast movement	This will freeze the movement of things like high speed trains, etc.
1/2000	Birds in flight	This will clearly show the bird's wings, slow down shutter to blur the wings
1/1000	Sports and quickly moving people	This will freeze action, to show more movement use a longer shutter speed
1/1000	Freezing fast cars, motorcycles, etc.	This will freeze quickly moving objects
1/250	Portraits	For wider aperture/shallower depth of field, use a faster shutter speed
1/250	Freezing walking people or slow moving animals	This will freeze the movement of objects that aren't moving fast
1/150	General wildlife	For animals not moving especially fast
1/125	Panning for cyclists, automobiles, etc.	Follow the subject while the shutter is open so that subject is in focus/background blurred
1/125	General landscapes	Longer shutter speeds can show movement in grass, water, and the sky
1/15	Panning for running athletes and animals	Will keep subject in focus and blur background to give the feeling of speed
1/8	Blurring fast moving water	The faster the water, the shorter the shutter speed can be to still show movement
1/4	Panning people	Especially useful for street photography or when wanting to show the movement of people
5+ Seconds	Blurring waterfalls, rivers, etc.	Shorter shutter speeds will retain some texture, longer will produce a smoother, more dreamy effect
20+ Seconds	Astrophotography	Use the fastest shutter speed possible at your desired aperture and ISO to avoid the beginnings of trails
10+ Minutes	Star trails	May be done using a single long exposure or, more commonly, a series of photos









stacked in post-processing

Deciding which shutter speed to use will be a matter of trial and error depending on how fast your subject is moving and what the available light is. Using shutter speed to your advantage will depend on having an understanding of what you are going for. Do you want to freeze the action of that athlete or do you want to give your image a sense of motion? Decide what you want, consult the chart, and then start tweaking.

If you find that the image is blurrier than you would like, use a faster shutter. If things are too crisp and you're wanting to give a sense of motion or chaos, slow your shutter down. It is important to keep in mind, however, that shutter speed is always balanced against ISO and aperture so if you want to use a fast shutter to stop the action in low light, you're going to need to a wider aperture, a higher ISO, or both.

Some things to consider when learning to select shutter speeds:

Shutter speed and focal length

Something to keep in mind when choosing your shutter speed is that the longer your shutter is open, the better the chances of camera shake blurring your photos. This is especially true when shooting with a longer lens. As a rule of thumb, your shutter speed should not exceed your lens' focal length when you are shooting handheld. For example, if you are shooting with a 200mm lens, your shutter speed should be 1/200th of a second or faster to produce a sharp image. If your shutter speed will be slower than the length of your lens, it may be time to break out the tripod. Image stabilization in your camera or lens may also help negate some of this shake.

Learn in shutter priority mode

Using your camera's shutter priority mode ("TV" on Canon, "S" on Nikon) is a great way to gain an understanding of the effect different shutter speeds can have on

your images. Shutter priority mode allows you to select the shutter speed you want while the camera figures out the ISO and aperture for a proper exposure. Spend some time playing with the shutter priority mode to see what happens to your images when you speed up or slow down the shutter speed.

Use neutral density filters for longer exposures

Want to use a long exposure but your image is too bright? Even at the lowest ISO and narrowest aperture? You may want to try a neutral density (ND) filter. ND filters are simply pieces of glass that fit on the front of your lens. They cut down on incoming light. ND filters allow you to take those long exposures that blur waterfalls and smooth out ocean waves. They are useful if you want to take a long exposure on a bright day to show movement in clouds.

Shutter Speed Chart (time in seconds)

Full Stops	1/2 Stops	1/3 Stops
1/8000	1/8000	1/8000
		1/6400
	1/6000	
		1/5000
1/4000	1/4000	1/4000
		1/3200
	1/3000	
		1/2500

Full Stops	1/2 Stops	1/3 Stops
1/2000	1/2000	1/2000
		1/1600
	1/1500	
		1/2500
1/1000	1/1000	1/1000
		1/800
	1/750	
		1/640
1/500	1/500	1/500
		1/400
	1/350	
		1/320
1/250	1/250	1/250
		1/200
	1/180	
		1/160
1/125	1/125	1/125

Full Stops	1/2 Stops	1/3 Stops
		1/100
	1/90	
		1/80
1/60	1/60	1/60
		1/50
	1/45	
		1/40
1/30	1/30	1/30
		1/25
	1/20	
		1/20
1/15	1/15	1/15
		1/13
	1/10	
		1/10
1/8	1/8	1/8
	1/6	1/6

Full Stops	1/2 Stops	1/3 Stops
		1/5
1/4	1/4	1/4
	0.3	0.3
		0.4
0.5	0.5	0.5
		0.6
	0.7	
		0.8
1	1	1
		1.3
	1.5	
		1.6
2	2	2
		2.5
	3	
		3.2
4	4	4