

## SHUTTER SPEED

“Shutter Speed is the amount of time that the shutter is open”

**Shutter Speed** is one of the three pillars of photography, the other two being ISO and Aperture. **Shutter speed** is where the other side of the magic happens – it is responsible for creating dramatic effects by either freezing action or blurring motion.

### What is a Camera Shutter?

A camera shutter is a curtain in front of the camera sensor that stays closed until the camera fires. When the camera fires, the shutter opens and fully exposes the camera sensor to the light that passes through the lens aperture. After the sensor is done collecting the light, the shutter closes immediately, stopping the light from hitting the sensor. The button that fires the camera is also called “shutter” or “shutter button”, because it triggers the shutter to open and close.

### *Introduction to Shutter Speed in Digital Photography*



The three main areas that you can adjust are ISO, Aperture and Shutter speed.

In digital photography shutter speed is the length of time that your image sensor ‘sees’ the scene you’re attempting to capture.

Shutter speed, also known as “exposure time”, stands for the **length of time** a camera shutter is open to expose light into the camera sensor. If the shutter speed is fast, it can help to freeze action completely, as seen in the above photo of the dolphin. If the shutter speed is slow, it can

create an effect called “motion blur”, where moving objects appear blurred along the direction of the motion. This effect is used quite a bit in advertisements of cars and motorbikes, where a sense of speed and motion is communicated to the viewer by intentionally blurring the moving wheels.

In short, High shutter speeds freeze action, while low shutter speeds create an effect of motion.

### **How shutter speed is measured**

Shutter speeds are typically measured in fractions of a second, when they are under a second. For example  $1/4$  means a quarter of a second, while  $1/250$  means one two-hundred-and-fiftieth of a second or four milliseconds. Most modern DSLRs can handle shutter speeds of up to  $1/4000$ th of a second, while some can handle much higher speeds of  $1/8000$ th of a second and faster. The longest shutter speed on most DSLRs is typically 30 seconds (without using external remote triggers).

### **Fast, slow and long shutter speeds**

Fast shutter speed is typically whatever it takes to freeze action. For me, it is typically above  $1/500$ th of a second for general photography and above  $1/1000$ th of a second for bird photography.

Slow shutter speed is considered to be the slowest shutter speed that you can handle without introducing camera shake. Some of the newer Nikon lenses such as the Nikon 70-200mm VR II have special “vibration reduction” technologies within the lens that can handle shutter speeds of up to  $1/10$ th of a second (depending on photographer’s technique), hand-held!

Let me attempt to break down the topic of “Shutter Speed” into some bite sized pieces that should help digital camera owners trying to get their head around shutter speed:

- Shutter speed is measured in seconds – or in most cases fractions of seconds. The bigger the denominator the faster the speed (ie  $1/1000$  is much faster than  $1/30$ ).
- In most cases you’ll probably be using shutter speeds of  $1/60$ th of a second or faster. This is because anything slower than this is very difficult to use without getting camera shake. Camera shake is when your camera is moving while the shutter is open and results in blur in your photos.

- If you're using a slow shutter speed (anything slower than 1/60) you will need to either use a tripod or some type of image stabilization (more and more cameras are coming with this built in).
- Shutter speeds available to you on your camera will usually double (approximately) with each setting. As a result you'll usually have the options for the following shutter speeds – 1/500, 1/250, 1/125, 1/60, 1/30, 1/15, 1/8 etc. This 'doubling' is handy to keep in mind as aperture settings also double the amount of light that is let in – as a result increasing shutter speed by one stop and decreasing aperture by one stop should give you similar exposure levels.
- Some cameras also give you the option for very slow shutter speeds that are not fractions of seconds but are measured in seconds (for example 1 second, 10 seconds, 30 seconds etc). These are used in very low light situations, when you're going after special effects and/or when you're trying to capture a lot of movement in a shot. Some cameras also give you the option to shoot in 'B' (or 'Bulb') mode. Bulb mode lets you keep the shutter open for as long as you hold it down.
- When considering what shutter speed to use in an image you should always ask yourself whether anything in your scene is moving and how you'd like to capture that movement. If there is movement in your scene you have the choice of either freezing the movement (so it looks still) or letting the moving object intentionally blur (giving it a sense of movement).
- To freeze movement in an image (like in the surfing shot above) you'll want to choose a faster shutter speed and to let the movement blur you'll want to choose a slower shutter speed. The actual speeds you should choose will vary depending upon the speed of the subject in your shot and how much you want it to be blurred.
- **Motion is not always bad.** I spoke to one digital camera owner last week who told me that he always used fast shutter speeds and couldn't understand why anyone would want motion in their images. There are times when motion is good. For example when you're taking a photo of a waterfall and want to show how fast the water is flowing, or when you're taking a shot of a racing car and want to give it a feeling of speed, or when you're taking a shot of a star scape and want to show how the stars move over a longer period of time. In all of these instances choosing a longer shutter speed will be the way to go. However in all of these cases you need to use a tripod or you'll run the risk of ruining the shots by adding camera movement (a different type of blur than motion blur).
- **Focal Length and Shutter Speed** - another thing to consider when choosing shutter speed is the focal length of the lens you're using. Longer focal lengths will accentuate the amount of camera shake you have and so you'll need to choose a faster shutter speed (unless you have image stabilization in your lens or camera). The 'rule' of thumb to use with focal length in non image stabilized situations) is to choose a shutter speed with a denominator that is larger than the focal

length of the lens. For example if you have a lens that is 50mm 1/60th is probably ok but if you have a 200mm lens you'll probably want to shoot at around 1/250.