

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 $1/30$).

A camera's shutter is like a curtain that opens and lets in light to start the exposure, then closes to end it.

A photo therefore doesn't just capture a moment in time, but instead represents an average of light over a timeframe. The term "shutter speed" is used to describe this duration.

| | Camera Settings | Adverse Side Effects |
|-------------------------------|---|---|
| Faster Shutter Speeds: | <ul style="list-style-type: none"> ↑ ISO Speed ↓ f-number | <ul style="list-style-type: none"> ↑ image noise ↓ depth of field |
| Slower Shutter Speeds: | <ul style="list-style-type: none"> ↓ ISO Speed ↑ f-number | <ul style="list-style-type: none"> ↓ hand-holdability ↓ sharpness** |

only if the f-number increases so much that it causes visible **diffraction

Shutter speed can have a dramatic impact on the appearance of moving objects. Changes in background blurring are apparent from the need to adjust the aperture size to achieve proper exposure.



Slow shutter speed



Fast shutter speed

CONVEYING MOTION

While some might see still photography as restricting, many instead see this as liberating, because still capture enables nearly full control over how motion is conveyed. For instance, should the subject be rendered as an unrecognizable streak, or as a more defined blur? Or should the subject remain sharp, with everything else blurred? These and other choices are all under your control.



How much blur?

Unlike freezing motion, there is a lot of range when it comes to showing motion in your image. Do you want just a little blur to imply movement or do you want a long abstract trail of motion or light trail? Showing just some motion blur can be achieved with as high of 1/100th second shutter speed for fast moving subjects like cars, while just showing the taillight trail may require 10 seconds shutter speed.





The distance between you and the subject
The closer the subject is to you, the more pronounced the motion is going to be. So if you capture the the trolley at 10 feet away, it will look more blurry than if you were to take it 100 feet away.



Focal Length of Lens

Similarly, if you were to shoot that Ferris Wheel at 100 feet away with a 200mm lens, the Ferris Wheel will be more blurred compared to if you were to shoot it with a 35mm lens from the same distance. This is because the subject will be moving through a larger portion of your frame.

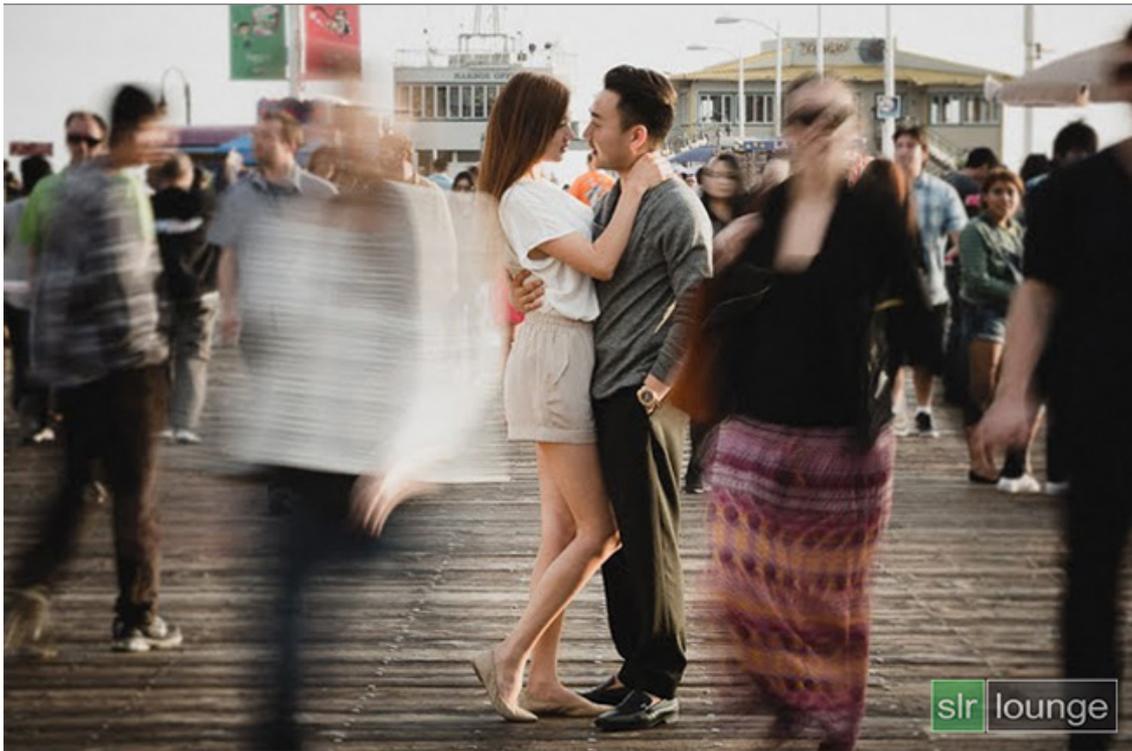


Minimize blur from camera shake

Although you want to introduce motion blur with slow shutter speed, what you don't want to have is camera blur caused by any movement of your camera.

Ideally, if you are shooting with a slow shutter speed, you want to secure your camera on either a tripod or on top of a stationary object like a table in order to keep your camera still. If you have to shoot handheld, however, the rule of thumb is that when you use a shutter speed number that is lower than your lens' focal length number, you will start to introduce camera blur into the photo. An example of this would be if you were to shoot 1/30th second shutter speed while using an 85mm prime lens. One way to help minimize camera blur is to use your camera or lens's image stabilization system. You want to also make sure that you are using the proper camera holding technique.





Stationary subject in moving environment

On the flip side, you can also shoot a stationary subject in a moving environment. The long shutter speed will blur the movement of the surrounding environment, while the subject remains in focus. This technique makes the stationary subject stand out in the image. The amount of shutter speed you need will depend on how much blur you want in your environment.

Use Neutral Density (ND) filter when needed

When you slow down your shutter speed, you are also allowing more time for light to hit your sensor, which in turn increases the image exposure. In order to get a proper exposure, you will have to close down your aperture. But in some cases, like a bright sunny day, you may not be able to close your aperture down enough to get a balanced exposure for a really slow shutter speed. Other times, you may want to shoot with a more wide open aperture while still using a slow shutter speed.

The ND filter is essentially a darkened piece of semi-opaque hard disc or square that acts like a pair of sunglasses on your lens to cut down the amount of light hitting your sensor. Because less light is coming in at any given time, you can slow down your shutter speed on a sunny day.

For misty water
slow down to $\frac{1}{2}$
sec or more





Light trails

Shooting at night in an urban setting and allowing the moving car lights to streak is another popular way to use slow shutter speed. Depending on the speed of the moving vehicles and how far away you are from them, you can use $\frac{1}{2}$ second to 10 seconds for your shutter speed. Just be sure to use a tripod when shooting this type of photos.

Adding creativity

Working with movement move your camera during exposures





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Pan to follow moving targets



Zoom while shooting



Let subject move shooting
or leave the frame



