

## WHAT ABOUT SHUTTER SPEED?

By Dick Kenyon

1. Shutter speed is the time the sensor is exposed to light. Slower shutter speeds let more light hit the sensor. Faster shutter speeds allow less light to hit the sensor.
2. Shutter speeds are expressed in seconds and fractions of a second. Changing the shutter speed one step slower, say from 1/200<sup>th</sup> to 1/100<sup>th</sup> second, lets in twice as much light; one step higher cuts the light in half. To maintain a constant exposure when moving the shutter speed one stop faster requires opening the aperture one stop and vice versa.
3. For hand held shooting with cameras that do not have image stabilization the rule of thumb is to shoot at a shutter speed that is the reciprocal of the lens focal length. Thus if your lens is of 105 mm focal length shoot at 1/100 second or 1/125 second shutter speed to prevent image blurring due to camera shake.

With digital cameras with a sensor smaller than the standard, full frame 35mm size the effective focal length of the lens must be considered when figuring the shutter speed for hand held shots without stabilization. For example, if the camera crop factor is 1.5 and you are using a 105mm lens the effective focal length is about 150mm so you should use a shutter speed of 1/150<sup>th</sup> second for static subjects.

If your camera/lens combination has image stabilization you will be able to shoot at one to three stops slower, say 1/50 second or 1/15 second, for a 105 mm focal length.

Remember, if you are shooting in Aperture Priority mode check the shutter speed selected by the camera prior to shooting to see if you have an acceptable aperture/shutter speed combination for your chosen subject.

4. Selection of an appropriate shutter speed is paramount when photographing moving subjects. When the subject is moving across the lens axis, i.e., perpendicular to the direction in which the camera is pointing, a high (short) shutter speed is required to stop the motion. The closer the subject the higher the shutter speed. If the subject is moving at an angle to the lens axis the shutter speed is less than above. If the subject is approaching the camera head on the shutter speed can be longer because the relative speed is less. These shutter speeds may be between 1/100<sup>th</sup> to 1/1000<sup>th</sup> second.

When your objective is to blur the motion, a longer shutter speed is required. Such speeds may be from 1/30<sup>th</sup> to 2 seconds.

The speed of the subject plays a part. The higher the subject speed the faster the shutter speed must be to freeze action. On the other hand, to achieve a desired amount of blurring requires an appropriately slow shutter speed.

To blur flowing water takes a shutter speed between 1/15<sup>th</sup> second and 4 seconds, dependent on the degree of blurring or smoothing you desire to create.

The following table shows a variety of shutter speeds for different subjects:

### SUGGESTED SHUTTER SPEEDS

#### TO FREEZE ACTION\*

Children – 1/250 – 1/1000 seconds

Moving water/waterfalls: 1/1000 seconds or more

Sporting event: 1/500 – 1/2000 seconds

Birds in flight: 1/1000th a second and above

#### TO CAPTURE MOTION\*\*

Amusement park rides: +/- one second

Moving water/waterfalls: 4 or more seconds

Fireworks: 1/2 – 4 seconds

Moving cars at night: 8-10 seconds

Night photography – one or more seconds

5. Selection of shutter speed is tied to selection of aperture and ISO. For example if you choose a high ISO and shoot in the Aperture Priority mode the camera may automatically select a range of shutter speeds matching the available light that will be fast enough to stop the motion of your subject.

It may be more appropriate to shoot in the Shutter Priority mode and select a fixed shutter speed that is sufficiently high for the circumstances and let the camera pick the aperture that will result in an acceptable exposure. Some control can also be applied through exposure compensation settings.

Shooting in the Manual mode gives you control of both shutter speed and aperture.

6. Slow shutter speeds may be hard to achieve when light conditions are bright and the lowest ISO available is 100 or 200. This often happens when shooting moving water. In this case it is usually necessary to add a polarizing filter and neutral density filters to cut the light reaching the sensor in order to get a one or two second shutter speed at an acceptable aperture setting. Even more light can be subtracted by dialing in one or two stops of exposure compensation.

7. For night and other low-light photographic situations shutter speeds become much longer trending into the seconds, minutes and even hours. Some cameras are limited in the length of timed shutter opening available. An example might be 30 seconds. Beyond that you must employ the Bulb or Time Exposure options where the shutter is made to open and remains open until a manual command to close is given. This is accomplished through use of an electronic cable release accessory having a program able time to hold the shutter open.

8. On your camera LCD or in the viewfinder shutter speeds are sometimes shown as numbers. 60 means  $1/60^{\text{th}}$  second, 100 means  $1/100^{\text{th}}$  second etc. If quotation marks appear around the number it means seconds. For example "1" means one second, "10" means ten seconds and ".5" means one-half second. In some cameras the shutter speeds are shown as fractions like  $1/100$  for one hundredth second. If that is the case then whole numbers like 1 and 10 mean seconds.

9. Generally shutter speed is manually set by rotating a control wheel.

Visit the following web sites for more information about shutter speed:

<http://digicamguides.com/learn/shutter-speed.html>

<http://youtube.com/watch?v=tA2yQ22YGD8>

[http://photography.about.com/od/camerabasics/ss/ShutterSpeed\\_6.htm](http://photography.about.com/od/camerabasics/ss/ShutterSpeed_6.htm)

<http://www.digital-photography-school.com/shutter-speed>