



In this unit we look at the finer points of both shutter speed and aperture and how to make full use of them.

Shutter Speed and Aperture Setting

Ok, how did you go with the first lesson? Did you take the series of images using the different ISO settings? Did you check out the differences in your computer, taking notice of the dark or black areas for noise? And did you notice the different shutter speed and/or aperture setting the camera used?

Shutter Speed

Now, let us get on with the shutter speed setting on your camera. The shutter speed is the time the camera's shutter remains open to expose the digital sensor. To be able to select a shutter speed it is necessary to take the camera off 'AUTO' and select Shutter priority, usually depicted by selecting the symbol 'S' (at least on Nikon cameras; Canon have as 'T' for Time or shutter speed. Check with your user's guide).

The range of shutter speeds varies from camera to camera, my Nikon ranges down from 1/8000 sec to 30 seconds and BULB. The BULB setting keeps the shutter open while ever the shutter button is depressed, this gives the photographer the ability to take images of star trails, night shots with long shutter speeds for car light trails etc. BULB setting is very rarely used now days.

Camera movement is always a problem and it is considered that images taken with a shutter speed of 1/30 second and higher (i.e. faster) are OK if the camera is hand-held. However images taken at slower speeds will need some way to ensure the camera does not move during the exposure. This means the use of a tripod, gorilla pod, bean bag or even setting the camera on the ground. Leaning the shoulder against a pole or wall can also assist.

Generally a fast shutter speed is used for fast moving subjects, e.g. kids running, sport events, frisky animals, etc. However this does not mean you must always do it this way. It is often beneficial to use a slower shutter speed to give some sensation of speed or movement in the image. However to use a slower shutter speed you will have to move or pan (swing) the camera and follow the movement of the subject. For an example in the following image I used a shutter speed of 1/30 sec; as you can see from the result, by panning with the action I have the horse, rider and steer reasonably sharp, their legs show that they are at full speed but more importantly the background is blurred so as not to create a distraction.



The opposite would be the result if I had used a much faster shutter speed; I would have ended up with the background sharp as well as the subject. The photo would have lost impact and they may as well have just been standing there making a very static image.

Street scenes at night sometime look better with a slow shutter speed because you can get the moving car light trails from their headlights and tail lights. However, in all these cases you will need a tripod. The shutter can be held open manually or it can be set to a long delay (in the latest cameras shutter speeds can be as slow as 60 sec). To avoid camera shake it is may be desirable to use a remote shutter release (see later) while on the tripod, or to use the camera's self-timer to activate the shutter if it is using a preset speed.



For firework images have the camera set on shutter priority and set the shutter speed to five seconds, then keep shooting, I would take about 400 shots over a 30 minute firework display. Most of my firework images would have been taken this way. As you can see in this image it helps to have water, river, lake, pond etc. in the foreground to catch the reflections.

The two images below had a faster shutter speed to freeze the action, they were taken on 1/400 sec. Also try some moving objects on slow shutter speeds to see the results. Try night shots as well as day shots; if needed increase the ISO setting to about 500.



Aperture Setting

The aperture setting relates to how large or small the lens opening is. The range of settings goes from about f1.4 to f22 (Depending on the camera brand, model and lens used). A setting of f1.4 means that the lens has a large opening, where as at a setting of f22 the lens is 'stopped down' to a much smaller opening.

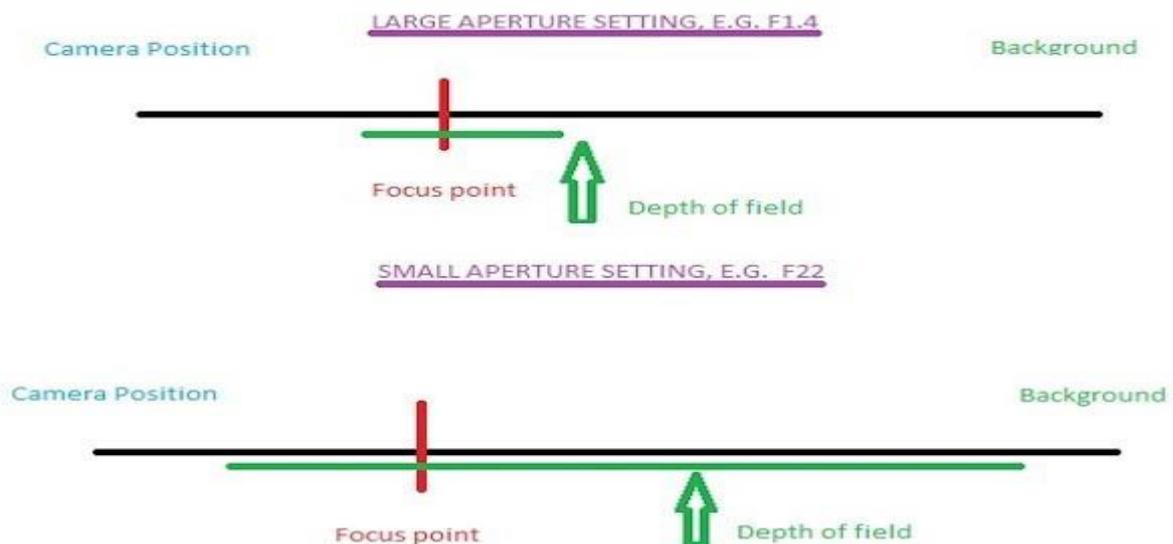


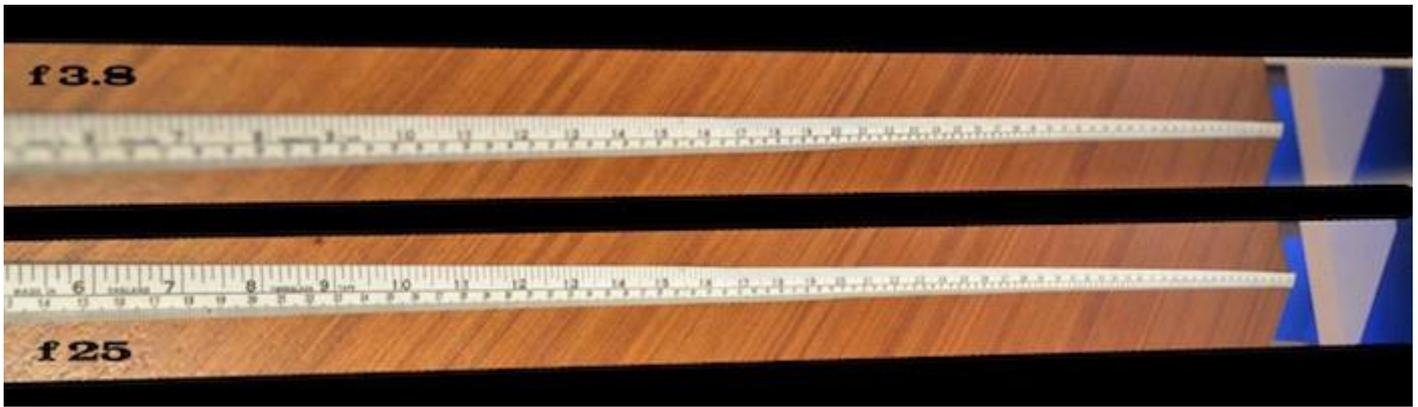
(l) f1 (large) aperture;

(r) f22 (small) aperture

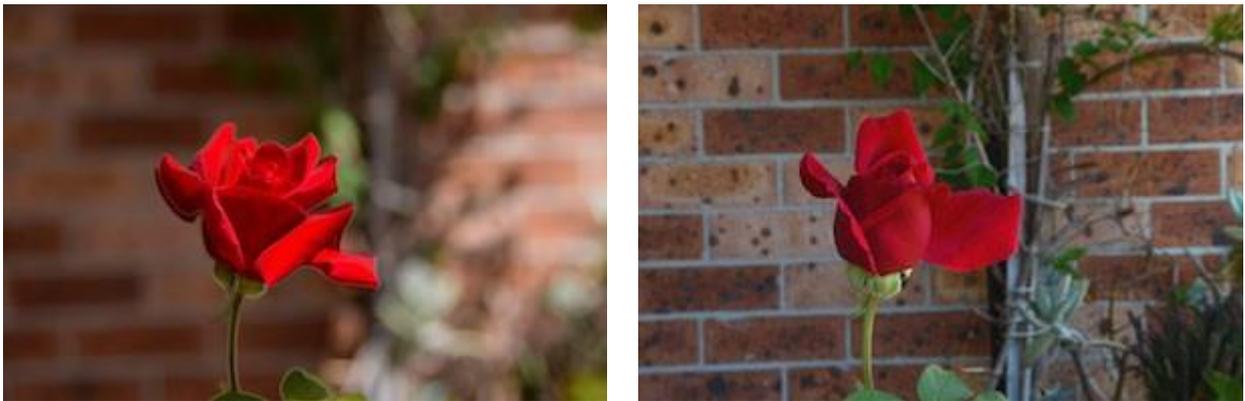
Now you will realise that the larger (smaller the number) the lens is open, the more light that will pass through to the sensor. With these settings you will have to increase the shutter speed or alter the ISO because, as I have mentioned before, there has to be a correct combination of shutter speed, aperture and ISO setting. I stated earlier on that you should use 100 ISO for the majority of your shooting; I will be assuming this setting throughout my lessons.

Conversely a small aperture setting would require a much longer shutter speed. However, the most important feature of the aperture setting is its effect on the **depth of field**. Depth of field (DOF) applies to all lenses; it is a distance of acceptable sharpness of the image both before and beyond the actual point of focus. It is shown diagrammatically below to help explain this concept:





Tape demonstrating DOF (note the sharpness of the markings)



(l) larger aperture = short DOF; (r) small aperture = large DOF

My example of the rose above was taken on a tripod. I was using shutter priority with a fast shutter speed to stop any movement in the rose; as the lighting conditions changed the camera exposure meter adjusted the aperture from a large to a small setting. Notice how the rose gets lost in the background of the second shot, whereas it stands out in the first one. This exercise will work just as well with a subject such as a person standing in front of a distant landscape; be close enough to get just the head and shoulders of the person in the image and placed so that the distant landscape can be seen over their shoulder. As with any human or animal portrait you should focus on the eyes (we will see how to ensure this when we look at focussing the camera) with all these images, then observe how little or great the background focus is; with the larger aperture the background should be quite blurry compared to the small aperture shot.

You can see the difference in the example of the rose above, both taken with the same focus point, the small aperture giving a much greater area in focus. This feature can be used on many subjects; a portrait, for example, is much better with a shallow depth of field gained by using a large aperture. This would make the person's head nice and sharp with the background out of focus, and would have the effect making the subject stand out. However, a person standing in the front of beautiful mountains would require a large depth of field (small aperture), rendering the person sharp as well as the distant mountains.

When preparing to take a photo the photographer has to decide what he or she wishes to achieve in the finished image, i.e. does it require shallow or greater depth of field, or is movement (or frozen movement) in the image more important.

Based on this decision the photographer should make the appropriate camera settings. In my case, for general photos of holiday snaps and family members I have my camera set on AUTO without flash (I'll discuss flash in more detail later). This way I am still making good use of the exposure meter and therefore getting well-exposed images. As I mentioned previously, all cameras have a built-in exposure meter and even when used off AUTO, it is still in use; however we are controlling it rather than it controlling us.

The exercise for this week consists of two sections, one for shutter speed and the other for aperture. Do not forget to set the ISO to 100, (it should stay there), then set the camera OFF AUTO. Next, select shutter speed priority and take a series of images using different shutter speeds. Choose a subject that has considerable movement, such as a car moving down the road. There are two ways to photograph it; firstly aim the camera across the road and when the car enters the field of view, take the shot. Take at least four shots like this, each with a different shutter speed ranging from about 1/30 second to the fastest your camera can do. With these shots you will see that the background will be sharp in all of the images, while the car will have varying amounts of movement blur. For the next shots use similar shutter speeds but now use the panning principle; get the car in the viewfinder while the car is a long way down the road and pan or move the camera, i.e. track the car to keep it in the centre of the viewfinder. Then, when the car is near its closest point to you, press the shutter release and follow through like any sporting shot. These results will show the car much sharper but the background will have the most blur due to the camera movement.

HOMEWORK

Homework this week is to take two series of images.

First series is to set the camera on Shutter Priority and take some images of moving targets some keeping the camera still while a fast moving subject passes by and some using a 'panning' technique. Panning is where you get the subject in the viewfinder and follow the subject till it gets closer and take the image while following through with the subject.

Second series is to set the camera on Aperture Priority and take images and note the difference in DOF and also how the camera has adjusted the shutter speed setting.

NEXT UNIT.

Next unit we will look at focussing the camera and also composition of the image.