Understanding Speedlights (Flash Units)

A light is everything in photography. The very word “photograph” comes from the Greek words “graphe” (to draw) and “photos” (light). There are many tools available to light a scene. There’s natural light which is daylight from the sun. Artificial lights consist of continuous lighting and flash lighting. Continuous lighting comes in the form of tungsten, fluorescents, and LEDs. Flash lighting comes in the form of strobes and speedlights. Speedlights can be a little more complicated than strobes, however, they can also be a versatile tool and a more convenient solution than strobes.

Types of Flash: TTL-Flash vs. Manual Flash

Flash typically works in two modes: in auto or TTL (“through the lens”) mode or in manual mode. What’s the better mode? It depends on the situation. The first mode that most photographers new to flash will use is TTL mode so we’ll discuss that first.

TTL Flash

For those who are questioning why their mode is called something other than just “TTL”, it’s important to note that Canon, Nikon, and Pentax all have different names for their TTL modes. Canon uses by E-TTL OR “evaluative” TTL, Nikon goes by i-TTL or “intelligent” TTL and Pentax calls it P-TTL or “pre-flash” TTL. For the purpose of this article, we will call it just “TTL”.

When you put your speedlight into TTL mode and hold the camera shutter button halfway down, it puts out an almost unseen flash of light or “pre-flash”. Your camera’s metering system picks up the reading from the pre-flash and signals to the speedlight approximately how much power to put out to get a correct exposure. It takes into consideration the distance from the light source to the subject and how much light reflects off of the subject.

In TTL mode

In TTL mode, your camera and speedlight are working together to give you a proper exposure, so I would highly recommend that when using TTL, that you set your camera to manual mode rather than any of the auto modes. Why? If both are set to an automatic mode, each is scrambling separately for the correct exposure at the same time, and you would never know how your image would turn out. It’s just best to set your camera on manual mode to measure for your ambient light and allow the flash to adjust its settings accordingly to light your subject.

TTL mode is best used when the distance between your subject and your light are constantly changing. For instance, when you are standing off to the side of the dance floor in one spot and a bride and groom are dancing around a ballroom at their wedding reception: the distance between your light source (your speedlight) and your subject (the bride and groom) changes every time they move closer or farther away from you and your camera. The speedlight recalculates automatically and gives the best outcome, based upon the conditions it determines from scanning ahead of the sensor. Sometimes you will see red lines on your subject, they are the illuminators helping to determine the distance from your nearest subject. The flash output will be calculated upon this target.

Manual Flash

When you put your speedlight into manual mode, you are controlling the output of the flash by the settings you dial in. You can also control the output of the flash by physically moving it closer or further away from your subject as at the same setting, the closer you have the flash to your subject, the stronger the light intensity will be. The further away your flash is from your subject, the weaker the light intensity will be.

The flash here is far from my subject, so its intensity will be very low.

Manual flash is best used when you are looking for consistency with each and every shot and nothing is changing. For instance, in a studio, you might pose your model in multiple poses but always in the same spot – at the same distance from the light source.

On-Camera vs. Off-Camera Flash

On-Camera Flash and Built-In Flash

Defining on and off-camera flash can be a tricky thing, however, I'm a believer that it's a misnomer that off-camera flash refers to anytime your speedlight is off of your camera. On or off-camera flash is determined by where the source of the light hitting your subject is coming from. When attached to your camera, if you aim your speedlight directly at your subject, the source of the light hitting your subject is coming directly from the speedlight, thereby the source is coming from on-camera. Your built-in flash is also considered an on-camera flash, but it is best used for its ability to trigger off-camera flash rather than as a light source.

External flash and built-in flash.

Advantages

- Inexpensive. On-camera flash is one flash, one light source, therefore, it is an inexpensive way to light a subject or scene.
- Convenience. If not already part of your camera like a built-in flash, on-camera flash is a portable, lightweight light source that you can pack in your purse or bag. An on-camera flash only requires a stash of batteries to power it instead of a power outlet like a strobe might require.
- A trigger. A built-in flash can serve as an optical trigger for off-camera slave flashes (Built-In Flash only)

Disadvantages

- Red eye effect. Since on-camera flash is pointed directly at the subject from on top of the camera – right in line with the lens, the light hits the back of the retina and reflects the colour red, which is the colour in that location of the eye. This causes a "red eye effect".
- Flattens out your subject. Due to the flash hitting your subject straight on, there is little, if any, shadow and highlight to give your subject dimension.
- Harsh shadows. At the same time, on-camera flash creates a harsh dark shadow behind your subject instead of a pleasing gradient transition between your subject and the background.
- "Black Tunnel" effect. When there is less ambient light, using your flash on-camera typically results in your subject being bright and sometimes overexposed while the area around your subject is completely dark.
- Weight. No, not the weight of the speedlight itself but added weight to your camera when shooting. (Speedlight only)
- Low power. Your built-in flash is much weaker than any flash or strobe you could ever use. (Built-in flash only)

Off-Camera Flash

However, what happens when you tilt your speedlight up and to the side to bounce the light from your speedlight off of the white wall or ceiling next to or above you? The source of the light hitting your subject now is coming from the wall, making it an off-camera light source. Off-camera flash can come from anywhere except when your speedlight is aimed directly at your subject. It can be when the speedlight is completely unattached to the camera or even when it is attached to the camera but bounced off of something reflective.

Off-camera flash can become like playing a game of pool: you have to know and understand the angle of incidence, or, what angle to point the light so that it will bounce onto your intended target.

Advantages

- Creative control. Getting your flash off-camera allows you the freedom to get more creative with its uses, such as bouncing the light off of the wall behind you to light a room or using a radio trigger, having the ability to place a speedlight outside of a room to backlight your subject through a doorway.
- Flexibility in light intensity. You can physically move a flash closer to your subject to increase light intensity or further away to decrease light intensity.
- Better light quality. You can create better light quality by using a modifier in conjunction with your speedlight such as a softbox or umbrella.
- Directionality. You can control the direction of your shadows by where you place the flash when off-camera.
- Red-eye effect prevention. By having your light source anywhere other than in the direct line of sight with your subject's eyes, you prevent red-eye in your images.
- Multiple flashes. With off-camera flash, you have the ability to combine multiple flashes to increase light intensity or to reduce recycling time.
- Addition of battery packs. In using a flash off-camera, you can use a battery pack to power the flash. While they do not increase the power of the flash, they do increase the battery life and can reduce recycling times.

Disadvantages

- Limited line of sight. Unless using a radio trigger, sometimes your master flash and slave flashes cannot communicate unless they are in the line of sight of one another.
- Expensive. Using a flash off-camera can be costly as you may need more than one-flash to light your subject and scene and/or you may need a trigger to signal additional flashes or a high-end camera that can connect to and manage a speedlight wirelessly.

Remember, in defining whether you are utilizing on-camera vs. off-camera flash, determine where the source of the light is that is hitting your subject.

Understanding Sync Speed & High Sync Speed

Sync speed is the fastest shutter you can set before the first and second curtain are too close together and the second curtain gets burned onto the sensor somewhere on the image (usually you will see a black bar on your image if you've exceeded your sync speed…) because it did not have enough time to clear the sensor.

High Speed sync is typically only achieved by using speedlights, however, some strobes now offer this capability. It's a way to get around the standard sync speed. As your first and second curtain move together across the sensor, when set to high sync speed, your light serves as a continuous light instead of a flash. The downside to engaging your high sync speed is that for each stop above sync speed, you lose one stop of light.

Tips and Tricks for Better Portraits Using Speedlights

The goal of your portraits is to have gradual transition in your shadows, which means you want softer light. You want to increase your light size. They are several ways to avoid the harsh shadows and contrast, avoid red eye and to create great portraits using flash.

Bouncing the Light

By swivelling and/or tilting your flash in any direction other than directly at your subject, you are bouncing light. Be it on the wall next to you or the ceiling, by bouncing the light off of a larger area, you are increasing your light size. Rather than the tiny little flash head being your light source, you are making the entire ceiling or wall your light source.

Bouncing the light off of a white ceiling.

If you do not have a wall or ceiling to bounce on, you can attach a white card to your speedlight. This will create smoother highlights and shadow transitioning. Be aware of the colour of the surface you are bouncing off of as light picks up the colour of the surface it hits. Try to bounce off of neutral colours like white or grey if it's available.

Flagging the Light

In bouncing the light, you want to make sure that light is not spilling onto your subject on its way to bouncing on the wall. To do this, you would flag your speedlight with a dark opaque material (usually a black opaque card and a hair tie work fine).

A flag keeps direct light spillage coming from the flash from hitting the subject on its way to bounce otherwise the result would be direct on-camera flash plus bounce.

Using High-Sync Speed

High-sync speed is good to use when you want to shoot with a shallow depth of field on a bright day. When opening up your aperture (to 2.8 or faster) on a bright day, even at your lowest ISO setting, you may be letting in too much light for a proper exposure. Since your ISO is as low as it can go and you don't want to stop down your aperture, speeding up your shutter speed is the only way to cut down the amount of light. High speed sync will allow you to use shutter speeds faster than your sync speed to do this. Just remember for each shutter stop above your sync speed you lost one stop of power from your speedlight. Professionals will often use multiple speedlights ganged together to gain more power when using high speed sync.

Mix Flash with Ambient Light

Opposite of the high-sync speed technique, you can do what is called "dragging the shutter", which is slowing down the shutter to capture ambient light while the flash captures the subject. For instance, when photographing sunsets, dragging the shutter allows you slow your shutter speed to capture more ambient light. This helps prevent the black tunnel effect as it helps to evenly light a scene.

Gel Your Light

You can use gels to colour the light for creative use or you can match the gel to the colour of the ambient light to get a more natural tone. For example; How do I use colour correction gels?

Identify your light source, select the appropriate colour correction gel(s), then attach the gel(s) to your flash. It is important to then set a custom white balance or set the camera to the same white a lance setting as shown on the attached correction gel.

CTB gels are used to colour balance flash to shade, or blue sky ambient light sources.

CTO gels are used to colour balance flash to incandescent, tungsten, or halogen ambient light sources.

- Use Full CTO for 3,200K ambient light
- Use 1/2 CTO for 3,800K ambient light
- Use 1/4 CTO for 4,600K ambient light

Plus-Green gels are used in combination with **CTO** gels to colour balance flash to fluorescent ambient light sources.

- Use Plus Green + 1/2 CTO for 3,600K fluorescent tubes
- Use Plus Green + 1/4 CTO for 4,300K fluorescent tubes
- Use Plus Green for 5,700K fluorescent tubes

Wireless Flash Controls

When using a flash off-camera, it's best to use a form of wireless trigger to control your flash. There are three types of wireless triggers: infrared, optical and radio.

Optical Triggers

Optical triggers are those that trigger slave flashes by bursting a flash of light onto your subject. They must be in the direct line of sight.

Infrared Triggers

Infrared triggers are considered optical triggers, but they use light in the infrared spectrum, so it doesn't affect the exposure. These types of triggers are still constrained by the need for line of sight to trigger.

Radio Trigger

Radio triggers are a preferred trigger to use as they are very versatile in that its radio frequencies can go through walls and softboxes, can be used anywhere and do not rely on being in the line of sight of the speedlight.

Flash Modifiers

Flash modifiers are necessary to diffuse the natural harsh light of a flash head. You can get modifiers for on-camera flash as well as off-camera flash.

On and Off -Camera Flash Modifiers

There are many tools out there that can be used to shape the light of both on and off-camera flash. There are things such as:

- Diffusers
- Mini Softboxes
- Bounce Cards
- Grids & Honeycombs
- Snoots
- Colour Filters & Gels
- Ringlights

Other modifiers you can use to diffuse harsh light from a speedlight include softboxes and umbrellas.

White umbrella and silver umbrella. They make gold too.