

Basic Flash Photography

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FLASH BASICS

Every time you use your flash do you wince? Did your inner self nudge you with that ‘It’s gonna be a lousy FLASH shot!’ question? Do you take more flash shots of the same thing than you really need just because the uncertainties of ‘Flash Photography’ scare you? *I* might scare you but your flash can be tamed.

Flash units provide portable light for your low-light photography. That’s low-LIGHT. You put batteries in and get bright light out. Ah, but how much light do you get out and how can you be sure it’s the correct amount of light? Read your Instruction Manual? That’s a start; but not a finish. In most situations you can set your flash to one setting and just leave it there. And as most people find themselves taking the same general types of pictures each time they grab the camera, you will find yourself actually ‘remembering’ your flash settings without even considering the consequences. It’ll come naturally to you.

So, now that we’ve broken the ice let’s get through the hard part that you’ll probably never need to know; ‘Guide Numbers’!

A flash unit’s Guide Number, or GN, is it’s rating of maximum light output at full power with fresh batteries. The higher the GN the brighter the light. Not too hard. But, there’s a formula either YOU can use to calculate by or you can let your appropriately equipped camera/flash do the calculations.

As most cameras/flash units today do the calculations for you, the emphasis to remember this hard stuff is diminished. But everyone doesn't have or necessarily want to use 'automation' and 'dedication'; they have inquiring minds and just want to know. We just LOVE starving brains!

The first thought to understanding flash: Flash works from 'reflected' light. Reflected light is light that has reached your subject from your flash and your subject has reflected enough of it to expose your film correctly.

So, you have a flash and you know it's GN and you want to use it to take flash pictures. Is it strong, bright, enough for your kind of photography? Let's find out. We mentioned a formula:

$$\text{GN/distance} = \text{f/stop}$$

This says: Divide the GN of your flash by the distance your flash must travel to your subject. The dividend will be the lens aperture setting for a proper exposure.

The f/stop is based on ISO 100 speed film.

You have the flash unit and hopefully know it's GN. You also know how far away your subject is. (Look at the 'distance ring' on your lens.) You always have the first two parts of the formula; you want to know the third.

If your subject is 10 feet away and you have a GN of 46 you simply insert these two known values into the formula, $46 \div 10 = 4.6$, or f/4.6. Don't have an f/4.6 you say? Set your aperture ring halfway between f/4 and f/5.6. We'll discuss this a bit more in a minute.

Another example: Your flash has a GN of 80 and your subjects is 6 feet away. $80 \div 6 = 13.3$. Don't have one of these either, we bet. Can you guess? Between f/11 and f/16? Right.

And another: GN = 80 and distance = 10 feet. $80 \div 10 = 8$. We know you can find this one; f/8.

And one more: GN = 60 and distance = 30 feet. $60 \div 30 = 2$. Unless you're using your 50mm lens or have a nice lens arsenal you are probably going to have to either move closer to your subject or use a faster film. A faster film, hmmm...

You can see by this last example that trying to use a lower powered flash is not such a good idea if you're shooting any distance. We know from past lessons that using faster films allows us to use smaller apertures. If the f/2 setting is going to be a problem you will want to use either ISO 200 (f/2.8) or even ISO 400 (f/4). For ISO 200 film we can stop down 1 stop because the ISO 200 film is 1 stop more light sensitive than ISO 100. Likewise, the ISO 400 film is 2 stops faster than ISO 100 allowing us to stop down 2 stops more than ISO 100 speed film would allow us in this 30 foot expanse of light.

Your manual might have a chart showing the aperture settings and film ISO's at given distances, but if you're any good at math you can just figure $\text{GN}/\text{distance} = \text{f}/\text{stop}$ and adjust your aperture setting based on your film speed.

Or you can buy a flash with a GN of up to 200. $\text{Gn (200)} \div \text{distance (30 feet)} = 6.7$, or $f/5.6$ - $f/8$ with ISO 100. It's cheaper to use a faster film, but your enlarged image quality might suffer. Also, your DOF choices will increase when smaller apertures are available.



One other point about setting your aperture. If you're using color negative film you don't have to worry about setting your lens aperture 'halfway between'. You can 'round' down or up; you probably won't notice the difference because of the exposure latitude of the film. HOWEVER, slide film users will want to be VERY careful to expose their film at the correct 'halfway' setting if that's how it computes. Remember, 1/2 stop of incorrect exposure goes a long way into disaster with slide film.

Comfortable? Good. Distance. It's not all it's cracked up to be. You've taken this kind of flash picture before; someone or thing against a wall. And the result was 'Me. And. My. ssshhhaDOW!' One word; bounce. Bouncing your flash's light off the ceiling or a nearby wall would have diffused the harsh light and softened the shadow's effect. But bouncing introduces several more aspects to our $\text{GN}/\text{distance}=\text{f}/\text{stop}$ formula.

You still need to know the distance your flash must travel to get to your subject. If the ceiling is your bounce source, your flash output must first get to the ceiling, a distance, and then get back down to your subject, another distance. Plus, you must correctly figure the 'angle of incidence' (angle of light to the ceiling) and the 'angle of reflectance' (angle back to the subject). Otherwise the flash might 'miss' your subject. Pool players cannot apply 'english' to bounce flash photography.

Assuming you've figured the distance and angles correctly you must also take into consideration the reflectance value of the ceiling; how much of your light will it absorb? And what color is the ceiling? If it's other than white you're gonna get that color of light being reflected down onto your subject. If she wore a white gown at the wedding and the ceiling is red; well you get the disaster...

Many of today's cameras can 'sync' their shutter speed to several settings that will work with your flash unit. Up to now we've only discussed setting the aperture correctly; but you KNOW, (don't you?) you must also set your shutter speed for any good exposure. Your flash unit has to 'synchronize' with your shutter. Otherwise you'll be shooting your propeller full of bullets!

Depending on your camera brand and type your shutter speed selector dial will have an indication denoting the correct setting for using your flash, usually anywhere from 1/60 to 1/250 second. Cameras with auto-sync might not display any indication. If your camera allows, you may have a selection of several speeds from which to choose affording you the opportunity of 'stop action' creativity. Keep exposure in mind as this can be tricky!

If you neglect to properly set your shutter speed to the flash sync speed you'll most likely be disappointed with your results. Choosing too fast a shutter speed will cause the shutter to open and close before the flash unit gets the signal to 'fire'. Your shutter will already be closing before the flash can fire resulting in only a portion of your film being exposed. This was such a recurring problem in the past that the camera manufacturers introduced the auto-sync feature taking the burden of proof from the hands of the photographer.

One more basic consideration; your lens. We've already considered the maximum aperture of your lens in relation to the power output of your flash, but the lens' 'angle of view' (AOV) must be covered. If you have interchangeable lenses you must take caution of the light coverage area of your flash unit. If your lens can see wider than your flash can cover you'd better think again. Go shopping!

Many flash units either come standard with 'zoom' flash heads or can be adapted with add-on filters that will effectively spread-out the light to cover the lens you're using. Some will even 'auto-zoom' if they are equipped to sense which lens you've attached to your camera!

The flashes that have the zoom feature built-in simply require you to pay enough attention to adjust the zoom head as you change focal length. These units can adjust from wide angle to telephoto. The flashes that offer a zoom adapter require you to attach the filter holder and the appropriate filter before using another lens. The auto-zoom flash heads 'know' which lens you've selected and will adjust themselves to the correct setting. Keep extra batteries on hand as these automated features must get their power from somewhere.

Knowing which lens you're using, which flash filter is correct, and what your flash power output is adjusted to will take you a long way toward taking good flash pictures. Paying attention and applying these basic principles will do the rest.

MANUAL FLASH



In Basic Flash we talked about getting more for your money by using a faster ISO film which kinda increased the GN of your flash. Well, there are times when you might want to decrease your flash's light output. Such as...

If you only had just a little more light to illuminate that flower you found growing in the forest. What a great picture with it's purple petals against that deep green moss covering behind it. But it's just too dark and the contrast is too subtle for an available light shot, but your flash is **WAY** too powerful and would cause the flower to wilt. What to do; what to **DO!**?!

If your flash unit has a power setting then you're in luck. Figuring your exposure can be tricky, but you **CAN** get the shot just the way you want it. You figure you just need a little 'poof' from your flash to highlight the flower without burning it and the moss into overexposure.

First thing is to be certain your flash can 'aim' at the flower. If it's gonna shoot straight out over the top of everything then what's the sense in trying? Carry a portable 'ceiling' around with you? Yep! Go to the camera store and buy an '18% grey card'. One side is '18% grey' while the other side is white. Bounce your flash off the white side of the card (or any white card) to soften the flash as it travels to the flower. Don't forget to measure the distance correctly. The white card will reflect almost all the light the flash fires.

After you've measured the distance you'll be referencing your flash's exposure scale or computing it's GN to figure your aperture setting. Let's do one.

Your camera is only about 2 feet away from the flower. You know you want the green moss to be a bit 'soft' so you also consider your DOF. Your flash has a GN of 80 and you have ISO 100 film loaded. $80 \div 2 = 40$. f/40? Won't wash! Even if your flash's GN is 40; $40 \div 2 = 20$. f/22 might be available but f/22 will also give you too much DOF. You know you're gonna bounce your flash; that'll help. Two feet up to the card and two feet back down equals 4 feet. $GN80 \div 4 = 20$ (f/22), $GN40 \div 4 = 10$ (f/11). Depending on which power flash you are using you're still gonna get more DOF that you probably want. And you're already using slow (ISO 100) film! So, what gives?

Power. If this is your type of photography then you'll want a flash unit that allows you to VARY or REDUCE it's power output. That is, it can electronically, within itself, reduce how much light it fires. If you spend time shooting close-ups you will become very familiar with this information. It'll make life SO much simpler. Normally these power reduction values will look like this: 1/2, 1/4, 1/8, 1/16, 1/32. Each of these is 1 stop less light output from the flash. Back to our examples, $GN80 @ 4 \text{ ft} = f/22$, but by reducing the power to 1/16 (4 stops LESS flash power) you could open your lens aperture to f/5.6. Or f/4 at the 1/32 setting. Or, you could move the white card a little further away causing the flash's light to travel farther and open your lens aperture more, further reducing your DOF.



Experiment with your power settings for different effects.

BUILT-IN FLASH

Your Owner's Manual can sometime leave you with that 'WHAT?' feeling. Someone had to write the explanatory text and then someone else edited that, and then someone else had the final job of making that text fit the booklet. As you've borne witness, we're not limited to space. We want you to understand and prosper; or is that 'go forth and prospect'? Flash...

Even though your Manual says to keep your subject within a certain distance from the camera, you might have other flash settings, or distances, available to you. One of our fully automatic cameras with a built-in flash does just that; it gives the specifications for just one distance range. We're okay from 1 $\frac{5}{8}$ feet to 8 $\frac{1}{3}$ feet. Anyone know how far $\frac{5}{8}$ of a foot is? Like you're not having to remember enough stuff trying to take a picture as it is. Why not say $\frac{1}{2}$ foot. And $\frac{1}{3}$? Come on... $\frac{1}{2}$ foot would do here just as well. If two inches is gonna mess me up, is $\frac{5}{8}$ and $\frac{1}{3}$ gonna make me healthy? Cease the criticisms.

So, 1 $\frac{1}{2}$ to 8 $\frac{1}{2}$ feet is how near and how far my subject can be from my flash. That's it? Then why did the camera manufacturer give me a low power setting for the flash? And how much light do I get at the 'low' setting? I have to experiment. Really! So, I take a regular flash shot at full power and then another from the same position at 'low' power. Then I move one-half the distance closer to my subject, leave the flash on 'low' power and take another exposure. Then I move one-half of that distance closer and take one more exposure. Then I wait to see how they turn out. Doing this

experiment with slide film will give you a better basis on which to judge your available flash range as the photofinisher can't compensate for any over or underexposure.

It turns out that 'low' on this particular camera cuts the flash power in half. I still have a minimum distance of 1&1/2 feet, but my maximum distance is now only 4 feet. The flash still has the power to illuminate subjects up close properly, but the reduced power causes the light to drop off at about 4 feet.

Avoid shooting with your flash if your subject's background is shiny such as glass or a mirror. If you'll change your shooting angle to the side your flash will still illuminate your subject and the background won't blast you with reflectance. Changing the shooting angle will also help to prevent you from underexposing your film because of the extra reflectance the exposure meter will see.

And then there's 'red-eye'. Not the saloon or the flight, but the 'creature from another planet' effect you see when you take a flash picture of a person while in a very dark area. The darkness of the surroundings causes your subject's eyes to dilate. When the flash fires the light reflected from your subject's retina is red and records onto your film as red dots. Preventing this has been a problem with cameras using built-in flash. Before you had to turn on all the lights so the person's eye's wouldn't dilate as much or you had to use an 'off-camera' flash. Today's cameras have an electronic circuit that fires a 'pre-flash' to make the subject's eyes stop down and then fires the exposing flash for the actual picture. Saves the day!



The further you can get the flash away from the camera lens the less likely you are to get 'red-eye'. So some cameras have 'pop-up' flash units that increase this 'angle of incidence' to minimize the effect. Remember to raise the flash before snapping the shutter release!



Now you know that Flash Photography works with 'reflected light'. If the flash doesn't have the power to go the distance, then there won't be enough light reflected back to expose the film properly. Know the limitations of your flash unit and live within them. You can cheat a little with color negative film because of its exposure latitude, but slide film users **BEWARE! DON'T YOU DARE!**

DEDICATED FLASH

Dedicated flash units are specifically designed to automatically synchronize the camera's shutter speed setting for which they were designed whenever the flash unit is attached to the camera body and the flash is turned on. This forgoes the errant 'half-frame' exposures most of us old-timers have encountered and allows you to relax knowing your flash pictures will 'at least' be sync-ed properly.

Most flash manufacturers offer the flash unit sold separately from the 'dedicated module' that actually attaches to the camera body. This way it's less expensive for them to make and less expensive for you to own, especially if you have more than one camera type that accepts a dedicated flash; just buy the module that is sold separately.

The dedicated module can also access other camera features such as exposure automation. The dedicated part of the flash is connected to a light meter within the camera body and can sense when there has been enough light on the film from the reflected flash to properly illuminate the scene and will cut the flash off automatically. Some of these dedicated modules have the same type of sensor built into them should the camera body not exhibit this internal feature. The results are usually similar, however the former is more accurate especially when doing close-up photography. Measuring the amount of light that actually hits the film is more accurate than the measurement the flash's built-in sensor reads.



If your camera has selectable and/or automatic features you will want to invest in a flash that can take advantage of all these features. If you're into manual control of your light you might also want a manual flash. You never know when you'll need more light or an additional light from a different angle.

These dedicated flash units are also handy when using a wide-angle flash adapter lens on your flash head. The reduced GN (because of the light being spread-out and not going so far) can be tricky to figure while the automatic sensor of the flash can take care of the proper amount of light to use.

Most of these flash units have a 'failsafe' indicator that will illuminate when there has been enough light reflected back to the sensor for a good exposure. If this sensor doesn't illuminate you'd better shoot it again with more power, faster film, or closer proximity. This is a nice feature to have when 'bouncing' your light onto your subject or when doing flash photography outdoors at night. And if your camera has the sensor built-in you can place your flash anywhere, separate from the camera, to better light your subject while letting the camera's internal sensor do all the work.

TTL AUTOEXPOSURE FLASH



Single contact means you get to do it ALL!



TTL stands for ‘Through-The-Lens’. This usually means that the light entering your camera is being metered by a sensor positioned in such a way that it sees the light that actually hits the film during the exposure and judges when to terminate the exposure based on it’s findings. This is a different system than we had several years ago.

Our only choice back then was to have a light meter that sensed light being reflected off the camera’s mirror and into a sensor to judge our exposure. For flash photography this was useless as the mirror is up and out of the light path during an exposure. Flashes back then simply received a signal from the camera saying ‘the shutter is open! you can flash now!’. Technology has enabled the camera manufacturers to add more automated electronics to figure your exposure, your focus, your aperture, and your shutter speed. Either accept these advancements or rely on what you’ve been taught and have learned from experience to make that great exposure. The more contacts you see in the hotshoe, the more features and automation you can expect from your camera and flash.

TTL metering sees it all; daylight, available light, flash, and fill. It’s a wonderful advancement in photographic technology. If your camera doesn’t have it you can take the same pictures, and equally well. It’s just that TTL metering can be more accurate during those difficult and confusing times.

Your camera might even have an autofocus feature that works off the TTL meter inside the camera body. In **dark situations** when it would be difficult to focus, your TTL meter along with your flash's Auto Focus electronic circuitry work to provide enough light with which your camera's autofocus feature can work to not only properly expose your film but to accurately adjust the focus as well. When you trip the shutter release the camera sends a signal to the flash telling it to **test the scene** for lighting and focussing information using it's **built-in infra-red (IR) electronics**. In the split second it takes to ascertain this information the camera then knows where to set the autofocus and which aperture to select for the optimal exposure. The shutter then opens and closes for the automatic shutter speed time and the film is exposed by the proper flash power output. The time-lag of this operation will normally go unnoticed on film. Some of these same automatic cameras even know where your eye is looking within the viewfinder and will adjust their focus and DOF for that area of your scene!



Science fiction; where would technology be without it?