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Digital Workflow

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Canon DSLR

The Ultimate Photographer's Guide



Christopher Grey







Flash

Watt? Me Worry?

Whether you'll use a built-in flash (found on the Rebel and 30D) or an accessory Speedlite, Canon has paid a great deal of attention to how that equipment interacts with their cameras. In the earlier days of Canon's digital photography, early Rebels, D30, D60, 10D, and 20D models, even the 1Ds, there were significant problems with E-TTL, Canon's through-the-lens flash metering system, that garnered less than rave reviews from many photographers. The problem was that the output power of the flash was tied to the final position of the focus point, so that if you focused, held the shutter halfway down and recomposed the image, the flash would fire based on where that focus point ended up. If the focus point came to rest on a white wall, for example, the exposure could be seriously skewed (although the wall would look great).

Canon's newer cameras, beginning with the EOS-1D Mark II, employ a newer flash metering algorithm called E-TTL II which provides more stable flash exposure than the previous E-TTL. The flash metering is still influenced by the location of the focus point at the time of exposure but not nearly as much so as with the older E-TTL bodies. E-TTL II will also take into account the focusing distance information that it gets from most, but not all, Canon lenses. While not perfect, it is certainly an improvement over E-TTL.

Shooting Tip

Should you be working with one of the early E-TTL cameras, getting good images is not impossible, it just requires that you pay close attention to where the focus point falls at the time of exposure or, if you choose to focus and recompose, that you add one more step with a feature called Flash Exposure Lock (FEL).

Using either the on-camera flash or an accessory Speedlite, find the most important part of the image, the portion you wish to focus on. Push the shutter button halfway to lock focus. Find the FEL (* on the prosumer bodies and near the shutter button on the EOS-1 cameras) button and push it. The FEL button will fire a small flash at the subject, and will record its strength and distance data when it's bounced back into the camera's memory.

Note that you cannot use back-button focus with FEL on consumer and prosumer bodies (FIG 8.1).

EOS-1 pro cameras have a dedicated FEL button, located just to the left of the shutter release. It's used exactly the same way, except that you can still use back-button focus (FIG 8.2).

You now have 6 seconds to recompose and shoot the image, with the FEL-targeted area nicely exposed. While this feature is helpful for earlier cameras, it's just as valuable as a tool for critical flash exposure on newer machines.



FIG 8.1



FIG 8.2

Built-In Flash

Working with the built-in on-camera flash is terrific for snapshots, although, in my opinion, it should not be used for paying jobs because its tube is small and produces a hard, specular source that accents skin shine and shows hard shadows. Pictures made with built-in flash will also look like everyone else's shots, so if you're a wedding photographer trying to establish a visual identity, using this feature might not be the best idea. The flash is placed close to the lens, and pops up vertically just above the lens axis. While this guarantees even light over its effective working area, the look of the images will actually be quite flat. Further, if you turn the camera to its vertical position, the resulting shadows will fall straight across that axis and look quite unattractive.

That said, the built-in flash can be very effective as fill flash, a little something to brighten up a shot without overpowering it.

Flash Exposure Compensation is a Function on any Canon with a built-in flash. Find it in the Menu of the Rebel, but on the 30D it is a button push that displays on the top LCD. It allows an increase or decrease in the flash output power relative to what the camera tells the flash it needs, a determination the camera will make based on the light at hand and the shooting Mode it's in. You are allowed up to two full stops of exposure compensation, over or under what the camera considers to be correct, when you use this Function.

We all know that outdoor exposures, even made under diffused daylight conditions, can show shadows that are not especially attractive even though the subject may be. If a face is lit from the side, for example, eyes tend to look lifeless because there is no catchlight, no hint of a light source, to give them a spark. This set of images was made in the Av Mode (FIG 8.3).



FIG 8.3 Ambient light only

Even if the camera doesn't automatically raise the flash (there may be so much light that the camera won't think it's necessary), push the flash button near the lens and pop it up manually (FIG 8.4).

Without making any Flash Exposure Compensation, the camera will use the built-in flash as a fill flash. Comparing a non-compensated image with one deliberately set to $-1/3$ stop would indicate that this is the camera's default fill flash position (FIGS 8.5 and 8.6).

With further compensation adjustments, at $-2/3$, -1 , and -2 stops, you can easily see how Flash Exposure Compensation can improve your images when used as a supplemental light source. In each case, look



FIG 8.4



FIG 8.5 Fill flash, no adjustment



FIG 8.6 Fill — 1/3

at how much life the catchlights in the eyes add to the shots (FIGS 8.7–8.9).

When working with built-in flash indoors, there are a couple of things for you to consider that will improve the quality of your images.

Virtually any setting that has light falling in it can be photographed. It's the quality of the light that determines the final beauty of the shot.



FIG 8.7 Fill —2/3



FIG 8.8 Fill —1 stop



FIG 8.9 Fill —2 stops

This image, made in the Av Mode, takes advantage of the light coming into the room through this family's large front room window. It's a nice image, but looks a little flat because the source (the window) is so broad and the subject is not influenced by any direct light (FIG 8.10).



FIG 8.10 Ambient light only

Use a shooting Mode that will take ambient light into account. If you use Manual, be sure to set a shutter speed and aperture that will include enough ambient detail to show the background. A shutter speed that's too short or an aperture that's too small will not allow enough ambient light to register, resulting in dark backgrounds with minimal or no detail. Even though the exposure from the flash will be terrific, the lack of ambient detail will result in "tonal merger," a part of the image where dark areas of the subject like hair or clothing are so dark they become indistinguishable against the background. Photos made with tonal merger lack the three-dimensional quality that makes for a better shot (FIG 8.11).



FIG 8.11 Camera in Manual mode

You'll get better results working in a mode that supports ambient light exposures. On the Basic side of the dial, Portrait, even Night Portrait, will produce great results because the exposure will be made for both ambient and flash. On the Creative side, Av, Tv, even ADep (on the Rebel and 30D) will produce nicely lit, dimensional results that balance ambient light to the flash (FIG 8.12).



FIG 8.12

Accessory Flash

At the time of this writing, Canon's flagship accessory strobe is the 580EX-II Speedlite, a beautiful, slim, relatively lightweight product that can do wonderful things either by itself or linked with many additional units (I've heard of as many as 36!). Unlike the earlier 580EX, the EX-II adds "Auto" to its Mode list, along with E-TTL and Manual, a feature many photographers feel will bring the Speedlite line back into the race as a full-featured unit capable of delivering what the photographic community says it wants.

E-TTL Mode fires a small flash immediately before firing the main burst. The purpose is for the unit to get a read on the amount of light bouncing back from the measuring point and shorten or lengthen the second flash duration accordingly. Auto Mode fires one shot at essentially full power, reads the bounce, and turns the strobe off when the correct amount of light has hit the sensor. Many photographers feel Auto to be more accurate than E-TTL.

No matter how you cut it, any 580 is considered a small unit. While it's capable of a strong burst at full power it doesn't typically work that way in E-TTL, where recycle speed is important (FIG 8.13).



FIG 8.13

I'll go out on a limb here, at least a little bit, to say that there is no accessory flash out there that will deliver perfect shots, every time and

right out of the box unless you understand and use Manual mode. Back in the days when we shot weddings, events, and portraits on film we could mess up quite a bit with our “automatic” flash units, and our labs would bail us out by adjusting exposure at the enlarger. Those days are over. Today, if we mess up, we’re on the hook to fix it and sometimes that’s hard to do, even with Photoshop.

I’ve found a few tricks, over the years, to get more consistent results from my Canon flash in E-TTL. Naturally, I’ll share. Some of these tricks have minimal basis in fact, they’re only based on my experience, but they seem to work nicely and improve my shot-to-shot success ratio.

My most important tip is that E-TTL seems to work better with an ISO higher than 100. When I fire up my flash unit I’ll set my camera’s ISO to at least 400. I think this helps because the unit doesn’t have to push out as much light as it does at my preferred ISO of 100, and can light the scene more efficiently.

The units have a built-in power adjustment that you can use to increase or decrease the output power relative to what the camera thinks it wants. This is just like the Flash Exposure Compensation Function dialed in on the camera with built-in flash, except that the adjustments are made on the flash unit itself. I’ve found that, working with the 30D and 5D, I like an overall increase of +1/3 on the strobe to give me more consistently perfect exposures although I can easily work with what the camera gives me if I forget to do that.

I’ve also found that zoom lenses are definitely the way to go when using accessory flash.

At 7 to 10 feet, the flash is working at its best. The distance from the subject is not so far that the flash has to work overtime but far enough so that the spread of light is even and consistent. My preferred lens in this circumstance is the 24–70 mm f2.8 zoom, because I can let the lens do the work of moving in or out of the frame.

It’s also a good idea to use a maximum aperture of f5.6 (larger is better) whenever possible.

Even when you’ve got your E-TTL flash nailed, you’re still dealing with a small, specular, light source. Better results are obtained when you use a third-party diffuser to broaden and soften the light source. There are many of these devices on the market, and I certainly haven’t tried all of them, but there are some characteristics that each exhibit: Any of them will spread the light, creating a larger, softer, source, and each will cut the efficiency of the source, the power of the strobe’s output, by at least one full stop.

The two that I use the most are the LumiQuest MidiBouncer (aka the Baseball Glove), www.lumiquest.com, which I attach with the provided Velcro strips, and my new favorite, the Ultimate Light Box System, a beautiful mini-softbox that's engineered to fit snugly right over the flash head and that can be easily modified for a softer or more specular light because it's a modular system. www.harbordigitaldesign.com (FIG 8.14).



FIG 8.14

If you want the most controllable results from your Speedlites, you must learn and note their power output in Manual mode. When you know what the true output is, and at what f-stop, a whole new world of controlled imagery is literally at your fingertips.

If you don't have an external flash meter, you will need to borrow or rent one to make this test, and you'll need to calibrate it to your camera first. Since there may be discrepancies between your camera and the meter, you'll need to photograph a gray target first. You'll also require the services of a friend to hold the meter as you fire the flash.

Make this test at ISO 100.

Set the EX flash unit to Manual, which will give you consistent shot-to-shot power (make sure the unit is fully recharged before firing). You will also

Shooting Tip

A look that I really like is when a flash fill is not noticeable but looks like it was part of the ambient. In other words, the fill is so soft as to be unrecognizable as fill flash, except, perhaps, in the catchlights in the eyes.

Try this with your favorite third-party modifier. From a working distance of not more than 10 feet, and with your modifier in place and your camera set to Av Mode, dial the E-TTL power to $-1\frac{1}{3}$ stops. Be sure to use an aperture that will not require a high power discharge from the flash unit. The result may be inconsistent and take too long to recycle. I think you'll find that the strobe fills in the shadows just enough to make the image truly believable and much prettier than it would have been without the fill. This image was made with the ULB (FIG 8.15).



FIG 8.15

need to set the Zoom control to 50 mm for the test, and be sure to select 50 mm whenever you use this technique for an actual shoot or do another test at other focal lengths. Dialing a different zoom focal length will change the power output of the light (FIG 8.16).



FIG 8.16

Using full power, 1/1 as noted on the back of the unit, find the correct distance from the target (and as close to it as possible, so you can fill the frame with gray) that will give you a meter reading in a whole stop or whole stop plus 0.3 or 0.7 (see External Meters). Take a picture of the gray target.

Push the Display button on the camera, and dial in the image with the Histogram. A properly metered and exposed image will show the primary pixel spike dead center. A spike to the left indicates that your

meter is giving you underexposure, while a spike to the right indicates overexposure. Adjust your light meter (see the manual) so that the reading it gives you will produce a centered histogram (FIG 8.17).

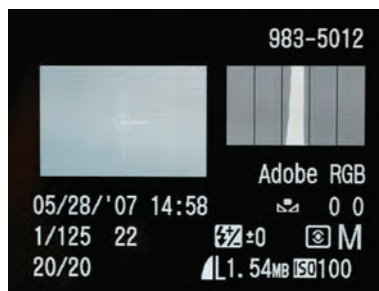


FIG 8.17

Use a tape measure and measure out one-foot increments, over a length of 20 feet. Starting at the 20' mark, and with your friend aiming the light meter at the camera from the other end, fire a full power flash at the meter. Note the f-stop the meter gives you. You may have to move a little closer, but the object is to get to the first available whole f-stop. Make note of that distance.

Move forward, test firing as you go and making note of where the whole f-stops are found. When you're done, you'll have a power map that will give you consistent results, shot after shot, over that 20' range.

You'll also have a map that can be used to extrapolate f-stops for every Manual power setting on the flash, from 1/1 to 1/64.

Every time you cut the power ratio in Manual, you'll drop the exposure value by one stop. So, if you're at 5' and getting f22 at full power, changing the ratio to 1/2 will give you f16, 1/4 will give you f11, and so on, all the way down to 1/64 which will give you a perfect f2.8. The 580 powers down to 1/128, for those of you with f2.0 capabilities (FIGS 8.18–8.20).



FIG 8.18 1/1 equals f22



FIG 8.19 1/8 equals f8



FIG 8.20 1/64 equals f2.8

This is a rock-solid technique that works in any indoor situation. Of course, once you know how much light your favorite modifier eats, you'll have a map for that, as well.

You can use flash outdoors, and in Manual, too, although there are some considerations that will affect the quality of your images.

When shooting outdoors, E-TTL and Auto will both take ambient light (sunlight) into account, more so than indoors when the flash is the dominant source. Manual does not. It can't make allowances for ambient light because its output is consistent, so you have to make allowances for it.

The effects of light are cumulative. Adding light to light creates brighter light, which must be dealt with at the camera by selecting a smaller aperture. For example, if you're outside in bright sun, and the sun is falling on the subject (with its usual bad shadows), you may want to fill those shadows as much as possible. Should you select the correct distance/power output to give you a flash strength of f16, you will have to add one stop less of exposure *at the camera* to f22, which will give you the perfect exposure you require (FIGS 8.21–8.23).



FIG 8.21 Exposure from sun is f16



FIG 8.22 Manual flash power equals f16. Image is one stop overexposed



FIG 8.23 Adding one stop at the camera, to f22, equals perfect exposure

When you use Manual flash as fill, you need to consider how much of the ambient light you wish to be dominant and then make the appropriate exposure adjustment. Note that some adjustments will not produce a whole f-stop or a perfect third. In those cases I've noted the closest f-stop that will yield an exposure good enough for proofs, without manipulation. This example uses f16 as its base, but the formula can be extrapolated against any ambient light level.

Assume the sun is a constant at f16.

Fill flash strength to ambient	Exposure adjustment	New aperture/result
-2 stops	+1/10 stop	f16 (image is 1/10 over)
-1 2/3 stops	+2/10 stop	f18 (image is 1/10 under)
-1 1/3 stops	+4/10 stop	f18 (image is 1/10 over)
-1 stop	+1/2 stop	f20 (image is 2/10 under)
-2/3 stop	+6/10 stop	f20 (image is 1/10 under)
-1/3 stop	+2/3 stop	f20 (perfect exposure)
Same as constant	+1 stop	f22 (perfect exposure)

Canon's Speedlites have many other features, all designed to help you make better pictures.

FEB (Flash Exposure Bracketing) let's you take three flash shots in a row at three different strengths. You can symmetrically vary the power in 1/3 stop increments up to a plus/minus of three whole stops. The camera will have to wait for the flash to recycle, of course, but if you jump the gun and fire the camera before the flash is ready you won't have to reset the bracket. The flash will hold the setting until a successful discharge can be made and, if you have dialed in a basic E-TTL exposure correction, the flash will add or

subtract that correction automatically. You will have to reselect FEB each time you wish to make a new bracket series (FIG 8.24).

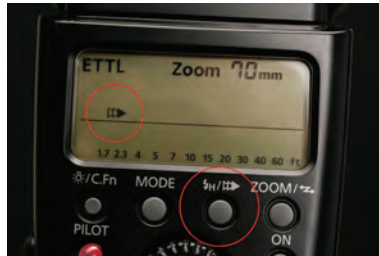


FIG 8.24

Sometimes, working outside in bright sunlight can pose a significant challenge to photographers hoping to use fill flash along with large apertures. On a typical sunny day, ISO 100 would require 1/1600 second at f4, well beyond the camera's maximum flash sync speed.

Speedlites offer High-Speed Sync (FP Flash), which lets you use flash at any shutter speed, up to the maximum 1/8000 second. To access it, select the high-speed option from the back of the flash. An icon next to the E-TTL designation will appear in the LCD panel. Note that as shutter speeds increase in speed the working distance of the strobe decreases. There is a distance scale on the bottom of the LCD showing you the effective range, but only for an unmodified strobe. If you'd like to use a diffuser to soften the light, your best bet might be to use the camera in Av Mode and make adjustments via Flash Exposure Compensation (FIG 8.25).

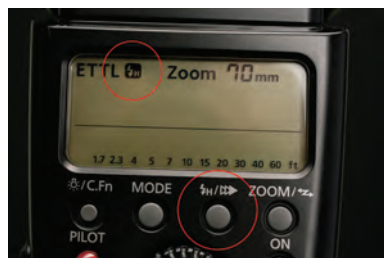


FIG 8.25

Of course, there are many other uses for High-Speed Sync (FIG 8.26).

toggling the same button that controls High-Speed Sync will access Second-Curtain Sync, a cool tool that fires the flash at the end of the exposure rather than the outset. If you wish to intentionally create a motion blur, flash at the end of a long exposure will freeze time at the end of the blur. The images will have a more realistic look to them. For the



FIG 8.26

most realistic look, be sure all the lights have, or have been gelled to, the same color temperature.



FIG 8.27

Working with Second-Curtain Sync in the studio poses an interesting problem. Even though Canon cameras have a Custom Function called Shutter Curtain Sync, it only works with Canon Speedlites that do not have that feature built into them. It will only fire studio strobes (or non-Canon accessory flash units) at the start of the exposure.

Obviously, the thing to do is to use the Speedlite to fire the Slave function of the studio strobes. I realized quickly that I couldn't use the E-TTL mode, as it fires a pre-flash that was strong enough to activate the slave. The studio strobes went off before the shutter (the shots were a little dark). The solution was to set the Speedlite to Manual at its lowest power, 1/128, and turn it so it was aimed behind me, at the slave on the studio pack (FIG 8.27).

Multi Stroboscopic Flash

Multi Stroboscopic Flash is yet another option for the creative photographer. Using this Mode gets you a multiple, rapid burst of strobe fires that will freeze movement in multiple positions. Use the images for analysis, like a golf swing, or just for drama or fun.

This feature is just slightly more difficult to use than other Modes, but it's not that tough. You'll need to determine the correct exposure strength of *one* flash, in Manual mode, that falls on your subject. Use an external meter or photograph a gray card, adjusting either the flash to subject distance or the strength of the flash, until you get a perfect, centered, histogram. Make note of the correct power setting.

Now, press the Mode button until Multi is displayed on the LCD. Dial in the same power setting.

For moving subjects that will not significantly overlap, decide how many times the flash should fire, and use the Dial button to find the burst number (it will blink when selected) and the Dial to select the number of flashes that will comprise the burst. Note that finding a lower power setting at the start of the process will allow for more flashes now.

The Hz setting will determine the speed of the burst. Higher Hz numbers mean shorter times between flashes but will also require more power, which is another reason to use a lower power setting if possible (FIG 8.28).



FIG 8.28

To find the correct shutter speed for your image, divide the number of flashes by the Hz rate. In this case the number of flashes is 4, as is the Hz rate ($4/4 = 1$). The shutter speed needs to be at least one full second long (FIG 8.29).



FIG 8.29

Speedlites in Studio or Location

Speedlites can talk to each other and, like humans, can set each other off.

You can connect a network of Speedlites together for a basic portrait light setup or to provide accent and background lights for a wedding or other such event. Although Speedlites are small, specular sources, they are, like all auxiliary lighting, tools to boost your creativity and realize your vision. It's simply a matter of how you work with them, and how you get them to do what you want.

The 550EX and 580 Speedlites have a switch on the bottom, just above the shoe mount, that will assign the role of Master or Slave, but the 580EX II Master/Slave selection happens in the Speedlite's Menu. The unit on the camera is always the Master, and with it, you can control every other Slave unit. Now, there are some caveats. Because the Slave units must "see" the camera unit, you are limited to a spread of 40°, left and right of the lens axis. You will also need to tilt or swing each flash so the infrared signal window (the red window on the front of the unit) is facing the Master. This 80° total is the limit of the infrared signal transmitted by the Master. Working with multiple Speedlites outside, according to Canon, gives you a maximum working outdoor distance of about 26', indoors, almost 50'. These are average results, and yours may vary, so test any setup before you put your money on it.

You can program Flash Exposure Compensation, High-Speed Sync, Stroboscopic Flash, or any other feature of the Speedlite (with the exception of Second-Curtain Sync) into the Master, but understand that the same settings will be applied to each of the slaves. For many images this is totally acceptable. Wedding and event photographers will often set several slaves on clamp mounts in multiple locations in a reception hall, to illuminate backgrounds or add hair lights to create depth and dimension to their images. Should you decide to make a change to the Master, such as adding or subtracting 1/3 stop of exposure value, the change will be made symmetrically to every Slave unit, although they can be ratioed separately against each other.

I'm not a fan of on-camera flash as a key (main) light, although I'll admit I've seen some beautiful shots made in that manner. I much prefer to have my key light off-camera, set to camera right or camera left, just to give my subject dimension by throwing a nice shadow. When I do have the Master on-camera, I prefer to use a modifier. The key light for this shot of R&B singer, Sahata, was modified with the Ultimate Light Box. The slaves, slightly behind and to the sides of her at camera right and camera left, were gelled with orange (FIG 8.30).

Shooting Tip

The little stand, the foot, that is provided with the 580EX II is best used when the strobe can be placed on a flat, level surface such as a floor or shelf. If you want to place the unit on a stand, and have the ability to change its angle, check out the R 4130 Umbrella Stand Adapter from Norman (www.photo-control.com). It's inexpensive and you can thread an umbrella through it, turning your Canon flash into a much broader, softer, source.

If you find yourself in a pinch and need to position another flash at an angle, just screw the foot onto your tripod and use its controls to angle the flash where you need it.

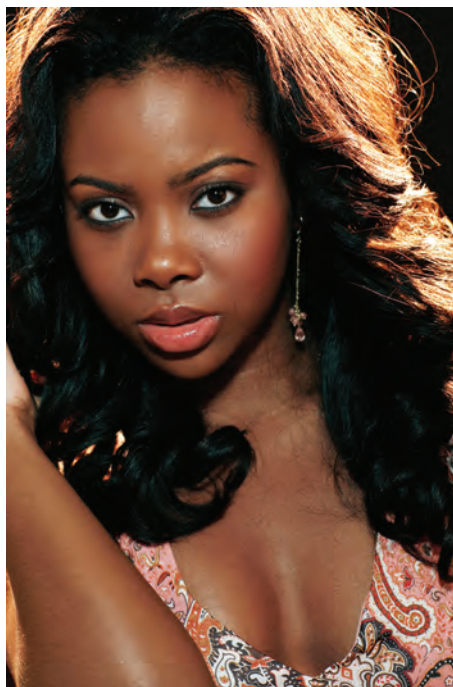


FIG 8.30

Canon allows you the option of prohibiting the Master unit from firing, even though it will still send out a signal flash to alert the other units. Being able to disable the Master is an extremely valuable feature because it frees you from the flat-light look that's so common to on-camera flash images made without modifiers.

We all like to break the rules, and the most important rule with wireless is that the units must see each other. One of my favorite lighting arrangements is to place a large softbox behind a sheet of white Plexiglas. I meter it by retracting the dome of the my external flash meter and placing it flat against the Plexi from the camera side, take the reading, then set the camera $+2/3$ over that reading. For example, if the meter read $f11$, I'd open the lens' aperture to $f9$. The result is an almost total silhouette (with just a little wrap-around light), against a clean, white background.

Recently, I had to set this up in an area where I could not use my studio flash. This presented a problem because the Plexiglas would not allow the infrared signal from the on-camera unit to pass through it to the Slave. While I could have slaved the rear unit to the Master, I didn't want any extra light to fall on my subject. The solution was to place the flash on a stand and aim it at a window to the side of the set. Since I could see the

Slave unit's reflection in the window, I knew the signal would be received (a mirror on a stand would work just as well). I connected the Master to the camera with a Canon Off-Camera Shoe Flash Cord 2, disabled the flash of the Master unit, and made this image (FIGS 8.31 and 8.32).



FIG 8.31

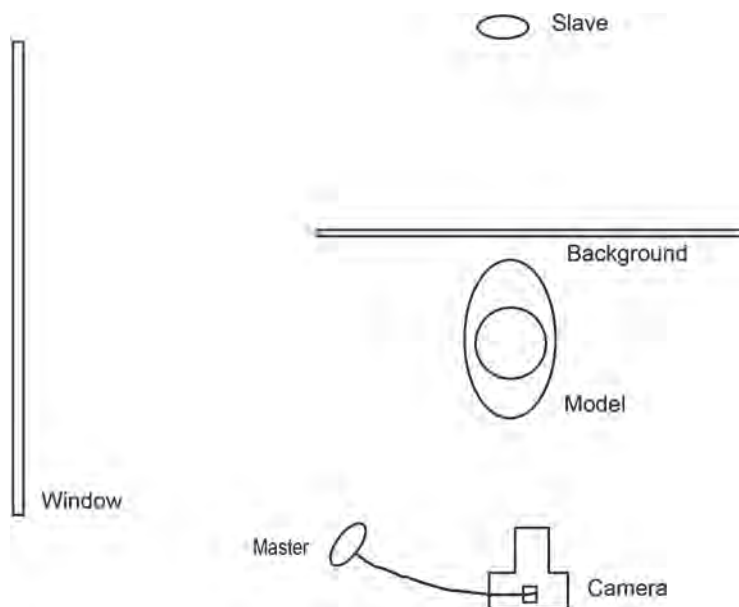


FIG 8.32

For studio or location, a nifty trick to increase the apparent size of the light is to place a translucent diffusion screen close to the subject and place the flash a few feet behind it. When the screen lights up from the flash it will act as a softbox and become a softer, broader source. It's best, in my opinion, to set the flash on Manual and meter with an external device. For this image the Master was disabled, with only the Slave firing. An additional bounce panel was placed at camera left (FIG 8.33).