

Strobe Power

John Siskin

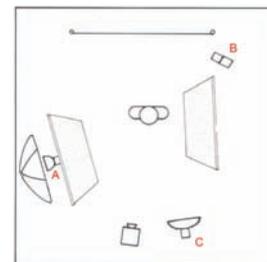
I have been working with and writing about strobes for several decades. In that time I've made a really huge number of images with strobes. All strobes have certain characteristics: they have a daylight spectrum, and the light has very short duration. These characteristics make them the best lights for still photography, because you can mix strobes with daylight and also stop action.

Several characteristics are really important in understanding how useful any particular strobe might be. First, know how much light output the unit has. Second, know the coverage of the strobe, how big an angle it illuminates and how evenly. Third, does the unit have a modeling light? These continuous lights on a strobe make it easier to see what the strobe will do. Fourth, how quickly does it recycle, that is how soon is it ready to shoot again? Fifth, how portable is the unit? Finally, how easy is it to control the unit: will the strobe work with your camera's automation?

How powerful does a strobe need to be? That depends on several factors, including the way you use light and the ISO you shoot at. I really like using big light sources to create soft light. Such light sources are not very efficient; so much of the light the strobe puts out won't end up on the subject. In Figure 1, I used a light panel and an umbrella to make a big light source on the left of the camera. If I had used the strobe directly on the subject, the aperture would have been f22.2 at ISO 100, but because of the light modifiers, the aperture was f8.7. So I lost more than 75% of the light I started with. Consequently, I need strobes with a lot of power. If I had used a more efficient lighting design, I



In this set-up, light A is a 750 watt-second moonlight, which bounces off an umbrella, and then the light goes through a light panel. This gives the soft light source. The other panel is a gold reflector. Lights A and C are connected to a power pack and both have warm filtration and are set to a power of 125 watt-seconds. B is used with a snoot to light the background; light C is used with a beauty dish to give a catch light and more definition.



wouldn't have used as much power, but the light wouldn't have had the same quality. Large light sources illuminate the subject from more angles, making softer light with more gradual transitions. I used a second light with a beauty dish to give the subject more definition and a good catch light in the eyes.

This article will provide information about the relative power and coverage of some strobes. This is helpful because strobes are currently measured in at least two different ways, which makes it impossible to compare their relative light output or power.

The light was measured with a Sekonic L-508 light meter at 10 feet from the light. The meter was set to ISO 100. This is how guide numbers are figured, and it makes sense to use this way of measuring with strobes that have built in reflectors, such as hot-shoe mounted strobes. The guide number of these strobes is the measured aperture, multiplied by 10, at 10 feet from the light, usually at ISO 100. So guide numbers work like aperture numbers: a rating of 110 is twice as powerful as a rating of 80. When you measure monolights or studio strobes in this way, you measure the light and the reflector. Changing the reflector will change the quantity of

the light, as well as the quality. This is one of the advantages of monolights and studio strobes: they allow you to use many light modifiers.

I decided to do another test that used a 3X3 soft box to read the strobes with the same modifier, which essentially changes the light output. Studio strobes are usually measured in watt-seconds, which are a measurement of power consumption, rather than light output. So two units can have the same number of watt-seconds and provide very different amounts of light.

When I started doing the tests for this article I had certain basic assumptions about strobe power: first that the manufacturers' guide numbers are often inaccurate. Second, I reasoned that studio strobes and monolights are much more powerful than hot-shoe mount strobes, like the Canon 580EX II. As the data will show, both these assumptions were found to be inaccurate.

I did have one assumption about strobe power that was accurate: when you cut the watt-seconds in half you have reduced the power of the strobe by one stop. So if the meter reads f11 at 200 watt-seconds, it will read f8 at 100 watt-seconds.



The meter and the strobe were 10 feet apart for the power test. The soft box was in the same position.

Unit	Soft Box	Reflector	Published Guide Number
Calumet 580 EX II	f2.8.8	f11.2	138@ 50mm
Vivitar 283	f2.8.1	f8.0	120
Calumet Travelite 750	f8.0	f11.4	N/A
Norman 200B	f2.8.9	f8.8	N/A
Alien Bee 1600	f5.6.6	f16.3	N/A
Norman LH2400 @ 200 w-s	f11.1	f16.3	N/A

I chose strobes from several different manufacturers and of several different types for this test. The first thing I wanted to know was if the Canon strobe was really producing as much light as it was rated to do. As previously mentioned, it produced a lot of light when it was used without any modifier. Then I wanted to examine some new technology moonlights, so I looked at the Alien Bee B1600 and the Calumet Travelite. These are contemporary monolights, the type I use in many circumstances.

Finally, I wanted to check some older lights so I could find out more about the progress of lighting technology. This was why I wanted to look at a Vivitar 283, introduced in about 1977. This was a great strobe at that time. While the Vivitar is about the same size as the Canon 580 EX II, it is about half the power. I also wanted to know about the power of the Norman LH2400 head with a 2000 watt-second power pack. This was my standard gear for decades, and I wanted to know how its power compared to the monolights. In this case, the Norman was significantly more powerful with the softbox, and the difference in power was much less with just the reflector. In the end it appears as though the reflector enables some of the small strobes to perform like the powerful units. This is particularly true with the Alien Bee and the Canon. When you use a device that encloses the strobe, like the soft box, the power rating of the strobe seems to be more indicative of the amount of light from the unit.

You can see that the Norman power pack I dragged all over Los Angeles is really only two stops more powerful than a Vivitar 283, with the reflector, but it is 4 stops more powerful if I use the soft box. I also note that although the watt-seconds on the Alien Bee are lower than the Calumet, the output is almost twice as high in these tests. The Canon's published guide number is accurate, since my meter gives the aperture and a decimal, and f11.2 and G.N. 138 are about the same. I was also interested to see that the Alien Bee unit had about the same power as the Norman LH2400 set at 2000 watt-seconds.

Assessment of the coverage of a strobe is a more subjective matter and is dependant on the modifier on the strobe. The coverage with the soft box, for instance, is about the same for all units. Since many

photographers manipulate strobe light, the power test results would change, as well as the coverage, with different modifiers. For tighter coverage, use snoots, or grid spots, to control light. For more coverage I could use a different reflector or umbrella or other tool.

I used the 6 to 8-inch reflectors on the monolights and studio strobes and looked at the light they produced. These are the reflectors most frequently sold with these units. The Calumet Travelite has broad coverage. The light is much brighter in the center than the sides. The Canon 580EX II has



Calumet Travelite 750



Canon 580EX II

The Calumet unit has much broader coverage than the Canon unit. Both are pretty even. For this test, all the units were fired at the same distance from the wall

smaller coverage. The light is fairly even, but falls off quickly at the side. This test was done at the 50mm setting. If the wider setting were used, the coverage would be broader. The Norman 200B has very narrow coverage and a rapid fall-off. The Norman LH 2400 has very broad coverage with a very gradual fall-off. The Alien Bee unit has narrow

coverage with a rapid fall-off. I think that broad even coverage is an advantage, but the amount of advantage changes if you use different modifiers.

For years I recommended studio lights and monolights because of the power they provide a photographer. Now I'm not at all sure that there is as much advantage in power. So why would I keep using studio lights? They recycle quickly all day and all night; most recycle in about two seconds. You can get external battery packs for a dedicated strobe, but they add extra cost, and there is a limit to how many shots you can take.

In addition, modeling lights, which are on studio strobes and monolights, are very important for designing light. Another concern is how easy is it to control the strobe. This is subjective. I prefer manual control, with a continuous power range of several stops. Through teaching classes I have become aware that many people would prefer the camera to be in control, which requires a dedicated

unit. Finally, there is cost. An Alien Bee 1600 costs less than a Canon 580EX II, without a battery pack.

I think there is tremendous advantage in having a dedicated strobe. It does a beautiful job with flash fill outdoors and is your best friend if you photograph events. However, I use monolights and studio strobes for most of my work. I feel that I can shoot all day and get better control with these units.

John Siskin is a commercial and fine art photographer who specializes in making architectural images, as well as macro, portraiture and product photographs. He has taught photography for more than 20 years and is currently teaching photographic lighting at BetterPhoto.com online. His web site is www.siskin-photo.com. His first book, Understanding and Controlling Strobe Lighting, A Guide for Digital Photographers, will be published this fall by Amherst Media.

To ask a question or comment on this article, visit our online Forum: www.phototechforum.com

Product Resources

Lighting: Canon 580EXII strobe, Norman LH2400 powerpack, Calumet Travelite, Alien Bee 1600, Vivitar 283, Norman 200B . Meter: Sekonic L-508.

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