

# Electronic Flash

More than just assuring that you'll always have enough light to shoot pictures

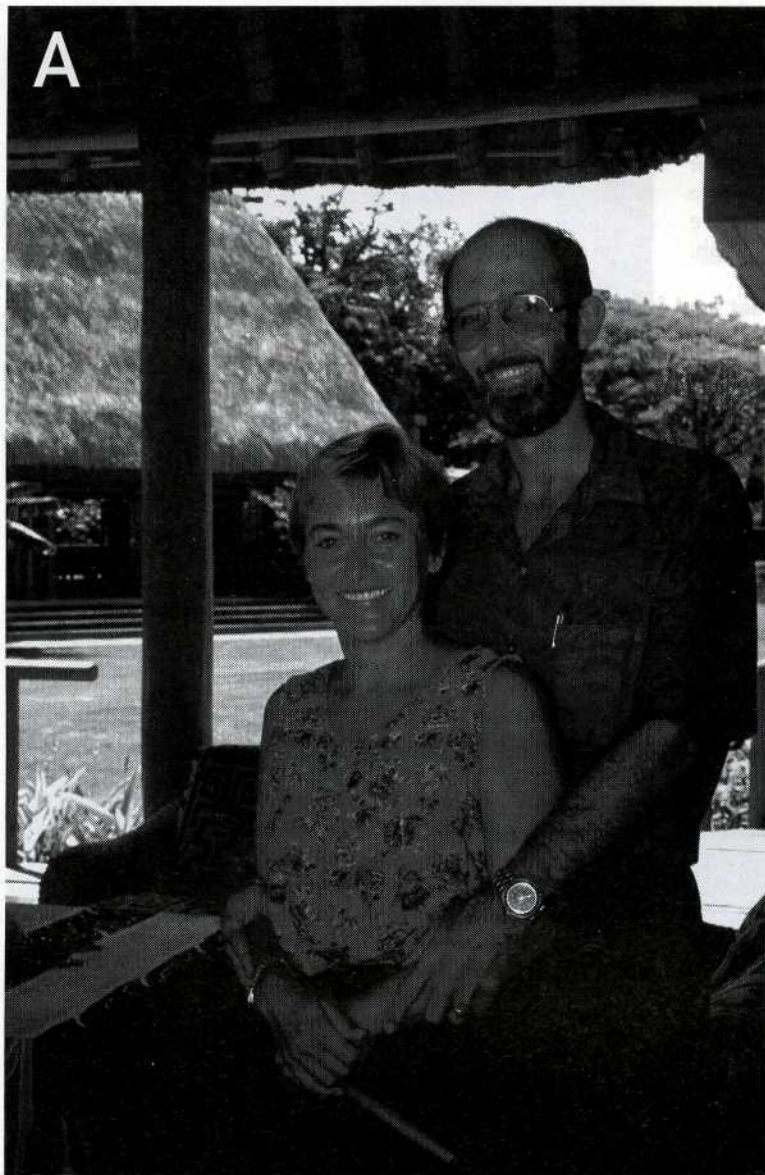
by Jack & Sue Drafa

Since the dawn of photography, lighting has always been a problem. The challenge has been finding the right light and obtaining enough of it to capture on film. Full sunlight works great, but sometimes there may not be enough sunlight, only a smattering of sunlight, or virtually none at all. So then what do you do? In the beginning, the answer was long exposures, or some very explosive flash powder. Eventually technology started to rear its head, and the flashbulb became a powerful lighting tool for the photographer.

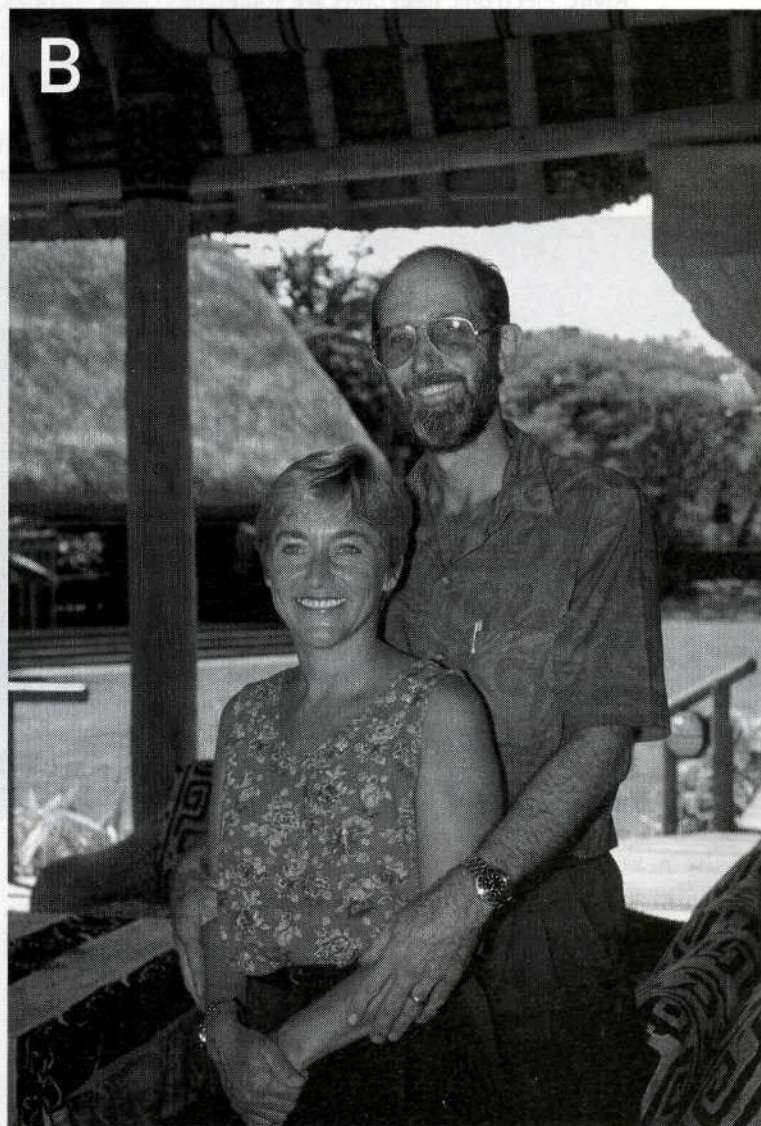


Direct flash is harsh and casts distracting shadows on nearby surfaces behind a subject (A). Flash units with tilt/swivel heads allow you to aim the head at a nearby wall or ceiling for a more natural "bounce" effect (B).





With backlit subjects, either the subject will be too dark, or the background will be too light if you shoot by existing light (A). Fill-flash adds light to the nearby subjects, for a better balance and a more attractive photo (B).



Finally, Dr. Harold Edgerton revolutionized the way we take pictures with his invention of the electronic flash. His amazing innovation takes a small clear tube of gas, ionizes it to produce a bright light, and then it reverts back to its original state, ready to capture the next moment in time.

The first flash units were very large, cumbersome, and not very efficient. Thankfully, today's electronic flash is very compact, power efficient, and features a wide selection of controls to accommodate almost any lighting problem a photographer may encounter. Electronic flashes come in all shapes and sizes and are found on just about every camera used today, even throw-away cameras.

There are plenty of advantages to using electronic flash. You can use slow, fine-grain film in low-light situations and still use a small aperture (at close range, anyway). A flash enables you to freeze the action of moving subjects which makes flashes a must if you are photographing children or pets. Flash helps fill in the dark shadows created by harsh sunlight and with more advanced systems automatically balances the ambient light with strobe for more appealing portraits. Electronic flash is color balanced for daylight, so you can intermix your electronic flash with sunlight exposures and never notice the difference. You can even use electronic flash units to provide that creative edge to your photography. Electronic flashes are used indoors and out in almost every aspect of photography, including portraiture, nature, sports, photojournalism and weddings.

## Automatic Flash Units

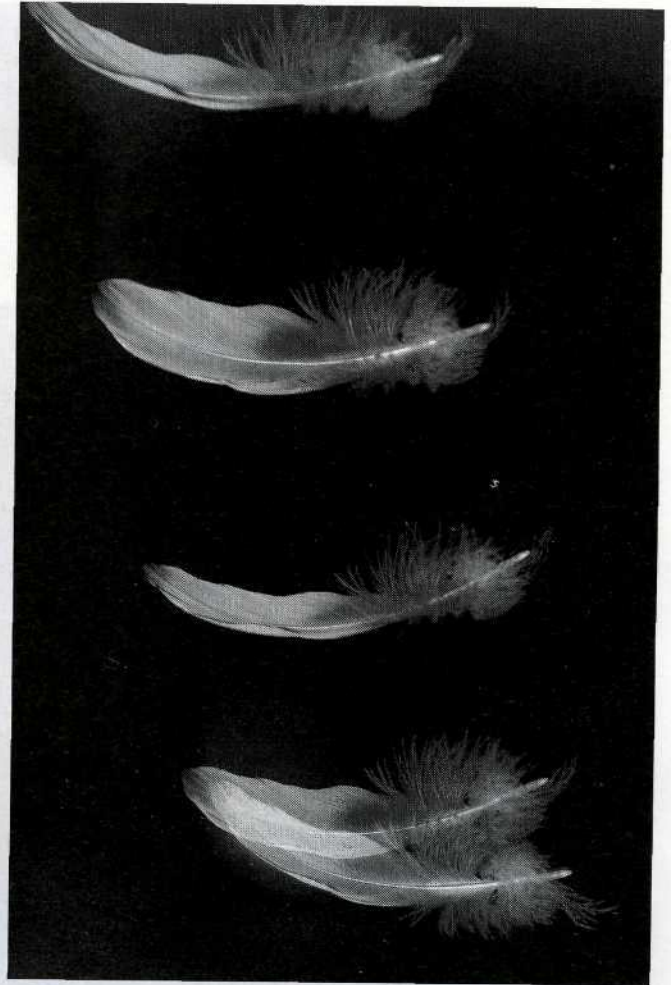
Automatic electronic flash units can be found built into one-time-use cameras, point-and-shoot cameras and many AF 35mm SLRs, and are also available as accessories for 35mm and digital SLRs and larger-format cameras. When the flash unit is built into the camera body, it will have a sensor system that tells the flash to charge and fire when the ambient light level is too low for hand-held shooting. Internal flash units have less power than accessory flash units, but still can reach as far as 25 feet with ISO 200 film and a fast lens. In almost all cases, the automatic internal flash units provide several modes: auto (the flash unit automatically fires when needed), fill-flash (the flash unit fires for every shot, regardless of light level), red-eye reduction (the flash fires one or more low-power pre-flashes to "stop-down" subjects' eyes and thus minimize red-eye), and off (the flash won't fire, regardless of light level—handy when you wish to capture the natural ambiance of the scene, or when flash use is not permitted).

On the accessory automatic flash units there is a sensor that is aimed at the subject. Once the flash is triggered, the light falling on the subject is reflected back into a sensor and when enough light for a correct exposure is achieved, the flash cuts off and the remainder of the charge is saved

**Below:** Slave flash units fire wirelessly when they "see" the burst from a camera-connected flash unit, allowing you to add light anywhere.

**Right:** Electronic flash units are sometimes called "strobes," but true strobes are flash units that fire repeatedly at a rapid rate. Some accessory flash units do have a strobe mode, which allows you to create multiple images of a moving subject in a single photograph.

**Bottom:** The brief duration of electronic flash makes it great for "freezing" nearby action subjects.



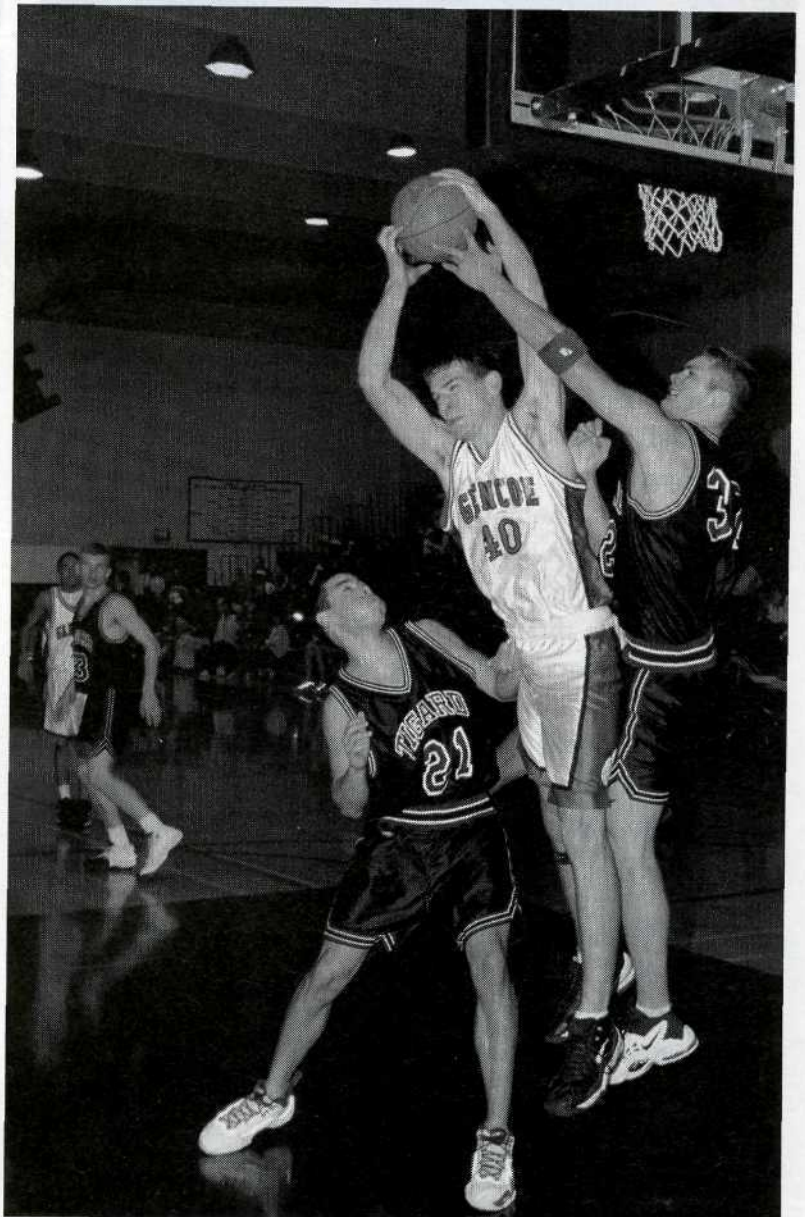
for the next shot. Exposure durations of an automatic electronic flash can range from  $\frac{1}{1000}$  second to  $\frac{1}{50,000}$ , (the duration becomes shorter as the flash-to-subject distance decreases), and because only a small portion of the energy is used for close-range flashes, recycling times are very brief, so the flash can be fired in rapid succession. Both internal and portable flash units use a wide variety of power sources that can include alkaline, rechargeable NiCd, lithium, or NiMH batteries.

With most automatic flashes, you set the flash unit's ISO index to the speed of the film you're using, and a calculator on the back of the flash indicates the f-stop you can use to have the flash cover a certain flash to subject distance. Once you select your f-stop, you can use your flash anywhere within the indicated distance range and the flash will provide correctly exposed results.

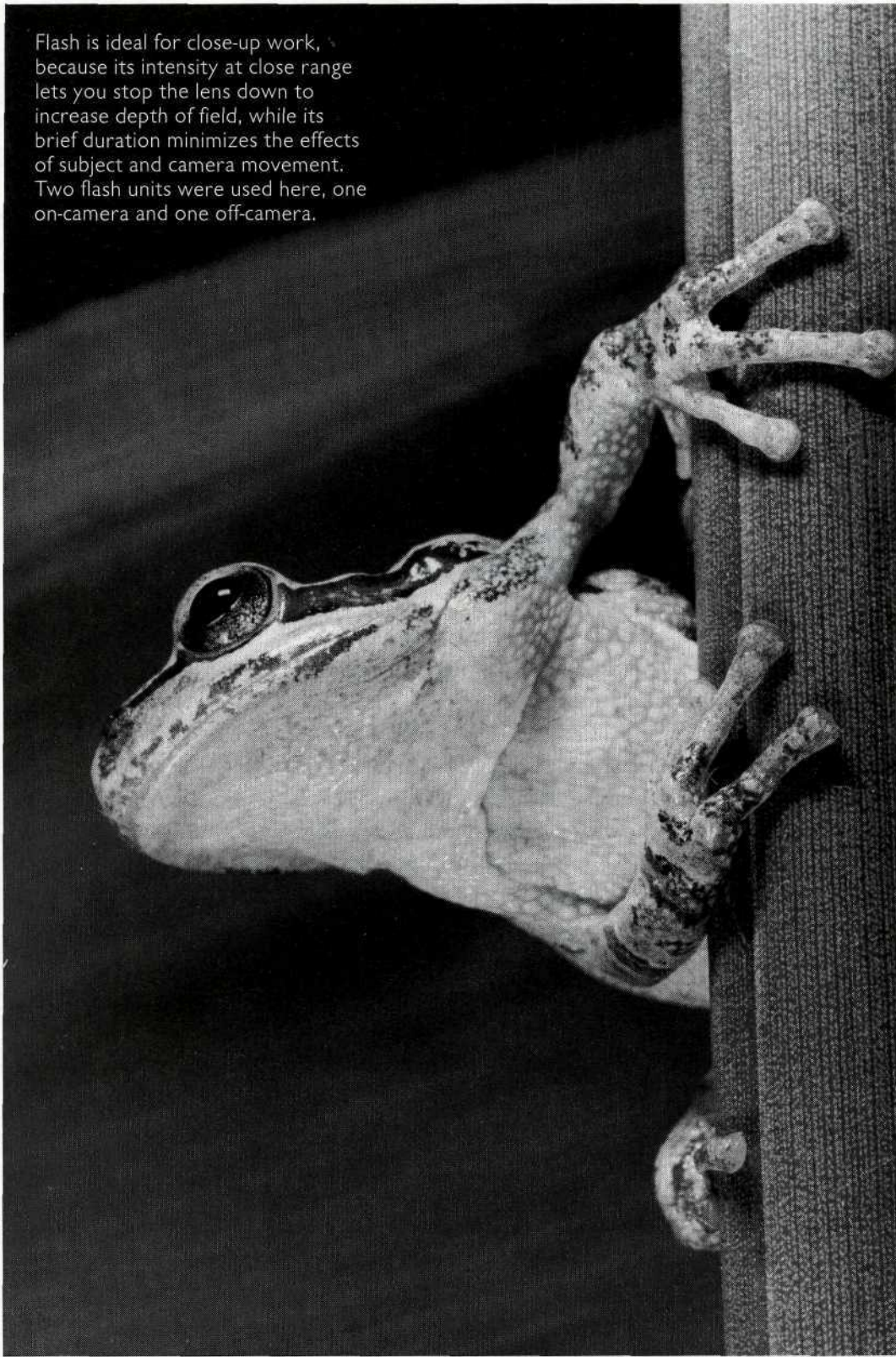
Occasionally you may encounter a shooting situation that will require you compensate for your flash's automatic setting by bracketing your exposure. If you photograph a dark subject against a bright background or use bounced flash, it may fool the automatic setting.

## Dedicated Flash Units

Dedicated flash units are manufactured for a specific camera system, and have complex electronics that enable the flash to control the exposure, so you don't have to do much more than turn the flash on and start shooting. The flash uses a set of pins on the hot-shoe base to talk to the camera and find out what zoom setting, aperture, shutter speed, film or digital ISO speed, or even focus distance is required. The flash then uses this information to help calculate the correct output during the exposure. With



Flash is ideal for close-up work, because its intensity at close range lets you stop the lens down to increase depth of field, while its brief duration minimizes the effects of subject and camera movement. Two flash units were used here, one on-camera and one off-camera.



setting and it will resort to function like the auto flash units we mentioned earlier.

## Flash Options

Having it your way is becoming the wave of photography and this is especially true for the electronic flash. Just about every variation of the electronic flash imaginable is now available for use with your camera system. Manufacturers include a variety of optional controls on their flash units, but unfortunately they vary from flash to flash. When shopping for a new flash, be sure to look carefully at the brochures to make sure the flash you have in mind has the features you require. If your camera's manufacturer does not have the type of flash or feature you need, keep in mind that there are many third-party suppliers that might. Here are a few of the options to consider when making your flash purchase.

**Manual Flash**—The manual flash setting is just as it sounds—you have to set everything yourself manually. With this setting, you can select full power,  $\frac{1}{2}$  power,  $\frac{1}{4}$  power or lower. You can refer to the back of the flash to know what *f*/stop to use with a given ISO at different distances to the subject. When using film cameras, experience and testing will help you gain correct exposure, but you can preview with the digital camera to make necessary corrections.

**Stroboscopic Flash**—This feature varies the number of times the flash

most cameras, dedicated flash is TTL: the exposure is determined by a meter reading made through the lens, for utmost accuracy.

To determine the operating distance of the flash, simply look at the LCD scale on the back of the unit to see the minimum and maximum distance the camera has selected based upon your *f*-stop setting. If you ever need to override any of the flash settings, just use the select menu on the back to increase or decrease the output of the flash. These flashes are so smart that they even know when you're not taking pictures so they go into a standby mode. Not to worry though, because they will be back ready to work on a moment's notice. Most units will even tell you if you have taken a picture that is over- or underexposed.

If you want to use a dedicated flash on a camera that does not speak the same language, you can use the auto

fires during an exposure, and the power setting for each flash. The shutter is held open for the entire exposure, so be sure to use a dark background so you don't overpower the scene with too much available light. As a subject moves through the scene, multiple images are formed on one film frame.

You can also use this function to paint with light. With the camera mounted on a tripod, depress the test fire button to start the stroboscope sequence and move the flash around your subject. Several groups of stroboscope flash sequences provide very soft lighting when photographing large objects.

**Slow Sync**—This feature allows you to take flash pictures with a slow shutter speed. Normally, the camera will set the shutter speed that is required to handhold the camera while maintaining a sharp available light exposure. With slow sync, the camera will use whatever long

exposure you desire and still fire the flash. This allows you to achieve a nice balance between available light and flash, even when the available light level is low in intensity. You will probably have to use a tripod and cable release if you want to keep both the available-lit background sharp.

**Rear-Curtain Sync**—This setting can be used for some creative applications when using long shutter speeds. Rear-curtain sync fires the flash at the end of the exposure instead of the start where it normally fires. Thus, ambient-light ghost-image “speed streaks” will record behind a subject moving across the frame, rather than in front of the subject—a more natural effect.

**Red-Eye Reduction**—This is a feature found on most flash units today. The flash unit emits a pre-exposure burst of light that causes the subject’s pupils to react, so that when the final image is taken, the red-eye effect will be minimized. Note that this is called red-eye *reduction*. The only way to *eliminate* red-eye is to move the flash unit away from the lens axis—possible with many accessory flash units, but not with built-in units.

**Ring Flash**—The ring flash is a special flash unit designed for close-up photography. It’s a circular flash tube that mounts on the front of the lens, surrounding it with even light. Many ring lights contain two or more flash tubes, so you can use any or all to provide ratio lighting. Most ring lights operate off a separate power pack and are synchronized through the hot-shoe on the top of the camera.

## Flash Accessories

To expand the versatility of your flash lighting techniques, manufacturers have created a wide variety of accessories. These include flash-head beam adjusters, colored filters, umbrella and softbox attachments, and bounce card attachments. Some of the adjusters are designed to expand the beam of the flash to cover wide-angle lenses, while others concentrate and narrow the light beam to extend the shooting range with telephoto lenses. Umbrella and softbox attachments provide soft lighting, while built-in bounce cards work great in situations where you want softer lighting using a single flash, but have no walls or ceilings from which to bounce the light.

If you plan on using multiple flashes, you will need to pick up a TTL flash cord to connect multiple flash units together. Flash extension cords allow you to move the flash off-camera to provide directional lighting. Some flashes have cordless triggering devices called slaves. Depending on the model, the slave can fire the flash at full power or provide complete cordless TTL exposure control.

You might also consider battery power packs if you do much high-speed photography. These units provide hundreds of flashes before needing recharging, so you can keep on taking pictures for hours.

## Let’s Go Shopping

Now that you have a better understanding of what’s available for flash photography, check out this list of flash manufacturers before making your buying decisions.

### Achiever

Achiever has more than a dozen different models of electronic flashes divided up into three groups: auto/manual, autofocus, and dedicated flash systems.

If you are looking for a more professional flash, check



Achiever 828

out the 828TW. It has a guide number of 92 for a flash range up to 46 feet, bounce flash head, and a second smaller flash at the base for perfect flash fill.

The 630AFD has a zoom head that covers a 28–85mm lens and can swivel in any direction for bounce flash photography. A

built-in AF illuminator helps the camera focus even in total darkness. Wide-angle diffusers and a color gel set are included.

The DZ632 is a dedicated flash system with a flash head that can cover a 24–85mm lens with a swivel head for bounce flash photography. This flash also has four automatic aperture settings, and an exposure check indicator. Achiever flash units are distributed by Satter, a division of Omega.

### Canon

Canon offers a variety of Speedlites that are compatible with its EOS series of AF 35mm SLR cameras.

The 550EX and its companion, the ST-E2 wireless transmitter, allow the use of multiple Speedlites under full E-TTL control without wires. The 550EX has a guide number of 180 with ISO 100, AF-Assist Beam, High Speed Sync, and a Flash Exposure Bracketing system.

Canon’s newest introduction, the MT-24EX Macro Twin Lite, is just the answer for photographers needing directional lighting for their macro work. The two flash heads can be moved to simulate natural lighting and they can even bounce and swivel.

Canon still offers the Ring Lite version, the MR-14EX, so you have a choice.

If you want a lot of flash power, you might consider the 480EG grip-style flash with a hefty guide number of 223 with ISO 100. It boasts a wide range of exposure control options including TTL and variable-power manual flash.

Smaller Canon flash units include the 540EZ, with its powerful high-output auto-zoom; the 420 EX with a guide number of 42; the 220EX that covers up to a 28mm; and the compact, economical 200E.



Canon MT-24EX

### Contax

Contax makes several TLA model flash units dedicated to their Contax cameras. The TLA 280 incorporates the use of two flash heads in one flash. The main head at the top can swivel or zoom for bounce flash, while the smaller flash at the base of the unit serves as a fill flash.

The TLA 360 also has the two flash heads, but can also deliver TTL, auto, and manual flash control. The TLA 360 flash also supports multi (strobo) flash control, and uses a power zoom head for wide-angle to telephoto lenses.



Contax TLA 280

The TLA 480 is a bracket-mounted flash that features three flash modes: TTL, auto, and manual control.

Second-curtain control is possible with this flash and the Contax N cameras. The flash head can be tilted 90° up, 180° to the left and

115° to the right for optimum bounce control.

The low-profile TLA 200 has a guide number of 20 with TTL Auto exposure control and slow sync operation.

### Metz

The Metz collection, distributed by Bogen Photo Corporation, have long been workhorse flashes for the working professional.

The key to the Metz system is the SCA (Special Camera Adaption) adapter, which allows you to change adapters when you change camera brands. More than 15 camera manufacturers are supported, which makes Metz flash units compatible with just about every camera made.

One of the more powerful grip flash units is the 60CT flash with a guide number of 197. With a recycle time of .2 to 4 seconds, this flash can shoot from 160 to 4500 images on one charge. The 70MZ flash head has a power zoom that covers 24–105mm lenses and it features cordless TTL control, auto-remote flash modes and rear-curtain flash sync.



Metz 60CT

The 34AF-3 dedicated shoe flash is small enough to fit in a shirt pocket and has an autofocus measuring beam for low light. The 40AF-4 is a fully dedicated flash for Canon, Minolta, and Nikon SLRs. It has a tilt-up zoom head with automatic or manual power zoom settings. The 54MZ-3 uses a twin flash head with one set for bounce and one direct to provide total lighting control.

### Minolta

Minolta's macro flash system includes the Macro Twin Flash 2400 and the Macro Ring Flash 1200. Used in conjunction with the new Macro Flash controller, you have total control over ratio, intensity, and the quality of light

falling on the subject. The Macro Twin Flash 2400 has adjustable flash heads and features a variety of attachments for creative lighting effects. Both units are perfect for close-up photos of flowers, animals or collectables.



Minolta Program Flash 3600HS(D) & 5600HS(D)

The 5600HS(D) and 3600HS(D) are designed to work with

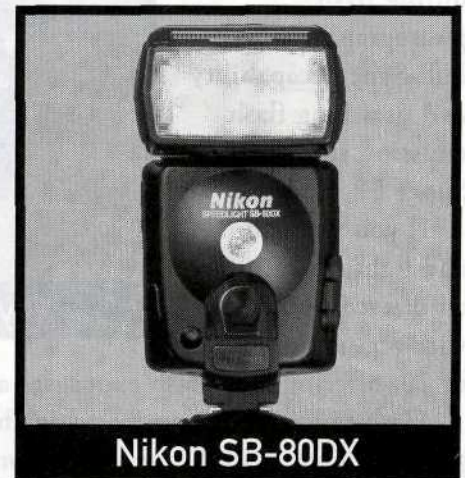
the ADI (Advanced Distance Integration) flash metering in newer Maxxum cameras and on the new DiMAGE 7i digital camera. Each flash unit allows fully automatic flash sync at shutter speeds up to 1/2,000, and features a power zoom head that automatically covers focal lengths from 24–85mm. The 5600HS(D) features five custom functions and the flash head can tilt down 10° for macro applications or turn 90° up or to the side. The flash modes include manual, multiple flash, ratio flash, or modeling flash.

### Nikon

Nikon features a full line of effective flash units made exclusively for their line of SLR cameras.

Their newest addition, the SB-80DX AF Speedlight, features a power zoom that changes the head position from 24–105mm to match the lens' focal length. It also has an adapter so that it can cover lenses as wide as 14mm, and a diffusion dome to soften shadows.

For the macro photographer, the new TTL Macro Speedlight SB-29s is the latest in ring flash technology. Brightness can be adjusted, and a modeling light lets you check the effect before you fire the shutter.



Nikon SB-80DX

Nikon also has a new compact SB-30 unit that operates as a wireless speedlight for multiple flash photography. It can tilt downward and has an adapter that allows for use with lenses as wide as 17mm.

The SB-50DX can work in conjunction with a Nikon SLR's built-in flash, so the two flashes can use the TTL metering system to achieve the best ratio of bounce and direct lighting. The compact little flash has a guide number of 72 with ISO 100 film and can be used as a wireless slave with TTL Auto Control.

## Nissin

Nissin, distributed by R.T.S. Inc., includes both shoe- and handle-mounted flash units designed for use with most SLR cameras.



**Nissin Auto 6000AF  
& Auto 5200G**

The sleek Auto 6000AF Thyristor is Nissin's top-of-the-line handle mount flash. It features a powerful bounce-and-swivel head and auto-shut-off energy-saving circuitry. This flash offers full TTL, manual and five auto f-stop ranges of f/2.8, f/4, f/5.6, f/8 and

f/11. It also features five variable power ratios and has a maximum auto range of 70 feet.

The Auto 5200G Thyristor is also a handle-grip flash, but it only features three auto settings and two manual settings. Both flashes feature a wide assortment of power packs, sync cords, TTL modules, bounce cards, and wide-angle diffusers. For the digital-camera user, Nissin has a special Digislave whose built-in slave is triggered when the main flash in the digital camera is fired.

## Olympus

The Olympus flash systems, primarily designed for the OM-series cameras, provide outstanding light coverage for edge-to-edge sharpness.

The F280 uses Off-The-Film metering during flash photography. It has Full-Syncro capability and uses long flash emission time in the Super FP mode.

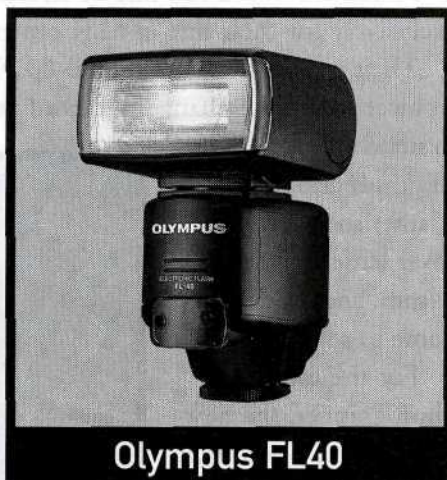
If you want slim and light, the S20 is an ultracompact flash with a guide number of 20, offering auto flash exposures at f/2.8 and f/5.6.

Flash power is demonstrated in the G40 flash with its guide number of 132, swivel head, multi-flash mode, and rear-curtain mode which fires the flash at the end of the exposure.

The FL40 flash was created specifically for filmless photography with the C-2500 digital camera, but it can also be used with film-based cameras that have a hot-shoe attachment. Its swivel and bounce flash head can easily cover a digital camera's focal length of 9.2–28mm (equivalent to 36–110mm on a 35mm camera). It uses a low-light illuminator, exposure control of  $\pm 2$  stops, front and rear sync, and flash sync from  $\frac{1}{250}$  second to 8 seconds.

## Pentax

Pentax offers more than a half dozen AF flash units, with



**Olympus FL40**

guide numbers ranging from 14 to 164 at ISO 100.

Top of the lineup includes the AF500FTZ TTL shoe-mount flash that outputs a guide number of 164. The power zoom head automatically sets the beam angle to match lenses from 24–85mm. Other flash modes include auto, adjustable manual, stroboscopic flash, trailing-shutter sync, swivel head for bounce flash, autofocus spot beam, and contrast control.

The AF330FTZ has a zoom flash head with an autofocus spot beam, and contrast control.



**Pentax AF360FGZ**

At 7.4 ounces, this small flash has a healthy 108 guide number.

The AF360FGZ has those same features, plus a guide number of 119 and an adjustable flash head for swivel and bounce.

The AF220T is a very compact little

flash with 60° or 90° bounce head, automatic X-sync, automatic aperture settings, and an auto check lamp.

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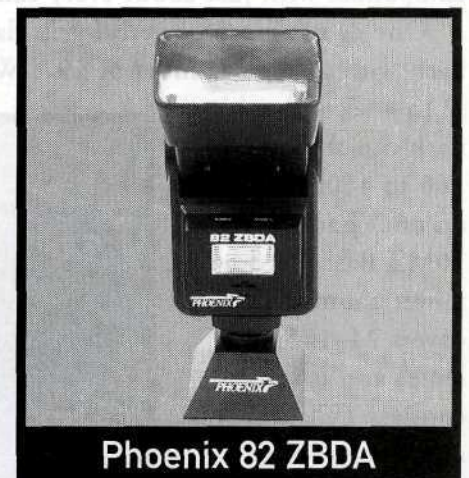
The Phoenix Corporation makes more than a dozen manual, auto, and TTL/Infrared flash units. Their most recent addition is the D79-BZS Digital Automatic Slave. It has a slave range of 15–33 feet, can swivel or bounce, and features a zoom head with four settings.

Other automatic flashes include the 82 ZBDA, which features a twin flash head that allows bounce flash and control over beam angle with a power zoom head. The 93 ZBSA also has bounce and power zoom capability with a head that tilts and swivels. Most of their autofocus lineup provide infrared-assist to help the camera autofocus when the light levels are too low, and have bounce capability with zoom heads that swivel and tilt. For the macro crowd, they have a RL-59 ring flash that allows small apertures and greater depth of field.

In the manual group, you'll find a 49S with a slave option, and the HMS-98T handle mount flash with twin flash heads to provide both bounce and direct flash.

## Quantum

Quantum Instruments is well known for its dependable battery packs and portable flash units. The Qflash model T2 produces a guide number of 160, while the Qflash Model X2 has a guide number of 220. The Qflash system features both TTL and auto mode, along with a flexible flash head that takes a variety of flash diffusers, or bare



**Phoenix 82 ZBDA**

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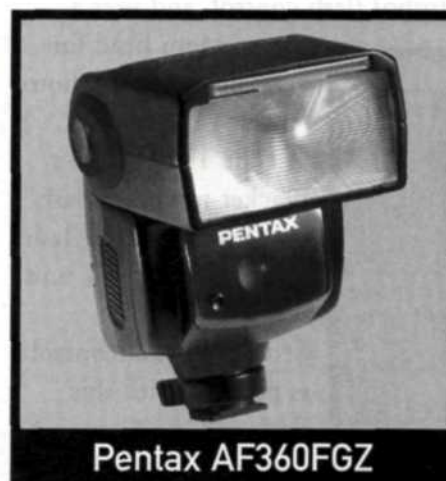


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**Phoenix 82 ZBDA**





**Quantum T2 & X2**

bulb. In manual mode you have 19 different settings from f/1.4 to f/32. An LCD display on the back provides you with information about f-stop, flash range, power settings, and the selected program mode.

When it comes to power, Quantum is able to provide power packs that recycle flash units very rapidly. The 12-ounce Battery 1 Compact is designed for those power-hungry digital cameras and the Bantam is a small, lightweight battery that can reduce your recycle time by half. The popular Quantum Battery 1+ allows you to power dual mount flashes and the Turbos can reduce your recycle time on a shoe-mounted flash to 1 second.

**Sigma**

Sigma's EF series of flash units are designed to work with Sigma, Canon, Minolta, Nikon and Pentax camera systems. They all feature high guide numbers and full TTL exposure automation. There are two models in each series: the standard ST models featuring full exposure automation and full auto-zoom function; and the Super models, having the same automation, but more user control. The Super models also have extra functions like wireless TTL exposure control, slave, rear-curtain sync, stroboscopic effect, high-speed sync, red-eye reduction and a modeling lamp.

The EF-500 ST and EF-500 Super have a guide number of 165 and exposure options include TTL, or manual at full or 1/6 power. Their power-zoom heads can accommodate lens focal lengths from 28-105mm, and can swivel, rotate and tilt to do everything from close-up to bounce flash.

The EF-430 ST and EF-430 have a guide number of 142 and support TTL exposure, bounce, and automatic flash-fill. The zoom flash head automatically adjusts for the focal length of a lens from 28-80mm.

**Sunpak**

Sunpak offers an extremely large selection of flash units

for just about every camera brand and level of expertise. To make your choice easier, Sunpak has created four distinct groups: professional series, shoe-mount autofocus, dedicated flash with fixed-mounts, and shoe-mount flash units.

The selection expands even further with the PZ5000AF, a hot-shoe-mounted flash with an auto power zoom from 28-135mm. The flash head can also tilt up and down and swivel to the side for bounce flash. With a powerful guide number of 180 and an ISO range of 6-6400 this is a very adaptable unit. The features include TTL, auto, power ratio, manual, second-curtain sync, multi-flash stroboscopic, and slave.



**Sunpak PZ5000AF**

The handle-mounted 622 Super has seven interchangeable flash heads, a wide range of different dedicated camera modules, seven auto aperture settings

and manual control down to 1/128 power.

The PZ4000AF shoe-mount flash features a motorized zoom head that automatically adjusts the flash to match the focal length of lenses from 28-80mm. The DX-8R and DX-12R ringlights are designed for medical, industrial, or creative applications.

**Vivitar**

One of the longest-running models of an electronic flash is the Vivitar 283, introduced over 25 years ago. Much of the technology developed for that unit has evolved into an entire series of flash units that cover all photographic skill levels.

The most recent addition to the line is the 850AF, which replaces the 840AF unit. The 850AF has a power zoom head, a guide number of 120 with ISO 100, complete TTL auto operation and is available for Canon, Minolta, Nikon, and Pentax AF cameras. Manual power settings of full, 1/2, 1/4, and 1/8 power give you the option of working with manual exposure.



**Vivitar 850AF**

Macro photographers will be able to control light on their nature scenes with the 6000AF macro ring flash. This full TTL exposure unit mounts directly to the lens, and connects to a power supply attached to the hot-shoe on the top of the camera.

Vivitar also includes a series of flash units like the 2800, 2000, and the 16A that can be used with some of the more basic camera systems. ■