

# points on flash

## **KODAK SERVICE LEAFLET No. 1**

The simplicity of today's flash equipment has reduced maintenance to a minimum; all that is usually required is the replacement of batteries when necessary. It is not surprising, therefore, that millions of successful flash pictures are taken every year.

This leaflet explains how flash works, and gives some useful advice on taking good flash pictures.

## The flash unit

Until recently there have been two main types of flash unit: one which takes expendable flashbulbs or flashcubes and one which is fitted with an electronic flash tube. Both these kinds of unit rely on an electrical circuit for operation. The latest innovation is the magicube in which the flash is triggered mechanically and requires no electrical circuit.

Flash units which take a flashbulb or flashcube generally operate on dry batteries. Use only the batteries recommended for the equipment; other types may either not fit or be unable to take the load, or may cause trouble by leaking. When you fit the batteries, make sure that they are fresh, and place them in the flash unit correctly (with + and - terminals *right* way round). If you reverse them you run the risk of flash failure. The batteries must make good electrical contact inside the unit. Deposits (sometimes invisible) tend to form on the metal surfaces and prevent good contact, so you should regularly rub the battery terminals and the metal contacts inside the unit with a rough cloth to keep them free of deposits. If the contacts are difficult to get at, use a rubber eraser on the end of a pencil. Never use abrasive materials such as emery cloth or sandpaper; these will damage the plating. Before you put the flash unit away, take the batteries out. Exhausted batteries can leak and cause corrosion. Keep the batteries nearby in a plastic bag, so that you don't forget to put them back in again when you next use the unit. Clean all the contacts before you refit the batteries. Batteries shouldn't be stored for a long time because they deteriorate even when not being used. Buy them just before you need them. In general, manganese alkaline and mercury batteries last longer than zinc carbon batteries. If you think that a battery is running down, fit a new one.

Electrical contacts in the unit sometimes become twisted or bent. When they no longer make firm contact, raise or bend them slightly. Connections have a habit of working loose, particularly on extension leads, so make regular checks of all connections during a flash session. If you suspect a lead of having a break, have it properly checked. Many electronic flash units are powered by accumulators. To keep these in peak condition, you must recharge them regularly and maintain the electrolyte level with distilled water. A sure sign that the accumulators need recharging is a long recovery time between flashes but don't wait for this to happen before recharging.

## Adjustable cameras

Adjustable cameras have a variable lens aperture which allows you to take flash pictures at a wider range of flash-to-subject distances than you could with less sophisticated cameras. To find the correct lens aperture use the tables given with the bulbs or the film. Alternatively you can use guide numbers. These are based on the various combinations of flashbulb, film speed, shutter speed, and synchronization. Guide numbers can be found on the cartons containing flashbulbs or flashcubes, in photographic literature, or in the instruction books provided with the flash equipment. You may find the numbers varying from one source of information to another, but these differences are usually very slight and are the result of different types of flash equipment being used to determine the guide number. If you are in doubt, the safest numbers to use are those given with the equipment itself.

When you have selected the guide number for your particular set of exposing conditions, use the following formula to find the correct lens aperture.

$$\text{Lens aperture setting (f/no)} = \frac{\text{Guide number}}{\text{Flash-to-subject distance (ft)}}$$

Example:

With a guide number of 80 and a flash-to-subject distance of 10 feet.

$$\text{Lens aperture setting (f/no)} = \frac{80}{10} = 8$$

So correct lens aperture setting is f/8

Guide numbers are correctly named—they are only intended as a guide; if your subjects are particularly light or dark, or the room very large or very small you may have to make a slight adjustment to the calculated exposure (see below).

### Causes of over- and under-exposure

Over-exposure will give you "washed-out" slides, or very dense negatives. It may occur—

- if the guide number used is too low
- if the flash-to-subject distance is less than that recommended
- if the room is smaller than average with light walls (it will need approximately 1 stop less exposure).



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Before you put the flash unit away, take the batteries out. Exhausted batteries can leak and cause corrosion. Keep the batteries nearby in a plastic bag, so that you don't forget to put them back in again when you next use the unit. Clean all the contacts before you refit the batteries. Batteries shouldn't be stored for a long time because they deteriorate even when not being used. Buy them just before you need them. In general, manganese alkaline and mercury batteries last longer than zinc carbon batteries. If you think that a battery is running down, fit a new one.

Electrical contacts in the unit sometimes become twisted or bent. When they no longer make firm contact, raise or bend them slightly. Connections have a habit of working loose, particularly on extension leads, so make regular checks of all connections during a flash session. If you suspect a lead of having a break, have it properly checked. Many electronic flash units are powered by accumulators. To keep these in peak condition, you must recharge them regularly and maintain the electrolyte level with distilled water. A sure sign that the accumulators need recharging is a long recovery time between flashes but don't wait for this to happen before recharging.

When you put an electronic flash unit away, remember to switch off the power and discharge the tube.

Remember that you can get a severe electric shock if you tamper with the inside of an electronic flash unit, because the storage capacitors may still be holding a high charge.

Some electronic flash units can also be run from the mains electricity supply. This saves using the accumulators.

## Flashbulbs, flashcubes and magicubes

These are an expendable and relatively cheap source of flash for the amateur photographer. The most commonly used bulbs are the AG3B and the PF1B. They both have similar light outputs but fit different types of socket, so make sure that you get the right one for your equipment. AG3B bulbs usually come in packs of five, held in a special plastic sleeve to protect their wire contacts. Slide the bulbs out of the sleeve to avoid damaging the wire contacts, then slide or push home the narrow glass base of the bulb between the bulb contacts of the flash unit.

Cameras with focal plane shutters need a special type of flashbulb, so look up the camera's instructions or ask your dealer which ones you should use.

Flashcubes have become very popular with the amateur photographer, because you can take four flash pictures before you need to replace the cube. To use flashcubes you must have equipment fitted with a flashcube socket. After each flash picture the flashcube rotates through 90°, so that a fresh bulb is facing forward, ready for the next picture.

The magicube also rotates to give four flashes, but here the flash is operated mechanically. A firing pin, linked to the shutter mechanism, is fitted in the magicube socket on the camera. As the shutter is released, this pin enters a small hole under the forward-facing side of the magicube and fires the flash. Remember that the magicube will only operate on cameras which are fitted with this mechanism.

## KODAK 'Instamatic' Cameras

Some 'Instamatic' Cameras have a flash unit built in; with others you have to attach a KODAK 'Instamatic' Flashcube Holder. The instructions packed with the equipment recommend the correct batteries and tell you how to fit them. Keep the contacts and terminals free from deposits, as described, to ensure good

electrical contact. Push the Flashcube Holder back on the camera as far as it will go. If your camera has the battery compartment in the base, make sure that the sliding battery cover is *fully* closed before taking flash pictures. If yours is a "pop-up" flashholder, check that the flashholder is fully raised before taking each flash picture: it sometimes gets pushed down when a fresh bulb is inserted.

The metal contacts inside the flashcube sockets often become discoloured. Clean them occasionally by fitting a flashcube and rotating it manually once or twice. Don't press down on the flashcube. Don't touch the contacts or attempt to clean them in any other way.

The latest 'Instamatic' Cameras have been designed to take the magicube. Flashcubes will not operate on these cameras, as the firing mechanism is purely mechanical. Be sure to buy magicubes if you have one of these new models. If in doubt, consult your dealer.

## Synchronization

The flash synchronization mechanism in the camera ensures that the shutter opens when the maximum amount of light from the bulb is illuminating the subject. With the more advanced adjustable cameras, flash synchronization can be of two types, "X" or "M". Some cameras have both types and some only one. If the synchronization is not marked you can assume that it is "X".

"X" Synchronization—Use with electronic flash at all shutter speeds, with flashbulbs or flashcubes at shutter speeds up to 1/60 second.

"M" Synchronization—Use with flashbulbs or flashcubes at all shutter speeds. Do not use with electronic flash.

## Flash Exposure

Factors which affect the exposure are:

- The light output of the bulb
- The flash-to-subject distance
- The size of the lens aperture
- The speed (sensitivity) of the film
- The shutter speed

## Inexpensive cameras

Control of exposure on these cameras is usually limited. Nevertheless, they can produce excellent flash pictures, with less complication than the fully adjustable cameras. Just keep within the recommended flash-to-subject distance range, and follow the camera instructions; many cameras have a special flash setting.



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Over-exposure will give you "washed-out" slides, or very dense negatives. It may occur—

- if the guide number used is too low
- if the flash-to-subject distance is less than that recommended
- if the room is smaller than average with light walls (it will need approximately 1 stop less exposure).

Under-exposure will give you dark slides, or very thin negatives. It may occur—

- if the guide number used is too high
- if the flash-to-subject distance is greater than that recommended
- if the room is larger than average (give approximately 1 stop more exposure)
- if the picture is taken outdoors at night (give approximately 2 stops more exposure)
- if you use "X" synchronization with flashbulbs or flashcubes at shutter speeds faster than 1/60 second (e.g. 1/125 sec)
- if the reflector is dirty (use metal polish, not cleaning powder).

## General Tips

Good flash photography is not possible in a smoky atmosphere. The haziness produces dull pictures with degraded colours. If you want bright, colourful pictures of a party or similar occasion, take them early in the festivities when the air is clear. Leave the room lights on when taking flash pictures; it gives a more natural appearance to the scene.

The reflection of the flash from a shiny surface will spoil your flash picture, so try to position the camera so that the flash fires at an oblique angle to the surface, and the reflection doesn't appear in the picture.

You may remember seeing in flash pictures of people, a bright red spot where the pupil of the eye should appear black. This effect arises because the flash is reflected by the eye. The KODAK Magicube Extender helps to prevent this when taking pictures in dim or moderately lit interiors. More pleasing shadow effects are created in close-ups of people, flowers and many small subjects. It can be fitted only to KODAK 'Instamatic' Cameras that take Magicubes.

Use blue flashbulbs for taking colour or black-and-white pictures. If you are using electronic flash you may find the colour pictures looking slightly blue. To correct this, some units require also KODAK 'Wratten' Filters Nos. 1A, 81, 81A, 81B or KODAK CC10Y Filter to be fitted over the camera lens.

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