

SPEEDLITE

PHOTOGRAPHY



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Flash modes



AUTO FLASH

Although the pop-up flash is convenient to have at hand, it does not have the same control as a flashgun 'speedlite'. This is due to the fact you are unable to adjust the position or angle of the flash. The pop-up flash is also not as powerful as a speedlite. Having said that you do have the ability to change the flash modes and flash compensation.



OPENING THE FLASH

If you are in any of the auto or picture modes the flash fires when programmed. If you are in any other mode such as M, A, S, P you are required to press the flash button to popup the flash.



Some built in flashes require you to manually pop up the flash.



FLASH WHEN IN AUTO MODE

When you are in any of the Auto Modes the flash is then under the control of the camera. You are unable to control the flash because the auto function overrides the settings.

Auto flash (camera decides when flash needs to be used)



ANATOMY OF A FLASHGUN OR SPEEDLITE

1. Flash head- look for one that can be rotated or flipped to allow you to bounce and direct light.
2. AF assist- this projects an infrared beam to help focus in dim light.
3. Hotshoe- this is the connection between camera and flash used to trigger the flash and communicate data for metering (TTL).
4. Fold away reflector and diffuser- the reflector can be used with the gun in bounce mode to direct a small amount of light towards the subject. The diffuser is used to disperse light over a wider area when shooting with an ultra wide lens.



ANATOMY OF A FLASHGUN OR SPEEDLITE

Bounce flash
catch light- to
help light go
forward onto
the subject

Wide angle
adapter- this is
for when you
use wide angle
lenses with flash
to make sure
the flash
coverage is even



ANATOMY OF A FLASHGUN OR SPEEDLITE



Tilt/swivel of the flash head

Mode- this allows you to control the different modes e.g. TTL or manual

Ready Lamp- this lets you know when the flash is ready to fire. On this flash it is also the flash test



Zoom- this allows you to change the zoom of the flash to match your lens angle.

Stroboscopic Flash setting

Command dial

ANATOMY OF A FLASHGUN OR SPEEDLITE

Do not use flash with your lens hood attached.

If you have a lens hood on when using a flash it will catch the light and create a shadow on the image.



RED-EYE



Anti red-eye aims to prevent red-eye in flash portraits by using a series of pre-flashes to make the subject's pupil narrow before the exposure is taken.



FRONT AND REAR CURTAIN SYNC



This works in the same way as slow sync except that the flash is fired at the end of the exposure rather than at the start. This is great for leaving light trails behind a moving subject.



FILL-IN FLASH

- Flash is not just for low light it can be really useful for getting rid of hard shadows created by bright sunshine.
- Flash does not have to be the primary light source for exposure.
- Fill-in flash is a technique where flash is used to brighten deep areas of shadow



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Flash Compensation

PHOTOGRAPHY



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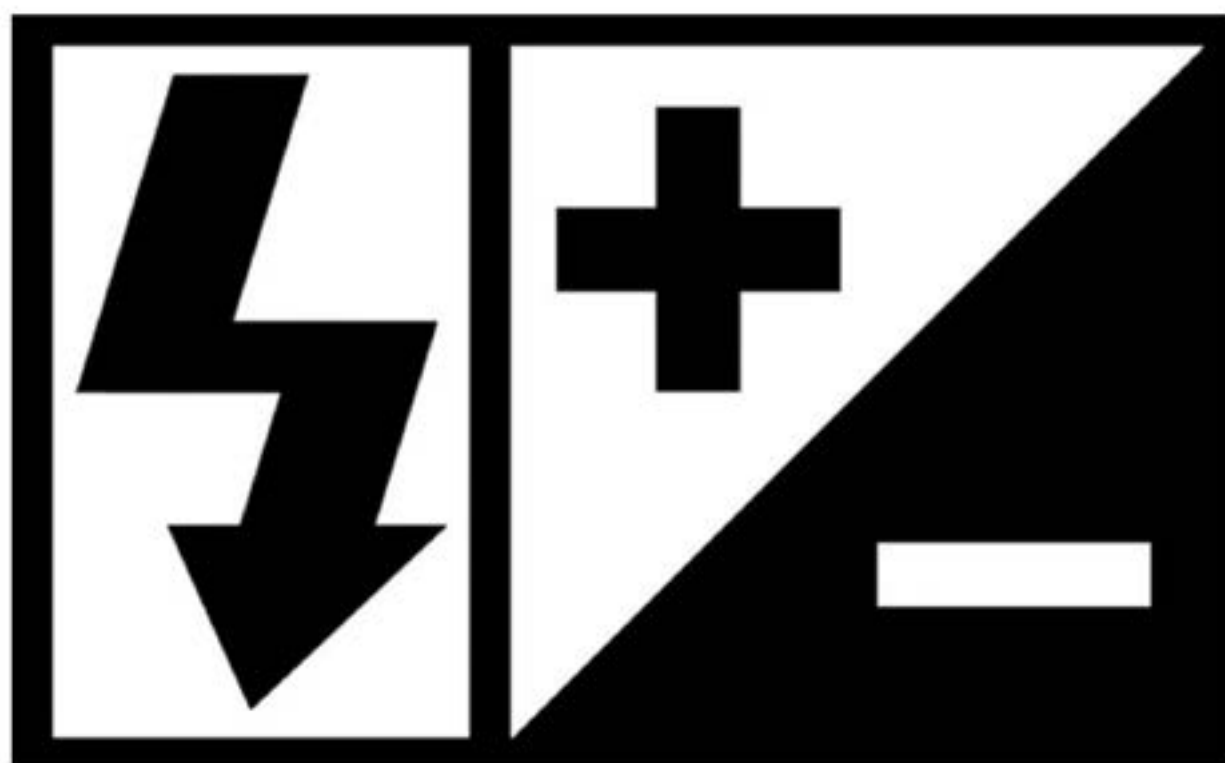
FLASH EXPOSURE COMPENSATION

When flash exposure compensation is applied, no changes are made to aperture, shutter speed or ISO only the level of the flash emitted is altered.

+ increases the power of the burst

-Reduces the flash power output

Flash compensation changes the flash verses ambient ratio.



EXPOSURE COMPENSATION

How to change the background brightness with exposure compensation

- When you take a picture with flash, your flash only effects the immediate area. The background brightness of the scene is not effected as this is ambient light. There has been no added light from the flash.
- In order to impact on the background we use exposure compensation (not flash compensation).



- Dialling to the - will make the background darker and dialling to the + will make the background lighter.

EXPOSURE COMPENSATION

Flash 0 Ex 0



EXPOSURE COMPENSATION

Flash 0 Ex -1



EXPOSURE COMPENSATION

Flash 0 Ex -2



EXPOSURE COMPENSATION

Flash 0 Ex 0



EXPOSURE COMPENSATION

Flash 0 Ex -1



EXPOSURE COMPENSATION

Flash 0 Ex -2



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Bounce Flash & Other flash

techniques



BOUNCE FLASH

Bounce flash is a technique where the flash head is intentionally positioned to provide indirect light onto the subject. It is best to bounce light off a large portable reflector, otherwise the bounced light will adopt the colour characteristics of the surface it strikes. Not only is bounced light more diffused and flattering, it can also reduce distracting hotspots.



BOUNCE FLASH

Direct Flash



BOUNCE FLASH

Bounce Flash



FLASH HOT SPOTS

This is caused when light hitting the subject is uneven, resulting in the light being brighter at one spot on the subject.



LIGHTING RATIOS

•Lighting contrast is the difference among the level of illumination between the main and the fill light. The difference can be measured in stops and recorded as a light ratio.

Stops Light ratio

1 2:1

2 4:1

3 8:1

4 16:1

5 32:1

•You measure the light ratio by taking a light reading from the brightest point and then the darkest. Calculate how many stops difference there is between each one.



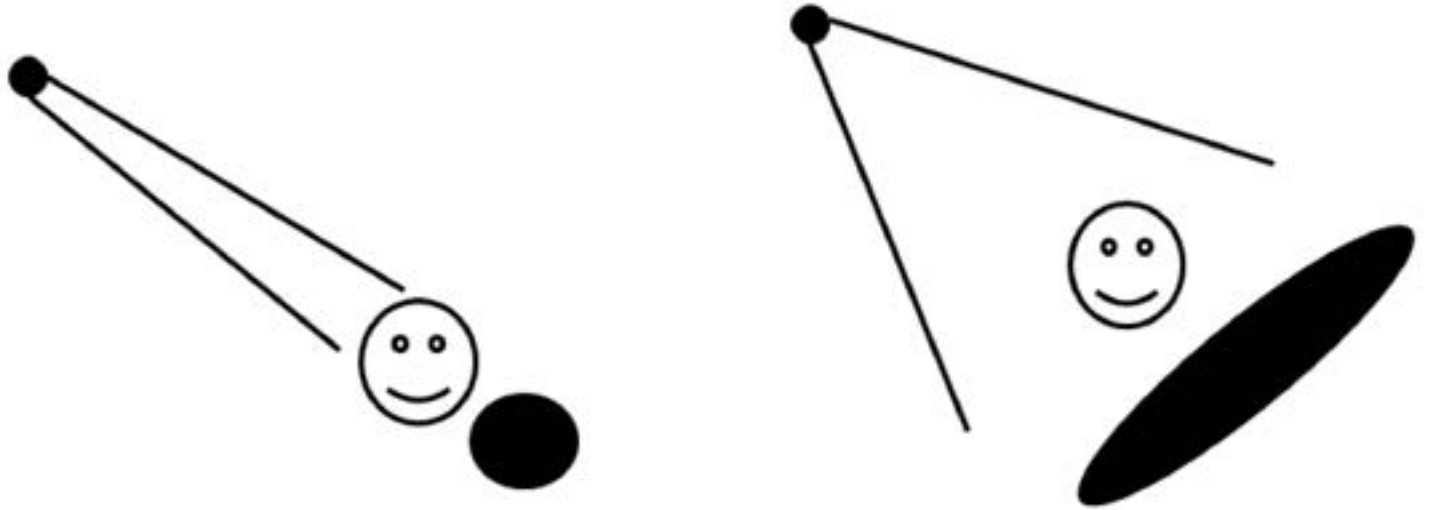
4

Flash Theory



FLASH THEORY

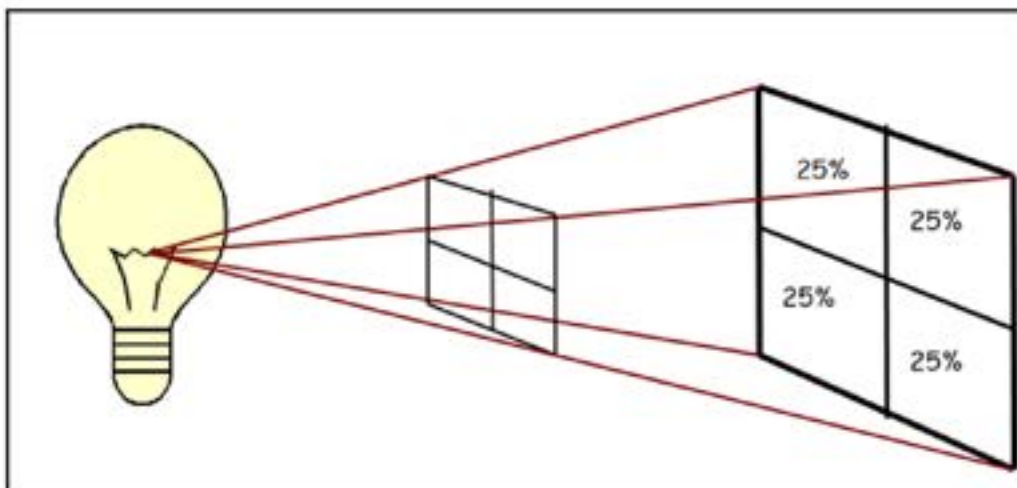
Hard light is a light source from a distance. The closer it gets the softer it becomes, because the light source gets bigger due to it being closer in proximity to the subject.



Quality of light is about the shadows produced not the intensity.

FALL OFF EFFECT AND INVERSE SQUARE LAW

- The further light travels the weaker it gets.
- This is a principle of physics which states 'The intensity of illumination on a subject due to a point source of light is inversely proportional to the square of the distance between them.'
- If a reading is F16 when the light to subject distance is one metre, at two metres the reading would be F8, at 4 metres it would be F4.
- In friendlier terms this means that every time the distance between a subject and light source is doubled, the light hitting the subject drops by 4 times (or 2 stops).



FLASH SYNC SPEED



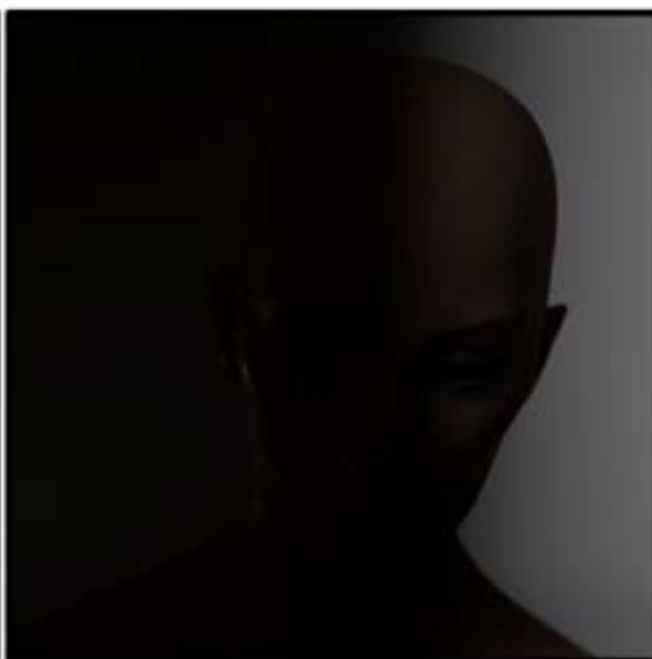
1/125 sec



1/200 sec



1/250 sec



1/500 sec

FLASH SYNC SPEED

If your shutter speed is set typically faster than 1/200sec then you will get the shadow of the shutter on the image.

Shutter Speed set at 1/250 sec. You can just begin to see the shadow from uneven exposure .



FLASH RECYCLE TIME

- This is the length of time it takes for a flash unit to recharge its capacitors and be ready for use after being fired. Typically this is seconds but the higher the power setting the longer the recycle time will be.
- When buying a flash unit, a quick recycle time is important because it allows you to shoot a number of frames in quick succession.



GUIDE NUMBER

- The guide number (GN) of a flash unit is given by the manufacturer and indicates the power and operating distance. The number can be used to calculate the relevant aperture or the distance that the flash can effectively travel. The number is usually stated in feet or metres for a sensitivity rating to the camera's lowest ISO.
- In manual flash mode, divide the guide number by the camera-to-subject distance in meters to calculate the required aperture.
- $F\text{-stop} = GN / \text{distance}$
- $\text{Distance} = GN / F\text{-stop}$



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Advanced Flash Skills

PHOTOGRAPHY



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OFF CAMERA FLASH

With a speedlite you are able to take it off your camera to get more control on how you light a scene. The two main ways are corded and wireless.

- Corded attaches to the hotshoe on your camera and flash. This gives a good connection and is reliable. You can pick these up for a very good price.



- The other option is wireless. This is attached to the speedlite and the hotshoe of the camera and communicates without the need for wires. This means you can be further away from the subject. These can be quite expensive.



WAYS TO FIRE YOUR FLASH GUN

Other options to fire your flash off camera is that some camera manufactures offer a built in wireless flash. This however, can struggle to communicate with your flash if you are more than seven metres from your flash or in bright sunshine.

You also have the option of using an infrared trigger, these can be temperamental when outside though.



SPEEDLITE TO LIGHTING STAND ADAPTER

You need to have your speedlite attached to something so that you do not have to hold it. This means that you can position your flash away from your camera and know that it is secure. You can purchase an adapter which allows you to connect your speedlite on one end and the other attaches to a lighting stand or tripod. A lighting stand is generally better to use because it can normally go higher than a tripod especially when the subject is standing up. When buying an adapter look for one that has a umbrella slot to enable you to use studio lighting umbrellas.



Screw thread for lighting stand or tripod



SHUTTER SPEED

Why Shutter Speed is not part of the exposure calculation when using flash

Here is an example:

Imagine a black room with no light at all.

If you had the shutter open on bulb, no image would be recorded because there is no light.

The flash is then fired and therefore an image is recorded.

The aperture controls how much light gets in or in other words how much flash light gets in.

Shutter speed is not irrelevant to our photography, but it is irrelevant to the light contribution made to the flash. Shutter speed has an effect on the ambient light in the scene.

SHUTTER SPEED

Shutter speed in flash calculation

When shooting a mix of ambient and flash light we use the shutter speed to control the ambient ratio, and the aperture and flash power for the flash intensity.

A shutter speed set at 1/125 has very little influence on the ambient light in the shot.

If you select a slower shutter speed, it will allow more ambient light to be read.

ADJUSTING THE EXPOSURE

- Aperture= the brightness of the subject and depth of field
- Shutter Speed= controls the ambient light and not the subject light
- Power of Flash= the brightness of the subject
- ISO = is like the volume switch it controls both subject and ambient light. E.g. If the subject and background is dark by putting up the ISO both get lighter
- Make sure your shutter speed does not go above 1/200 as you will get the shutter in the frame



First test shot. Subject and background too bright, so I reduced the ISO. Because the subject was very bright I also reduced the power of the flash. I could have also made the aperture smaller.

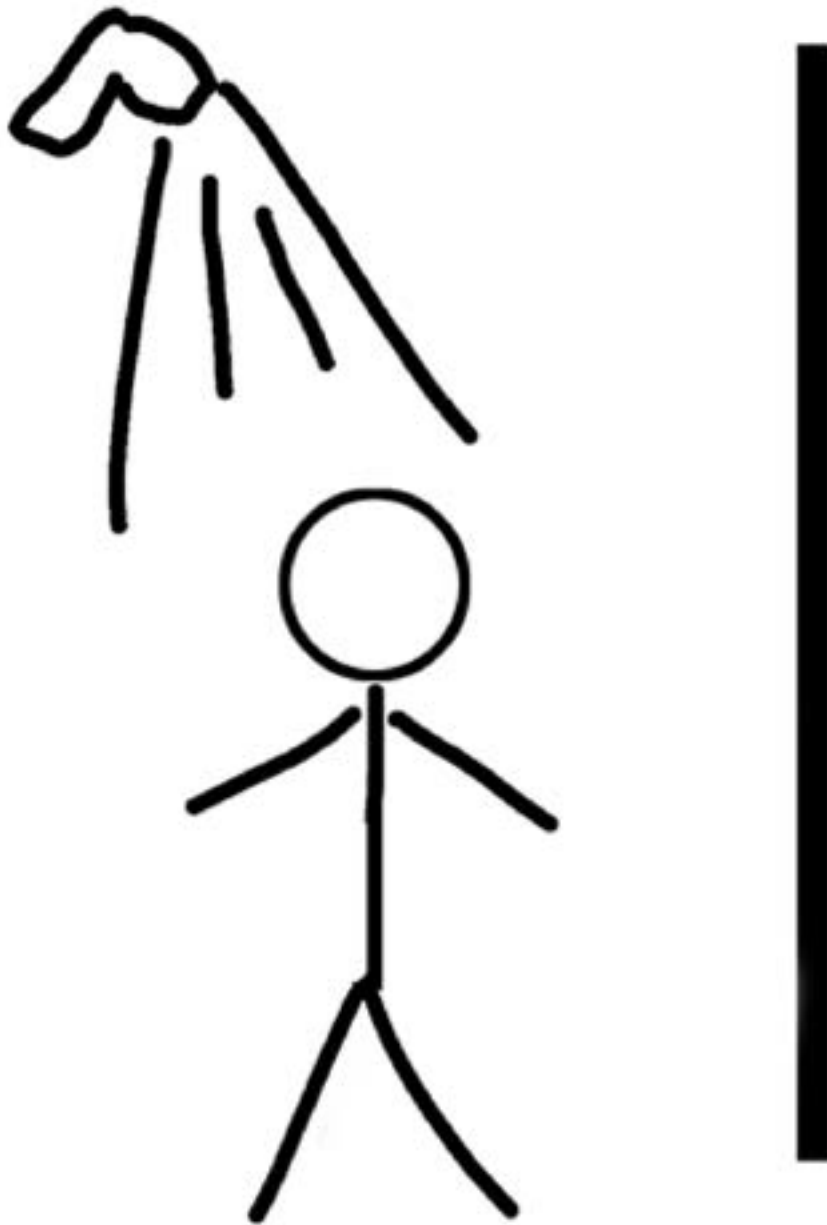


Second test shot. Subject and background now the correct brightness



SUBJECT AND BACKGROUND BRIGHTNESS

If you want the background to be dark the flash needs to be close to the subject



WATCH FOR UNWANTED SHADOWS

This is due to the angle of the light. Moving the flash around to the front has taken the hard effect off the shadow



HIDING THE FLASH TO DO A WIDE ROOM SHOT

Use features in the room to hide the flash. You can then use flash and achieve a wide shot.

Flash



HIDING THE FLASH TO DO A WIDE ROOM SHOT

Use features in the room to hide the flash. You can then use flash and achieve a wide shot.



Flash

FLASH WHEN IN MANUAL MODE

To sum up:

- A smaller light source is a harder one
- Aperture controls the flash (how bright the subject is)
- Shutter Speed controls the ambient light and not the subject
- ISO is like the volume switch it controls both subject and ambient light
- Make sure your shutter does not go above 1/200 as you will get the shutter in the frame



TESTING THE EXPOSURE OF THE BACKGROUND LIGHT BY SWITCHING OFF THE FLASH

Background
brightness



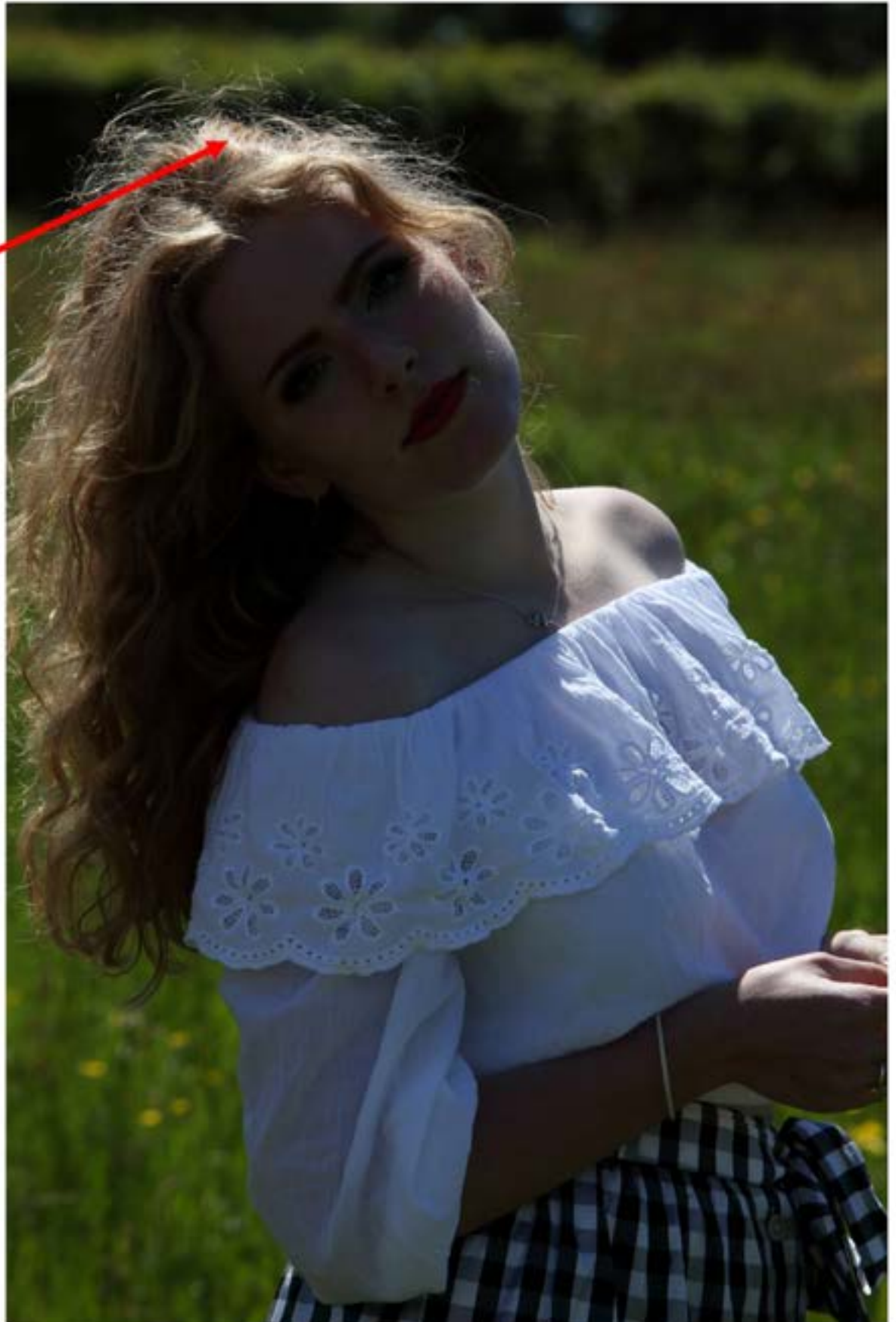
TESTING THE EXPOSURE OF THE BACKGROUND LIGHT BY SWITCHING OFF THE FLASH



When the flash is matched to the background you get an even exposure of them both

TESTING THE EXPOSURE OF THE BACKGROUND LIGHT BY SWITCHING OFF THE FLASH

Background
brightness



TESTING THE EXPOSURE OF THE BACKGROUND LIGHT BY SWITCHING OFF THE FLASH



When the flash is matched to the background you get an even exposure of the both

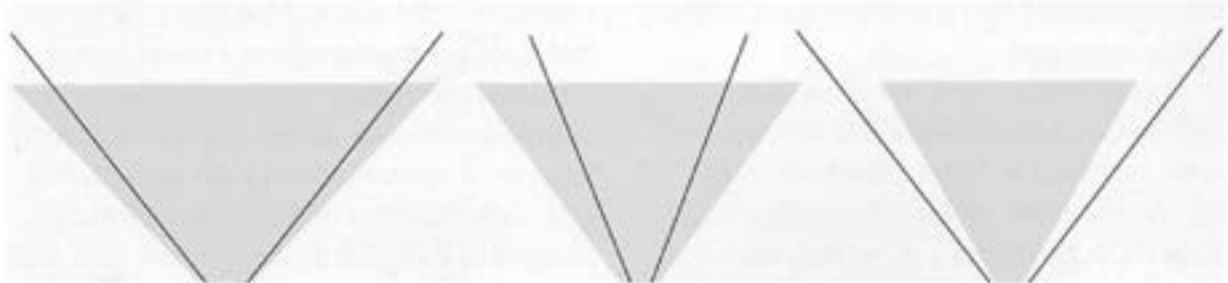
DRAMA FLASH SHOT IN BRIGHT SUNSHINE

Metre from a bright area in the scene. Then lock this exposure in manual mode dialling in negative compensation (1-2 stops). Do not metre from a dark or mid tone as effect is lessened. Use the flash in manual mode using between 1/2 to 1/8 power depending on the distance of the flash from the subject and brightness of the day.



UNEVENNESS OF FLASH

- Flash coverage on a speedlite is usually given in terms of a focal length and is called 'zoom'.
- The speedlite when used with TTL (through the lens metering) will automatically adjust the flash coverage to match the focal length of your lens. However, you can adjust this manually using the zoom function on the speedlite.
- If the flash coverage is too small for the focal length then this results in an unevenness of light.



If the flash coverage (grey) is greater than the lens angle of view, (black lines), the recorded image will be fully exposed (left). However, if the lens angle of view is too wide for the flash coverage (right), the edges of the image will appear dark. It does not matter if the lens angle of view is much narrower than the flash coverage (middle). It is not the most efficient use of the flash, but the subject will be well lit.

FLASH ZOOM 28MM



FLASH ZOOM 105MM



FLASH ZOOM

Lens used on camera was a 50mm

Flash
zoom
set to
50mm



FLASH ZOOM

Lens used on camera was a 50mm



Flash
zoom
set to
105mm

PAINTING WITH LIGHT

- This is a low light technique which is ideal for illuminating different parts of the scene which would be too dark without.
- Painting with light can also be used to draw with light to create shapes.
- Calculating exposure: Start by getting the ambient exposure of the scene. If you are using a torch or firework this is usually fine to draw with light without any exposure adjustment. However, if you want to use a flash gun to light up dark areas of a scene it is best to do a few test shots with your flash set to manual and start at 1/8 power.



HOW TO FREEZE MOVEMENT USING HIGH SPEED FLASH

- Typically most hotshoe mounted flash guns have a flash duration of around $1/750\text{sec}$ to $1/1000\text{sec}$ at full power.
- As a rough guide, flash duration halves each time you halve the power. So if a flash gives $1/1000\text{sec}$ at full power, then set at $1/16$ power it would fire at around $1/10,000\text{sec}$. This is enough to freeze most movement.
- The downside to this is that the power of the flash is very low so the flash needs to be closer to the subject. This is because the closer the flash to the subject the more light will reach it.
- This is fine for smaller subjects but bigger subjects it may be difficult.

SETTINGS FOR FREEZING MOVEMENT

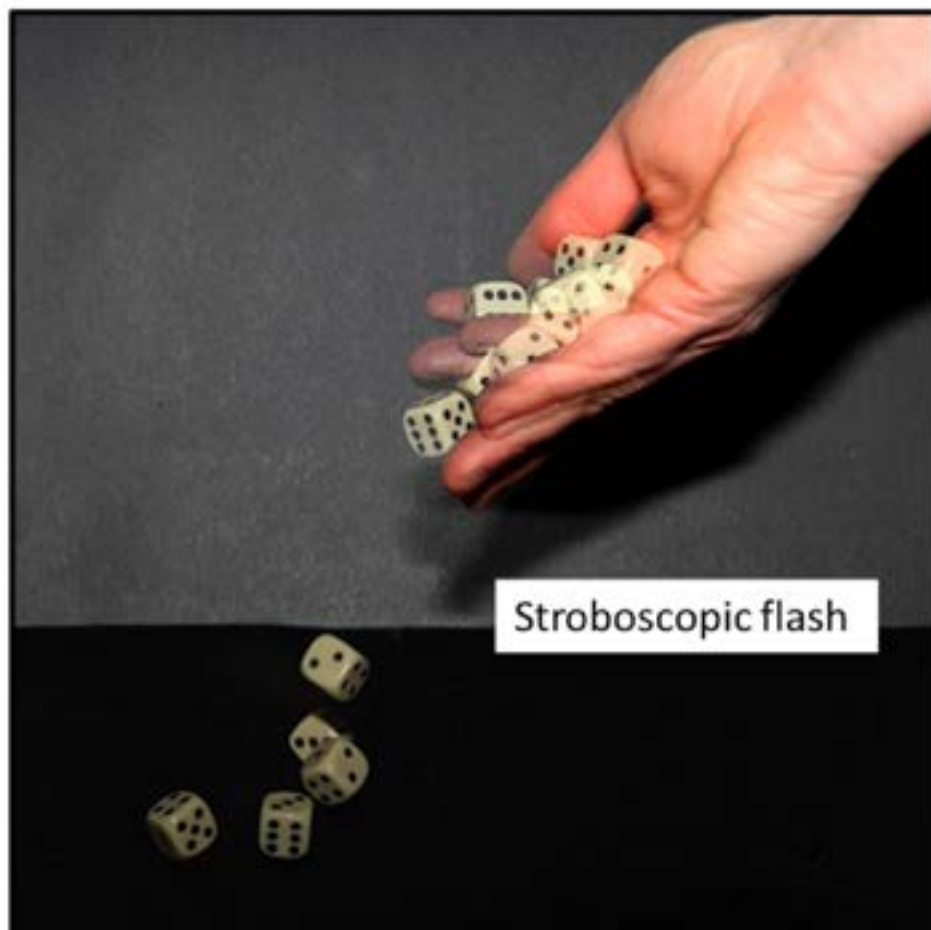
- To get the shortest exposure time from your flash, you need to set it to the lowest power suitable for your subject. When deciding on the setting try selecting the lowest power then take some test shots. If you find the image is underexposed, even at the widest aperture then you will have to increase the power setting.
- Camera settings: To prevent any ambient light affecting the exposure set the camera to the fastest flash sync speed (around 1/200th). After this you will need to set the aperture. A wider aperture lets in more light (makes the images brighter) and a smaller aperture lets in less light (makes the image darker). ISO will be like a volume control it will adjust the brightness of both the flash and ambient light.

STROBOSCOPIC FLASH

- Can be used to study motion
- The technique is firing the flash many times during one exposure



DIFFERENCE BETWEEN NORMAL FLASH AND STROBOSCOPIC



HOW TO DO IT

- Subject needs to be moving
- A dark background is best
- Lighter subjects stand out better
- The flash needs to have a multi mode
- Use a tripod to keep the frame constant
- Set the number of flashes (this will be how many times you want the flash to fire)
- Set the Hertz; 1 hz = 1 flash per second 10 hz = 10 flashes per second
- Power level can only be used at $\frac{1}{4}$ or less
- The number of flashes you need is determined by the duration of the motion you want to capture. Lower power means you can have more flashes
- Working out the metering is a guess. Test and go from there. Set a power level of $\frac{1}{8}$ to see what happens. An example to calculate; if the flash was set to fire at 12 pops and at 4 hz your exposure needs to be a least 3 seconds long e.g. $12 \div 4 = 3$

USING COLOUR GELS WITH YOUR FLASH

- The reason you would use gels over your flash head is to balance out the flash temperature with the ambient temperature.
- Your flash is daylight balanced and is a neutral colour. Ambient light can come from artificial light and therefore be orange, green or blue in temperature.
- If we use gels that match the same temperature to the ambient light it would be even. You then change the WB setting to bring the colour to neutral by either using a preset or using custom.



USING COLOUR GELS WITH YOUR FLASH

Matching the colour gel



USING COLOUR GELS WITH YOUR FLASH

Attaching the colour gel to the flash



USING COLOUR GELS WITH YOUR FLASH

Without gel, subject colder than lamps



USING COLOUR GELS WITH YOUR FLASH

With gel, subject is an even colour to lamps

