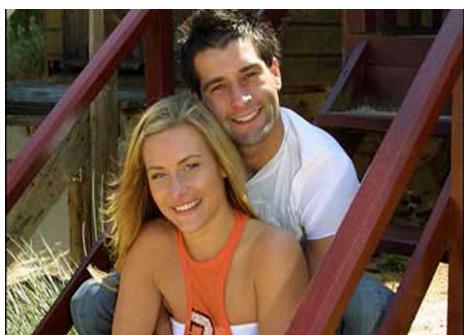


The Essential Guide To EOS Flash

Learn to understand EOS flash and Speedlite flashguns

Written by Nina Bailey



PREVIEW
EDITION

Written, designed and images by

Nina Bailey

Foreword by the author

Flash is often seen as “The black art” by photographers. It is not an area that is particularly difficult to use, however it is one where you have to understand the EOS system and what it is doing to get the results to work as you want. In many areas it is possible to muddle through with only a basic knowledge of photography and yet still get very good results.

Unfortunately flash just isn’t one of those. You do need to understand the basics of both photography and indeed of how flash works to be able to understand the settings that need to be used to get the results that you want.

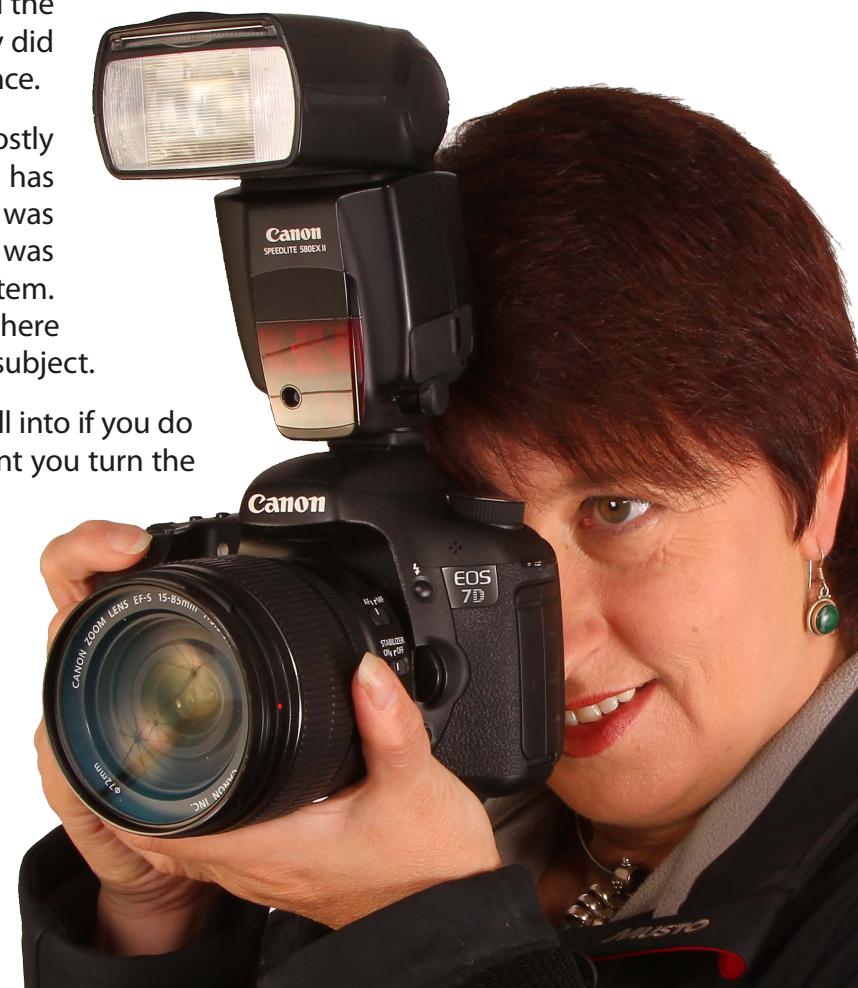
My involvement with flash goes back a very long way, when the Canon T90 was launched in 1986 it came out with a new flash unit, the Speedlite 300TL. I was working in retail at the time and was given the job of sorting out how the flash and camera worked together. I was given about an hour to get it sorted until the first customer arrived that I had to sell the unit to. I must have done a good job as not only did I sell the unit I also was christened the “Flash expert” and its a title that stuck to me ever since.

There is an irony in this, which is I do not use flash very much. The areas I specialise in mostly require me to shoot with available light. However, over the years my expertise in this field has stood me in good stead for the images I needed to produce for the training and DVDs I was involved in and the commercial shooting that I occasionally still do. The last wedding I shot was actually last year (2014) and it was all shot using fill-in flash using the Canon EOS flash system. My main use for flash for my personal shooting is for macro and micro photography, where often it is the only way to get enough light to get the depth of field that is needed for the subject.

Although I say that it is not a difficult thing to use, there are plenty of very large holes to fall into if you do not think about the restrictions placed upon you and the settings you can use the moment you turn the flash unit on.

In this ebook I aim to give you a very good understanding of the principles of using flash within the EOS system and the confidence and knowledge you need to successfully use a single flash on the camera for the images you want to take.

Nina





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PREVIEW
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Introduction



Introduction

Flash is a complex topic and it is one area of photography that most photographers will struggle to get to grips with. In all areas of photography the more you understand the fundamentals and combine this with a good familiarity of the controls on your camera, the more success you will have producing stunning images.

When we start shooting with flash a thorough understanding of the way that flash works is essential to get the very best results. Things like how it changes the settings that you can use and the changes to the basic operation of the camera. This makes it crucial to have a very good understanding of flash, if consistent results are to be achieved.

This is a subject where we have to understand that we are often taking two images at the same time. We still need to bear in mind all the rules that we are used to using for ambient light photography, but we then need to add to these, the rules that will produce a successful flash image.

One of the reasons why flash photography is such a complex topic is that the two sets of rules conflict with each other a large amount of the time. Because of this, the photographer has to often choose compromises in order to get a successful image.

This means that the photographer has to have a very good grasp of all the basic controls that we use within photography, such as aperture, shutter speed and ISO and how they combine to produce a good exposure, before they will get good results consistently with flash.

If you are very new to photography, my ebook *The Essential Guide To Photography With EOS Cameras* is designed to give you the grounding that you need, to tackle the more advanced areas of photography such as using flash.

Even camera functions such as metering, white balance and focusing will be affected by the use of flash, so it is not surprising that the majority of photographers will struggle to get the results that they want with flash at some stage or another.



Regardless of which Canon flash you use, it can be the built in flash that we find on most models or a larger and more powerful external flash unit, the way the system works when used for normal photography remains the same.

Introduction

The EOS flash system is very sophisticated and is the result of many years of evolution, which has produced a system that can respond automatically to the ambient lighting conditions and adjust its output to give very natural looking results in a very wide range of lighting conditions.

However, it is a system that is very different from other makes on the market and if not used correctly can give very erratic results, simply because one or two of the camera systems are not correctly set.

This ebook starts off by giving you the basic grounding to be able to use flash effectively, set the camera up for optimum results and understand how to utilise the wide ranging overrides where necessary.

This ebook does not replace the instruction manual for your flash. It is designed to help you understand how to use and apply the features you have, rather than specifically how to set them. At times you may find it easier to refer to the manual for your specific flashgun for how to set some features, especially if it is one of the earlier model flash units.

We then move onto look at using flash in more sophisticated ways and how to improve your results to be able to shoot professional looking images.

This ebook concentrates on using a single flash, which can be the built in unit or an external flashgun on the camera.



Canon makes a wide range of different flash units to suit different budgets and power requirements. Fundamentally, the larger flash units give out more power and therefore can light subjects at greater distances.

I will look at techniques such as using diffusers and bouncing flash along with a few essential overrides that are used regularly when shooting flash images.

I will also look at how flash light can be used within the flash images you take, as there are different ways that the flash light can be used.

What I am not going to look at in this ebook, is using some of the more advanced flash features, such as the flash custom functions, multiple flash or taking the flash off the camera by using the wireless system. That will all be in a later ebook, as to cover the topic of flash in its entirety is far too much to fit into a single ebook.

Chapter 01

Flash options within the EOS range



Flash options within the Canon EOS range

In this chapter I am going to look at the various options you have for shooting with flash within the EOS range and the benefits given by the different options.

Canon now has wide range of flash units available, which allows them to cater for the needs of different types of photographers. They range from small compact units ideal for family use, through to large powerful units designed especially for professional usage.

The built in flash

Most of the cameras within the EOS range feature a built in flash. Although this often gets a bad reputation for being of little use, if used correctly it can produce good results and is especially good for fill-in flash in bright light conditions. However as with all flash, it has to be used correctly to give the very best results.

Most of the techniques that I will be looking at in this ebook will be applicable to the built in flash unit as well as to the external flash units. Where they are not, it will be stated.

The cameras are designed with a specific lens in mind as the normal lens that is sold with that camera. For the introductory cameras, this is normally the EF-S 18-55mm lens. For the more advanced cameras the EF-S 17-85mm, EF-S 18-135mm or the EF-S 15-85mm are normally the recommended lenses.

If these lenses are used, the built in flash generally works very well as it has been designed to work with these lenses fitted. So the coverage and height of the flash above the camera has been made to prevent cut off from the lens.

It is important when using these lenses with flash to make sure that the lens hood has been removed, otherwise it can cause flash cut off at the bottom of the image being taken.



The built in flash

The longer range lenses such as the EF-S 18-200mm will normally give flash cut off, especially when using the wider settings that the lens offers and working at close distances. Because of this, if this is the only lens that you have, an external flash unit is generally an essential item to get good results.

The biggest limiting factor of the built in flash is that it is a forward firing unit and this cannot be varied, so there is no opportunity to soften the light that it gives.

It also has relatively low power and so the range that it can light is a little limited. However, on the camera's default ISO for flash usage (which is 400 ISO), it will easily light most things in a domestic room with its 4-5m range.

Additionally, today we can use the ISO realistically even higher than this. Taking the ISO up to 1600 ISO will take the maximum range up to 8-10 metres, in addition to capturing more available light if shooting indoors. I will explain why that's important later in the ebook.

The built in flash fires from quite a low position and so this can produce problems such as red eye. If you are shooting animals the same effect happens, but often yellow, green or even blue highlights appear where the pupil should be.

The red eye can be reduced by the use of the camera's red eye reduction function, though in some situations as we will see in later chapters, this is not always going to be effective.



In the two images above, the hood was left fitted to the lens and it has produced a lot of flash cut off on the image as I was shooting so close to the subject. These examples show the cut off more as I was shooting mainly with flash light rather than fill-in flash. The image below was taken on a long lens with a hood fitted but as the subject was some distance away there is no cut off caused by the hood or lens



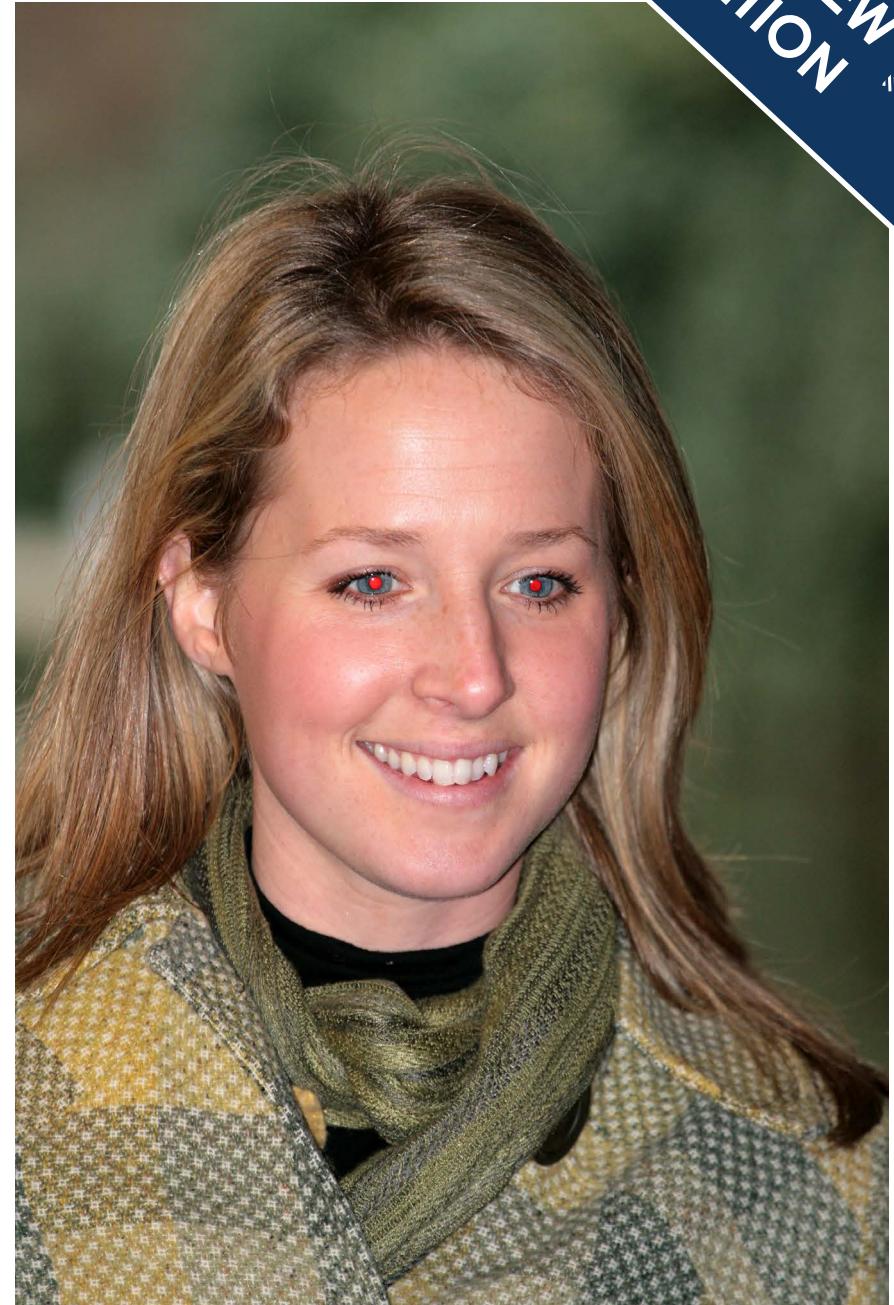
The built in flash

However, red eye only occurs when shooting in low light levels and so if using the flash for fill-in flash outdoors this is not a problem.

Despite some limitations, the built in flash can give some very good results, especially when used either for fill-in when shooting in brighter conditions or for close up and macro subjects. It can also be used in lower light levels successfully providing the subject is at a reasonably close range and the ISO is taken up to accommodate the lower light levels.

The images on this page show the red eye or blue eye that can occur when shooting with a built in flash. In animals the effect is very difficult to reduce or prevent, if using the built in flash indoors due to how the eye is formed.

One of the benefits of using an external flash is that the red eye could have been prevented by bouncing the flash light or using a diffuser or reflector to provide non-direct flash light.



External flash units

Canon makes a number of external flash units, which are all compatible with the range of EOS cameras. The range includes four general flashguns that will work for a wide variety of different subjects. There are also two specialist macro flash units, which are designed especially for close up and macro photography.

Regardless of the flash unit you choose, the basic operation of the flash system is identical. The flash units vary in power and in the range of features and overrides that they support, but once you learn how to use any one of them you will find that you can comfortably use any of them.

Understanding guide numbers for EOS flash guns

Flashguns have their power rated in a measurement called a Guide Number. In the UK this is quoted in a very specific manner, for example Gn. 58 metres at 100 ISO. With Canon flashguns the guide number is indicated by the first two numbers in its name. So the 580 EX II has a guide number of 58 metres and the 430 EX II has a guide number of 43. So we can see from this that the 580 EX II is a third more powerful than the 430 EX II.

The newer 600 EX-RT has a guide number of 60. The built in flash has a guide number of either 12m or 13m depending on the camera that you have.

It is important to understand what the guide number is actually telling you and how the various things within photography affect it.



600 EX-RT

Gn. 60m

430 EX II

Gn. 43m

320 EX

Gn. 32m

270 EX II

Gn. 27m

The guide number is always calculated for 100 ISO and the important thing about this is, that this is where the ISO range will be at its least. So by increasing the ISO from 100 to 400 we can double the guide number, thus effectively doubling the effective range of the flash (see table to the right for the effects of higher ISO settings).

The guide number assumes that the flash is mounted on the camera with the head pointing straight forward and will be indoors in a domestic room with a ceiling height of about 2.5 metres. If we use the flash bounced, with a diffuser fitted or outside, the range will be very much less than the guide number would indicate.

ISO effects on flash range based on built in flash Gn. 13 using an aperture of f5.6

100 ISO	1x	2.3m
200 ISO	1.4x	3.25m
400 ISO	2x	4.6m
800 ISO	2.8x	6.5m
1600 ISO	4x	9.2m
3200 ISO	5.6x	13m
6400 ISO	8x	18.4m
12800 ISO	11x	26m
25600 ISO	16x	36.8m

Understanding guide numbers for EOS flash guns

The quoted guide number is also calculated normally based upon the use of a 105mm lens. However, the 600 EX-RT model has a flash head that zooms to 200mm and therefore the guide number is quoted for this. The flash head zooms in and out automatically to give the correct coverage for the lens that is being used.

When it reaches its widest setting of 24mm, the guide number will be a lot lower. On the 580 EX II this drops the guide number to just Gn.28 at 100 ISO. The 600 EX-RT flash zooms out to 20mm and at this the guide number is GN. 26 at 100 ISO. This will give less than half the range than you would have, when shooting with a longer lens.

You might be noticing that most things except increasing the ISO, will reduce the power of the flash. The final thing that we are going to look at about Guide Numbers is the aperture and how this affects the range the flash can reach more today than ever before.

Guide numbers are always calculated based upon an aperture of f1.0. Thirty or more years ago, that was not too much of a problem as most photographers had access to wide aperture lenses, such as 50mm f1.4 and 50mm f1.8 standard lenses. Today, most photographers now use zoom lenses and when they are at their longest focal length, for example the 18-55mm lens used at 55mm, they will give a widest aperture of just f5.6.

That is now 5 stops away from how the flash

power is indicated on the flashgun. So although theoretically, according to the guide number the 580 EX II flash should give a range of 58 metres, in practical terms it will be much lower than that, 5 stops less for many zoom lenses. That is a very big reduction compared to the 1 or 2 stops away that photographers saw 30 plus years ago.

Therefore, although today's modern flashguns are about double the power of their counterparts 30 years ago, strangely we see less range than we used to.

There is a useful formula for flash that we can use to see what the range of the gun will have, given certain factors in use.

Guide number/Aperture = Range

So if we have a guide number of 58 metres because we are using a lens of 105mm or longer and we want to use an aperture of f5.6, our absolute maximum range, shooting with the flash pointing straight ahead with no diffusers or reflectors inside a room will be 10 metres.

If we use a wide lens, 24mm on full frame, or 15mm on a 1.6x sensor, we have a guide number of 28. This divided by f5.6 with the same shooting conditions will give us a range of approximately 5m.

So we can see that this makes using flash and understanding the range that we have available to us, far from straightforward.



Understanding guide numbers for EOS flash guns

Flash coverage mm	14mm	20mm	24mm	28mm	35mm	50mm	70mm	80mm	105mm	135mm
600 EX-RT	15	26	28	30	36	42	50	53	58	59
580 EX/580 EX II	15	-	28	30	36	42	50	53	58	-
430 EX/430 EX II	11	-	25	27	31	34	37	40	43	-
320 EX	-	-	24	-	-	32	-	-	-	-
270 EX/270 EX II	-	-	-	22	-	27	-	-	-	-

The guide number for each main focal length is always shown in a table towards the rear of the flash manual that comes with the flashgun.

The table above shows a comparison of the main guide number settings for most of the range based upon the use of 100 ISO.

The table to the right has the maths worked out for various guide numbers units based upon the use of f5.6 as the aperture being used. You can see how quickly the use of the higher ISO settings make a difference to the range that the flash units can reach.

The reality is that we do not have to use the maths when taking images. The main flashguns, the 600 EX-RT, 580 EX II and the 430 EX II all have a scale or display on the rear, that will show us this information.

However, if you are having problems with flash images it is a useful formula to know, as we can get the focal length of the lens and the aperture from the images' EXIF data. This will tell us how realistic it was to attempt to take the image.

If you want to use different ISO settings, then the listed coefficient values for the respective

ISO effects on flash range based on different guide numbers using an aperture of f5.6

ISO	Coefficient	Gn. 13	Gn. 28	Gn. 43	Gn. 58
100 ISO	1x	2.3m	5m	7.67m	10.35m
200 ISO	1.4x	3.25m	7m	10.75m	14.5m
400 ISO	2x	4.6m	10m	15.34m	20.7m
800 ISO	2.8x	6.5m	14m	21.5m	29m
1600 ISO	4x	9.2m	20m	30.68m	41.4m
3200 ISO	5.6x	13m	28m	43m	58m
6400 ISO	8x	18.4m	40m	61.36m	82.8m
12800 ISO	11x	26m	56m	86m	116m
25600 ISO	16x	36.8m	80m	122.72m	165.6m
51200 ISO	22x	52m	112m	172m	232m
102400 ISO	32x	73.6m	160m	245.44m	331.2m

ISO settings, as in the chart above, can be used in your calculations. These can be applied to the guide numbers or the maximum ranges.

I have based all the charts on the use of f5.6 as that is the aperture we often end up using in low light as it is the widest aperture on many of the popular zoom lenses. If we are working

in bright light then the apertures may well be much smaller than this, such as f8 and f11 and as a result the range will drop each time we pick a smaller aperture.

We are now going to take a brief look at the guns and look at how they vary and the applications that they suit best.

270 EX II flashgun

This is a small flash, which is limited in both range and features. That said, it is a useful unit for those like myself who have a camera such as the 5D Mark III, which does not have a built in flash and who want something small and light just for occasional use. I have recently added one to my outfit, as although I have a 600 EX-RT flash unit, I am certainly not going to carry that around everywhere I go on the off chance I might take one or two pictures with flash. The 270 EX II is so small and light you do not really notice its weight in the bag.

It is compatible with the wireless flash system as a slave flashgun. However, it fires on all the channels within the wireless flash system, which will be a problem if other photographers are close by, as their equipment will fire off your flashgun. Also the group that the flash works to is fixed.

It is designed to be a very basic unit that simply fits onto the cameras flash shoe and simply has an on/off switch. It has to be said that this is also one of the appealing things about the flash. It's as easy to use as a built in flash unit for those that do not have them on their cameras.

The flash is one of the first in the range to feature no controls on the flash itself. Instead it takes all of its controls from the camera's menu system. Therefore, to be able to use this flash unit you must have a camera that allows this, which is models launched after about 2007.

The addition of the wireless flash system onto



this flash has made it ideal as a wireless flashgun for those that specialise in close up and macro photography, providing you do not need the individual channels or groups. Its restricted power output is not a problem in this field and its small size and light weight makes it ideal for using on some of the specialist macro flash brackets.

To check the compatibility is easy. Have a look in the camera's menu system, within either the

camera or tools menu. You will find a command that is for the flash gun controls. Within this menu there are options to control the built in flash or menus for any attached speedlite unit. This was first seen in 2007 with the launch of the EOS 1D Mark III and the EOS 40D models and has been on all models since.

If you have one of the earlier models launched in 2007-2008 make sure that your firmware is up to date if you want to use this flashgun, as the

270 EX II flashgun

flash was launched after the camera and will not be compatible with the original firmware. From the 5D Mark II onwards all cameras have been compatible.

The key advantage of the 270 EX II is that it is very small and light, weighing under half the weight of the other two main guns in the range. This will be the main feature that will sell this flash unit and it is the thing that will make it popular for close up and macro work. However, the price paid for that size and weight reduction is quite high when you look at the specification of the flash unit.

The Guide Number is a maximum of 27m at 100 ISO. This assumes a lens focal length of at least 50mm full frame, or 30mm with a 1.6x crop sensor, will be used. The flash head needs to be manually adjusted to this setting, unlike the other guns in the range that will zoom in and out automatically as the lens is zoomed. This will give a maximum flash range at 100 ISO of just 4.8 metres or 9.6 metres at 400 ISO, assuming that you are shooting with an aperture of f5.6.

At the default 28mm setting on full frame, 18mm on a 1.6x sensor, the guide number is only 22 at 100 ISO. This will give a maximum flash range at 100 ISO of just 3.9 metres or 7.8 metres if shooting at 400 ISO, assuming that you are shooting with an aperture of f5.6.

These flash ranges are based upon the use of direct flash indoors. Bouncing the flash and the use of flash outside will almost halve these available ranges.

The 270 EX II also features a bounce flash option.



However, the power of the flash is very limited. This means that the bounce flash will only work in small rooms with low ceiling heights.

The flash head also only bounces and does not offer a swivel option. This is a problem as portraits are normally shot when holding the camera in a vertical position. This makes it impossible to be able to bounce the flash off a ceiling in that position.

So the limited power means that this is a flash that is only really suitable for domestic usage and macro.

With only just twice the range of the built in flash

it is not going to offer that much of an advantage for the majority of photographers, except that unlike the built in flash it can have the flash head bounced to soften the light.

This gun is most commonly sold to go with the smaller lighter models, such as the ultra compact EOS 100D.

However, it is also a useful extra flash unit for those with models without a built in flash unit, such as the EOS 5D Mark III and the EOS 6D.

There also used to be a 270 EX flash which had similar specifications but lacked the wireless compatibility.

320 EX flashgun

One of the newer flash units to the Canon range features an LED light on the front of the flash, which can be used to provide illumination when shooting with video. If you shoot a lot of video then this can be very useful to provide a small amount of additional lighting.

It can also be used as a modelling lamp and can function as a focus illuminator when shooting with live view in low light.

The flash also features the wireless system and so the flash can be used as a slave unit with any camera that features the built in wireless flash system. The wireless system allows channels to be set and any of the three groups to be set up as per models further up the range. The flash also has a function that allows the camera to be triggered from the flash with a 2 second delay.

The flash has a bounce head and a swivel option and has a manual zoom option on the flash head, allowing coverage of either 24mm (full frame) with a guide number of 24 metres or 50mm (full frame) with a guide number of 32 metres. This makes it better as an all round flash unit than the 270 EX II, especially with the swivel option as well as the bounce function.

Like the 270 EX II flash, this unit has no controls on the flash unit itself and has all its settings made from the camera's flash menu and so is only compatible with models from 2007 onwards. With the older models check that your firmware is up to date as this flash was launched after the cameras in many instances.

The key advantage of the 320 EX is that is small and light, weighing less than other two main guns in the range but is larger and heavier than the 270 EX II.

This flash will be popular for family use with its compatibility with video shooting. It will also find favour as a second flash amongst those shooting with the wireless flash system, especially those who shoot close up and macro photography, where the limited power range is less of a problem.

The Guide number is a maximum of 32 metres at 100 ISO, this assumes a lens of at least 50mm full frame, or 30mm if a 1.6x crop sensor is used.

The flash head needs to be manually adjusted to this setting, unlike the higher level guns in the range that will zoom in and out automatically as the lens is zoomed.

This will give a maximum flash range at 100 ISO of just 5.7 metres or 11.4 metres at 400 ISO, assuming that you are shooting with an aperture of f5.6.

At the default 24mm setting full frame, 15mm on a 1.6x sensor, the guide number is only 24 metres at 100 ISO. This will give a maximum flash range at 100 ISO of just 4.2 metres or 8.4 metres if shooting at 400 ISO, assuming that you are shooting with an aperture of f5.6.

These flash ranges are based upon the use of direct flash indoors. Bouncing the flash and the use of flash outside will almost halve these available ranges.



Although the 320 EX also features a bounce and swivel option, the power of the flash is very limited, which means that the bounce flash will only work in small rooms with low ceiling heights.

This is a good flashgun if your flash photography is mainly of friends and family in domestic surroundings, however, the flash is a little limited for commercial use in larger locations and outside.

430 EX II flashgun

This is much more of an all round flash unit, offering a very good specification and a good range of features and overrides. This model is compatible with the wireless flash system.

This flash is compatible with any of the EOS cameras and if the camera has the flash settings in the camera menu system, then this flashgun will link into that system. This gives the photographer a choice of options as to where the overrides can be set.

The flash has a maximum guide number of 43 metres at 100 ISO when shooting with a 105mm lens or longer giving it a maximum flash range of 7.6 metres if shooting at 100 ISO and 15.2 metres of shooting at 400 ISO, assuming an aperture of f5.6.

This will reduce to 24 metres at 100 ISO when shooting with a 24mm lens full frame or a 15mm lens when shooting with a 1.6x sensor. This will give a maximum flash range of 4.2 metres if shooting at 100 ISO and 8.4 metres if shooting at 400 ISO, assuming that you are shooting at an aperture of f5.6.

At the wider settings it may not sound that much more powerful than the 270 EX, but as most portraits are shot with short telephoto lenses between 65mm and 105mm then the gain in power at the telephoto end really is quite significant.

The 430 EX Mark II also features all the main settings within the system and the bounce head also swivels, offering a much better range of shooting options.

There is also a built in wide panel that allows the flash to be successfully used with lenses wider than 24mm on a full frame camera, or 15mm on a 1.6x crop sensor model. The use of the wide panel allows the flash to cover lenses down to 14mm on a full frame model and 10mm on a 1.6x crop sensor model.

The compatibility that the 430 EX II has with the wireless flash system is limited. It can be used away from the camera as a slave unit. This means that it can be fired by a camera that offers wireless flash options, the speedlite transmitter unit if fitted to the camera or another flashgun that offers the capability to be a master gun. It cannot be used as a master unit to fire another flash away from the camera.

Therefore, if wireless flash is high on your priority list then these limitations have to be born in mind. The 430 EX II does make an ideal unit to be used as a slave gun, if you already have the means to fire it, especially if you are doing mostly close range subjects.

There also used to be a 430 EX flash, which has identical specifications to this unit, but did not have the compatibility to use the settings in the cameras flash menu. It also had a slightly different way of operating the wireless flash system on the flashgun itself.

Due to the cost of the new 600 EX-RT models, compared to the 580 EX II flash that it replaced, the 430 EX II has now become the main flash sold into the amateur market. With the increase in



ISO range on the newer camera models the flash units do not have to be quite so powerful to get a good range when shooting in low light levels, which has also helped to increase the popularity of this model.

580 EX II flashgun

Although this flash is now discontinued, it is still one of the most frequently seen models in use with Canon EOS cameras. There was also a 580 EX model which had the same specification, although did not set via the camera's menu system.

I am including it as if looking for a secondhand flash, this is one of the most likely models to be encountered.

This flash was the best in the range at the time it was current and has all the features that you could need. It offers one of best ranges of the guns in the system and is fully compatible with the optical wireless flash system, having the ability to either act as a master unit or work as a slave away from the camera.

The 580 EX II has the full range of bounce and swivel options, allowing the flash to be bounced for both vertical and horizontal shots.

This flash is compatible with any of the EOS cameras and if the camera has the flash settings in the camera's menu system, then this flashgun will link into that. This gives the photographer a choice of options as to where the overrides can be set.

The flash has a maximum guide number of 58 metres at 100 ISO when shooting with a 105mm lens or longer, giving it a maximum flash range of 10.3 metres if shooting at 100 ISO and 20.6 metres of shooting at 400 ISO assuming an aperture of f5.6.

This will reduce to 28 metres at 100 ISO when shooting with a 24mm lens full frame or a 15mm lens when shooting with a 1.6x crop sensor. This will give a maximum flash range of 5 metres if shooting at 100 ISO and 10 metres if shooting at 400 ISO assuming that you are shooting at an aperture of f5.6.

There is also a built in wide panel that allows the flash to be successfully used with lenses wider than 24mm on a full frame camera or 15mm on a 1.6x sensor model.

The flash also has a built in reflector that can be used when shooting with fill-in flash either to give a catch light in the eyes or to provide a little bit of forward lighting, in addition to the bounce flash.

This used to be the standard professional flash unit as it had the power to cope with all the things demanded of it.

It used to be quite a lot more expensive than the 430 EX II, but then it does have the full wireless compatibility being able to act as a master flash unit as well as being a slave flash. However, it has to be said that this is only beneficial if you have more than one flash unit and plan to use more than one flash within the lighting you are providing.

In professional circles that's not too unusual, but for amateur photographers its rare to find many that own more than a single flashgun.



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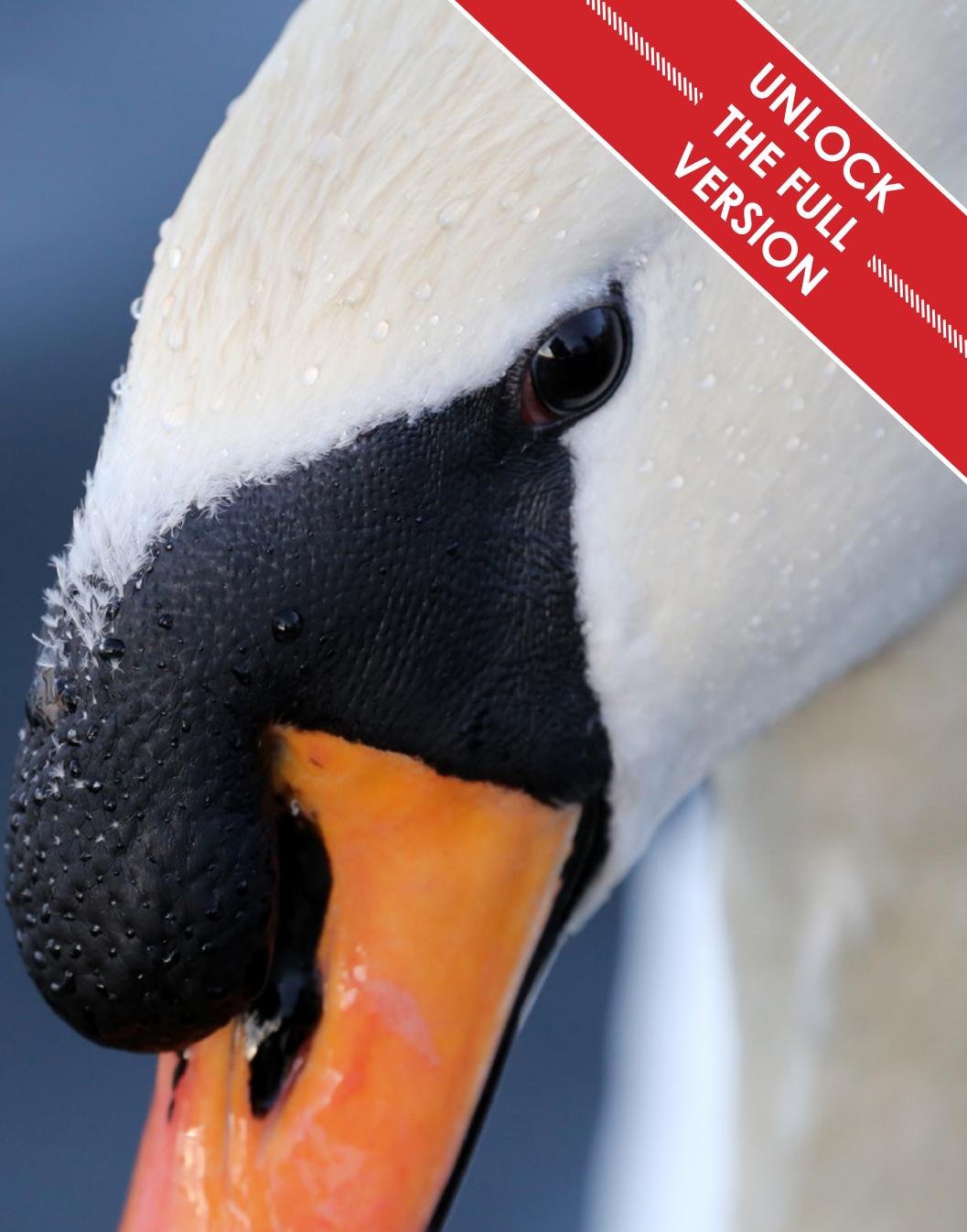
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