

Using Flash

or how in control light from a Flash Unit

Speedlites / Flash Units



Terms

- Guide No. i.e. – at ISO 100 in meters/feet
This is the maximum distance that the flash unit will light a subject at full power at maximum zoom length

- **The Guide Number (GN)**

- Each flash has its **guide number, GN**, for exposure calculation. The GN of a flash is defined at ISO 100 as the product of distance (*i.e.*, flash to subject distance) and aperture:

$$\text{GN} = \text{distance} \times \text{aperture}$$

- This means that the product of the flash-to-subject distance and aperture being used is equal to the GN of the flash at ISO 100. Normally, you will see *two* GN values, one in ft and the other in meter. Therefore, you should choose the right GN in calculations. For example, suppose a flash has a GN 90 in ft and we intend to photograph a subject 20 feet away from the flash. Since $90 = 20 \times \text{aperture}$, we have $\text{aperture} = 90/20 = 4.5$. Hence, we should use F4.5 at ISO 100 to take this shot in order to have a correct exposure.

- Keep in mind that the GN of a flash is usually given at ISO 100. If a different ISO is being used on your camera, the GN has to be adjusted. Let GN_{100} be the GN at ISO 100 and GN_k be the GN at ISO k . Their relationship can easily be described as

$$GN_k = \sqrt{\frac{k}{100}} GN_{100}$$

- Therefore, if the GN at ISO 100 is 80, the GN at ISO 200 is 113, the GN at ISO 400 is 160, and the GN at ISO 50 is 56.6. With this new GN, one can calculate the aperture from the flash-to-subject distance or calculate the flash-to-subject distance from the selected aperture.
- This means that at higher ISO settings, you get greater flash to subject distances.

Light Range For a Flash Unit with a Guide No. Of 58



20 degrees horizontal
Angle of view



58 Meters with a 105 mm lens



93 degrees horizontal
Angle of view



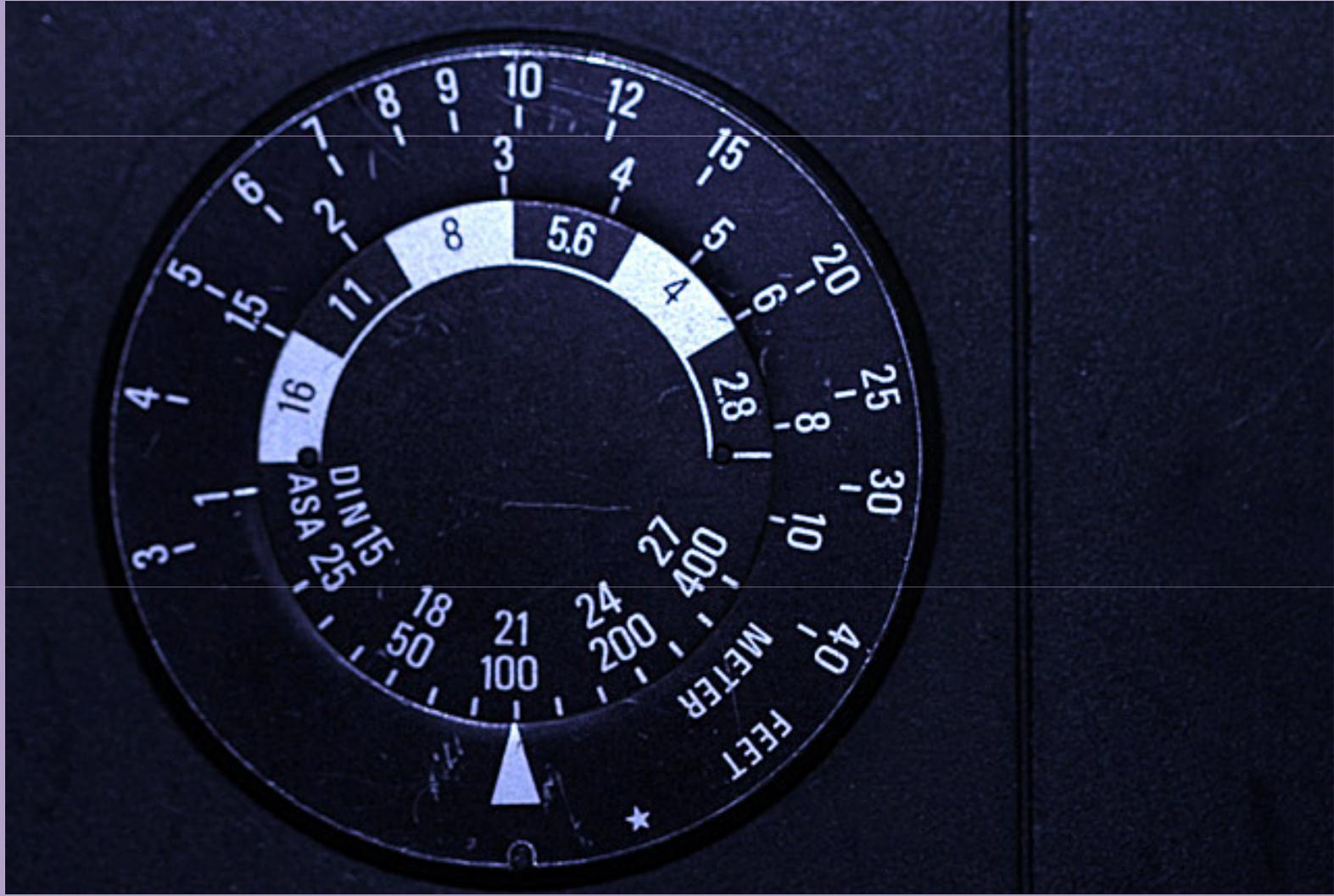
28 Meters with a 24 mm lens

Controlling the Light From the Flash Unit



Taking a step back in time, this 1976 vintage flash has no controls. To get the correct exposure, you worked out the distance between the subject and camera, then set the camera aperture as per the dial







Subject at 2 meters
Camera on Manual
Lens 50 mm

Aperture - f11
Shutter - 1/60 second
ISO - 100

Correct exposure



Subject at 2 meters
Camera on Manual
Lens 50 mm

Aperture - f16
Shutter - 1/60 second
ISO - 100

Under exposed



Subject at 2 meters
Camera on Manual
Lens 50 mm

Aperture - f8
Shutter - 1/60 second
ISO - 100

Over exposed

*The only change made in the last 3 photos has been the aperture
Aperture controls the amount of light on the Subject*

When to use Flash

- In a low-light environment
- When a subject has too much light behind it – such as someone standing on a white sandy beach or in front of a window
- To remove shadows on a bright sunny day – shadows under eyes, chin or a hat
This is called “Fill Flash”



Lens – 50 mm
Program
Aperture – f2.8
Shutter – 1/60
ISO - 100
Metered – on Bear
Flash - no



Lens – 50 mm
Program
Aperture – f4.0
Shutter – 1/60
ISO - 100
Metered – on Bear
Flash - yes



Lens – 50 mm
Manual
Aperture - f5.6
Shutter - 1/80
ISO - 100
Metered – outside
Flash - yes



Lens – 50 mm
Program
Aperture – f2.0
Shutter – 1/60
ISO - 400
Metered – on Bear
Flash - no



Lens – 50 mm
Program
Aperture – f4.0
Shutter – 1/60
ISO - 400
Metered – on Bear
Flash - yes

- **Program**

The camera automatically selects the shutter speed and aperture to suit the ambient light conditions. Select when you do not require control of the camera settings.

- **Shutter**

Select this mode when you want to set the shutter speed manually. The camera will then automatically set the aperture matching the shutter speed to obtain a standard exposure.

If the aperture display blinks, it means that the background exposure be under or over exposed

- ## Aperture

Select this mode when you want to set the aperture manually. The camera will then automatically set the shutter speed matching the aperture to obtain a standard exposure.

If the background is dark like a night scene, a slow shutter speed will be used to obtain a standard exposure of both the main subject and the background.

Standard exposure of the main subject is obtained with the flash, while a standard exposure of the background is obtained with the slow shutter speed.

Since a slow shutter speed will be used for low-light scenes, a tri-pod should be used.

If you want control of the shutter speed in Aperture priority when using flash, you can either check your camera's custom functions for an option that will allow you change the sync speed (Canon custom sync shown below) or select Manual

- Exposure flash sync speed in Av mode 0: Auto
- 1: 1/250 - 1/60 sec auto
- 2: 1/250 sec (fixed)



Lens – 47 mm
Manual
Aperture – f5.6
Shutter – 1/60
ISO - 200
Flash - yes



Lens – 47 mm
Aperture
Aperture – f5.6
Shutter – 1.3 sec.
ISO - 200
Flash - yes

Manual

Select this mode if you want to set both the shutter speed and aperture manually.

Standard exposure of the main subject is obtained with the flash. The exposure of the background is obtained with the shutter speed and aperture combination you set.

Note: At times you may find the Exposure Level Indicator showing way over or under exposed. In this case take a test photo and check the results before making any changes to your shutter speed or aperture.

- **Flash Exposure Compensation**

On your camera, you exposure compensation. Your flash unit has a separate exposure compensation for the amount of flash. In effect, this either reduces or increases the flash output power.

- ## High Speed Flash Sync

This allows the flash to work at higher shutter speeds than the normal camera shutter sync speed.

This is convenient when you want to use Aperture priority with a fast lens –

Taking a Portrait at f1.4 / 1.8 on a bright day so that you can use high shutter speeds.

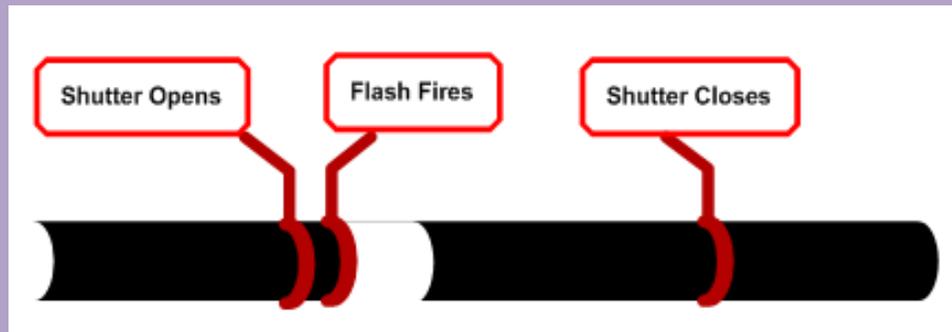
Note:

With high speed sync, the faster the shutter speed, the shorter the effective flash range will become.

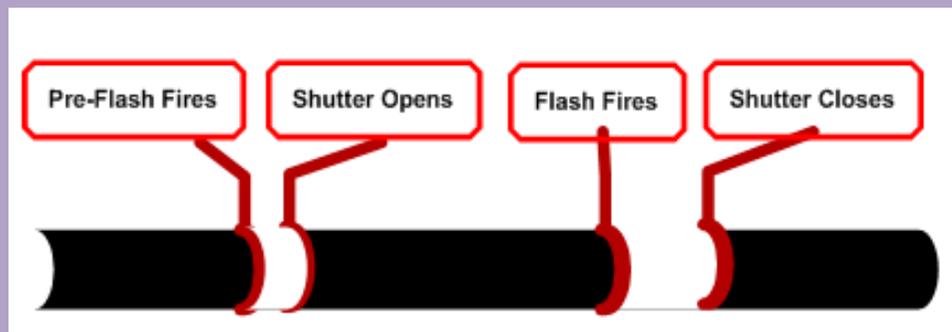
- First / Second Curtain Sync

What do these options mean?

First Curtain - with this, the flash fires at the beginning of the exposure, in sync with the first curtain movement.



Second Curtain - with this, the flash fires at the end of the exposure, in sync with the second curtain movement.



- For second curtain photography to be successful, you need to be using a slow shutter speed.



Lens – 32 mm
Aperture Priority
Aperture – f4.0
Shutter – 1 second
ISO – 320
Flash – yes – 1st Curtain



Lens – 32 mm
Aperture Priority
Aperture – f4.0
Shutter – 0.5 second
ISO – 320
Flash – yes – 2nd Curtain

- Using High ISO

You may wish to use high for a number of reasons –

- ❖ So that the flash uses less power and recycles faster.
- ❖ So that higher shutter speeds which will help with freezing subject movement or eliminate camera shake.
- ❖ You might need the extra 'reach' that a higher ISO gives to your flash's output.

- Problems With Using Flash

Harsh Light – the subject is bright, much like it has been photographed with the sun shining in the middle of the day. To remove the harsh look, try the following –

- ❖ Use minus flash exposure compensation or reduce flash power
- ❖ Bounce the flash off a wall or roof if one is available
- ❖ Use some other method to reflect flash onto the subject.

Harsh shadows behind the subject. To minimise try the following –

- ❖ Use bounce flash off a ceiling or wall.
- ❖ Use some sort of reflector on flash unit to reflect the flash light onto the subject.
- ❖ Move subject away from walls.



Lens – 32 mm
Program
Aperture – f4.0
Shutter – 1/60
ISO – 400
Flash Exp. – 2/3
Flash – on camera



Lens – 32 mm
Program
Aperture – f4.0
Shutter – 1/60
ISO - 400
Flash Exp. – 2/
Flash - Bounced