Flash Photography: Part A

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On-Camera vs In-Camera Flash

- Called a Speedlite, flashgun or hot shoe flash.
- Connects directly to your camera
- Can be tilted and swiveled
- Adjustable power
- Can be used on or off-camera
- Greater control and better lighting options
- Has its own power supply

- A build-in, pop-up light that is part of your camera
- Oriented in a fixed direction
- Operates near the lens (red-eye)
- Low power
- Results can be harsh

On-Camera Flash Sources

- Canon
- Nikon
- Sony
- Fuji
- …

<u>3rd Party ($ - $$$)</u>:

- Profoto
- Nissin
- Godox
- Flashpoint
- Yongnuo
- Phottix
- Bolt
- …

Adorama store brand

Ways to Use a Speedlite Flash

Flash Modifiers

(see vellogear.com for lots of ideas)

Diffusion Dome - best used indoors when bouncing light

Softbox diffuses the light, softer shadows

Gels for changing light color (e.g. to match ambient)

Tungsten match

Florescent match

Key Flash Performance Specs

- Guide Number (relative flash power)
- Recycle time (wait time between shots while it recharges itself)
- Power type (e.g AA batteries, rechargable batteries, external power supply)
- (Auto) Zoom Head (matches lens focal length)
- Remote triggering (requires remote trigger)
- TTL (Through the Lens automatic power setting)
- HSS (High Speed Sync for fast shutter speeds)

Guide Number (a published value for each flash)

- for correct exposure at maximum flash power & ISO 100

Guide Number (ft, m) = Distance (ft, m) × fstop

- fstop = Guide Number / Distance
- Distance = Guide Number / fstop

Example 1: Canon Speedlite 430EX III-RT

Guide Number = 141’

fstops:	f/16,	f/8,	f/4,	f/2.8
Distances:	9’,	18’,	35’,	50’

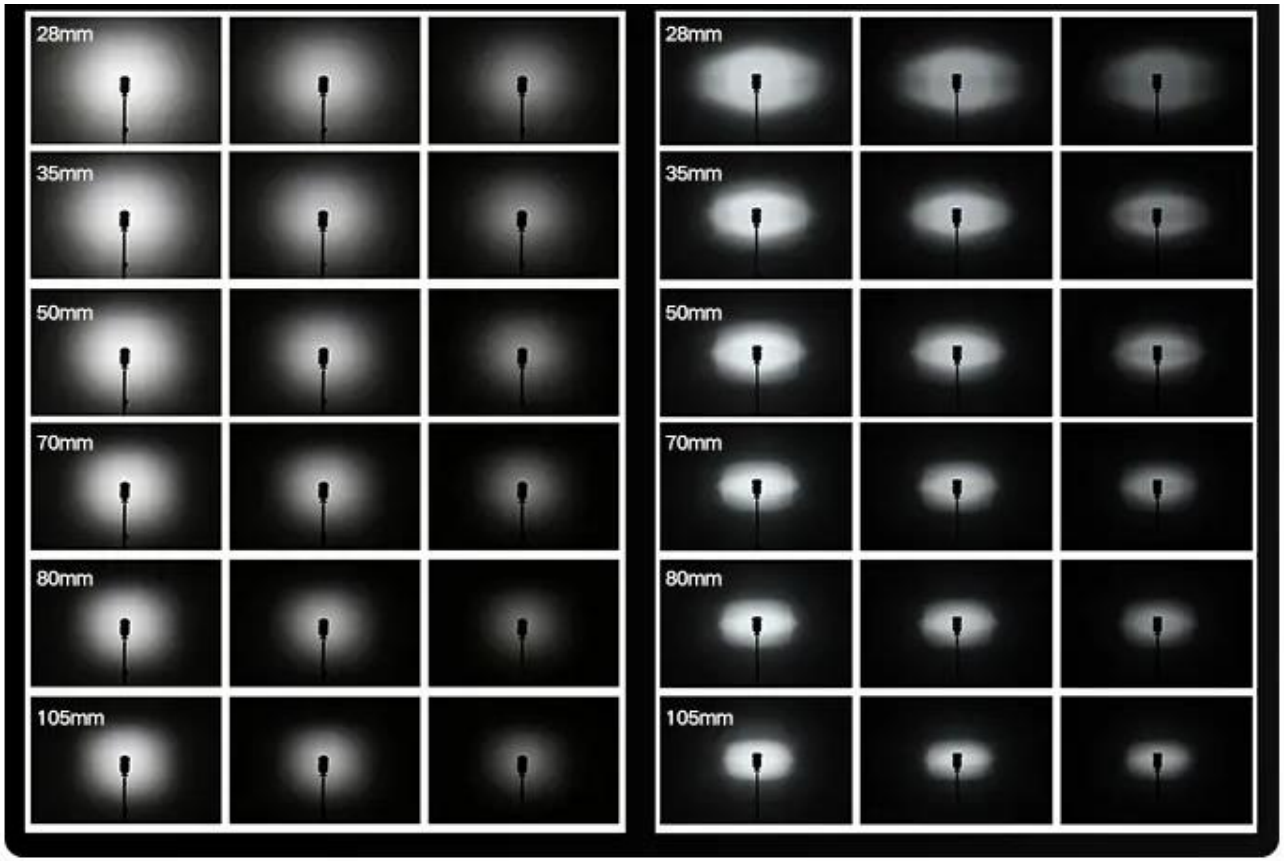
Example 2: Canon M50 Mk II camera w/ ***built-in flash***

Guide Number = 16.4’

fstops:	f/16,	f/8,	f/4,	f/2.8
Distances:	1’,	2’,	4’,	6’

Zoom Flashes

- Flash adjusts to match field of view of lens. Some are automatic.



Manual Flash

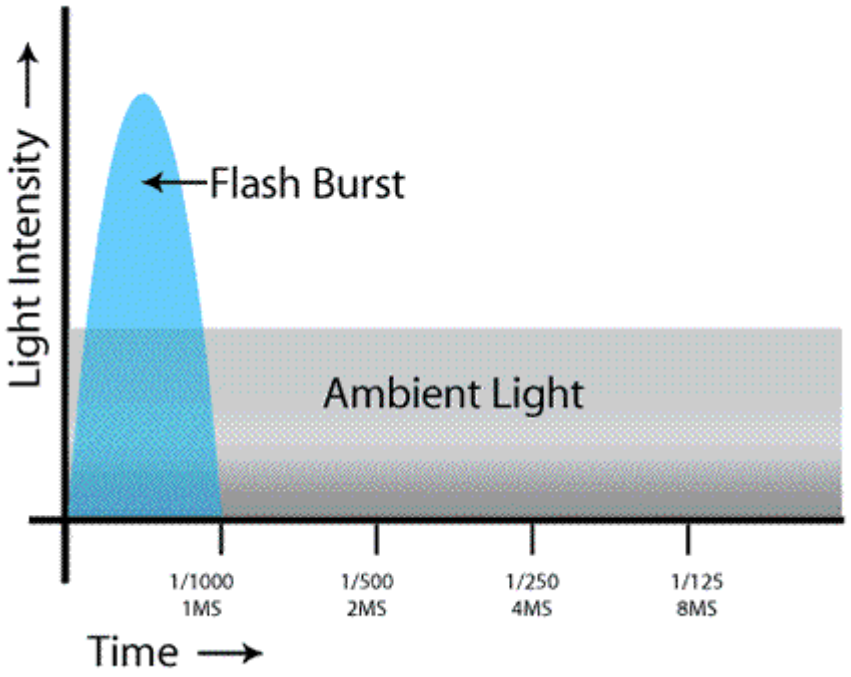
- You set this via the flash's menu. You control the flash power.
- Power is set as 1/1 (full power), 1/2 (half-power), … 1/256.
- Start by properly exposing your background. Lock in your aperture, ISO, and shutter speed. Manual Mode is best.
- Can just pick a flash power, e.g. 1/32, and see how it looks. Raise or decrease as needed.
- Adjusting the aperture and ISO affect the exposure in Manual Flash Mode, unlike TTL Mode (next slide).

Through the Lens (TTL) Flashes

- TTL automatically uses the camera's built-in metering system, aperture & ISO settings, and the distance to the subject to set flash power.
- Shutter speed won't affect subject exposure.
- Aperture or ISO adjustments won't affect the exposure as TTL will adjust the power to compensate.
- Press the flash's menu button and select TTL. Then just shoot!
- If flash is off camera, best TTL when flash is same distance from subject as camera is.
- TTL can use flash compensation setting to increase or decrease power from the automatic result.
- Or select Manual operation and adjust it yourself.
- E-TTL mode means "evaluative through the lens." It uses a quick pre-burst of light before the actual flash. It does this to drown out the ambient light that may interfere with the exposure calculation.

Flash vs Ambient Light

- Flash power on subject is the area within the fig. blue zone – independent of shutter speed, but depends on subject distance and flash power setting.
- Ambient light power is the area in the gray rectangle – increases with shutter duration.
- Both are equally affected by ISO and aperture.



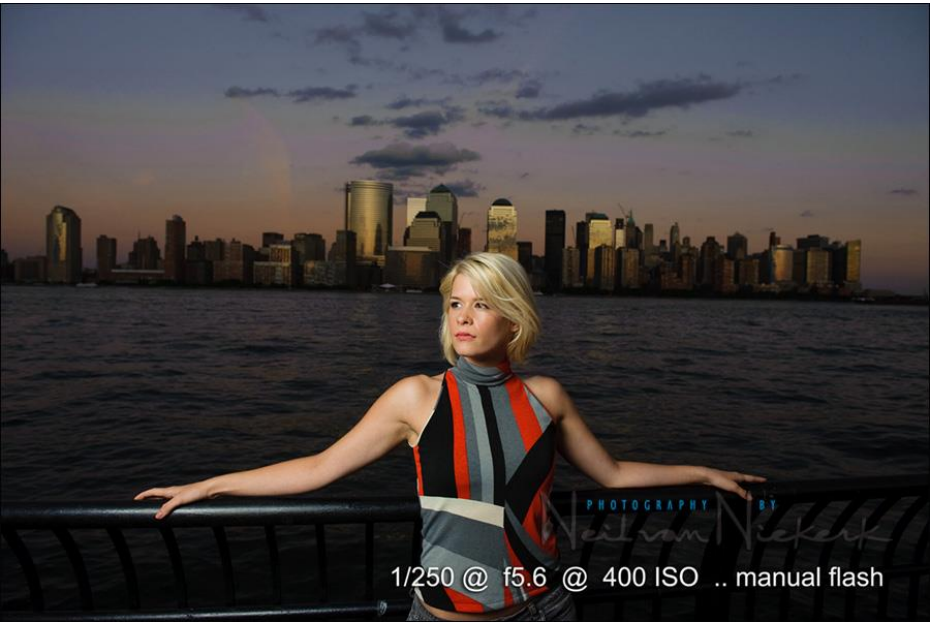
Faster shutter speeds:

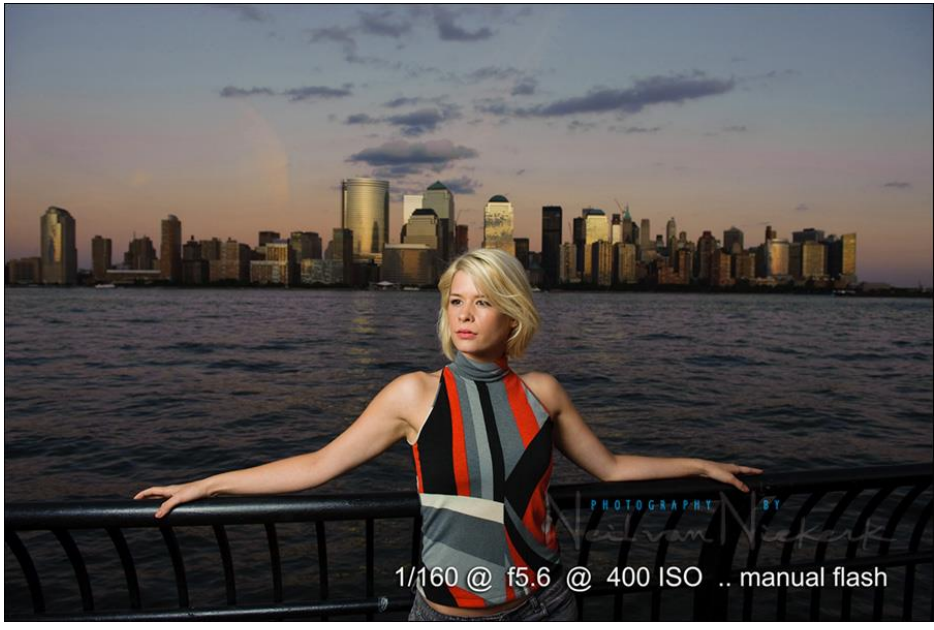
- Increases flash to ambient ratio.
- They freeze motion.
- They allow for less flash power to be used and faster recycle times.

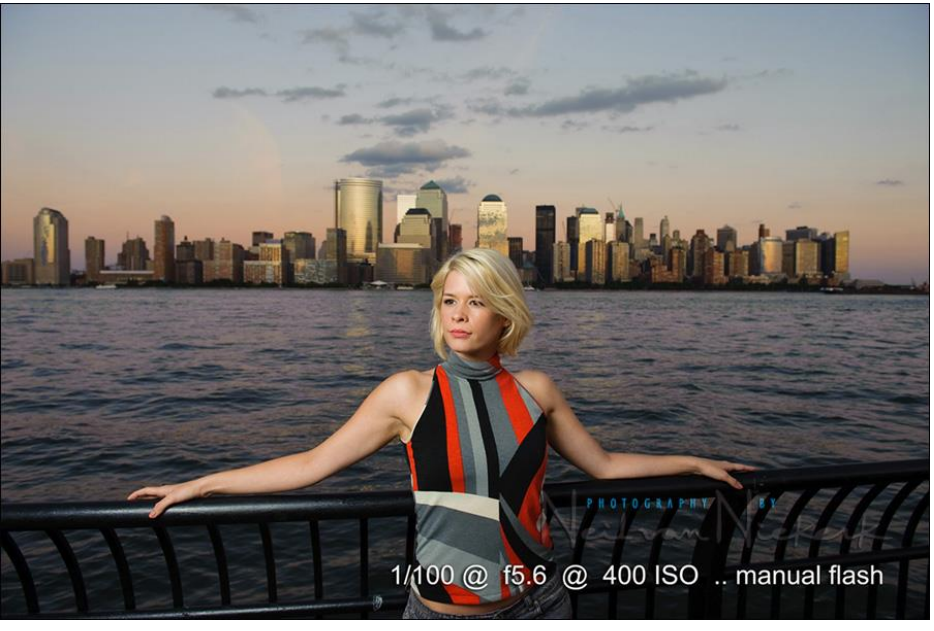
Slower shutter speeds:

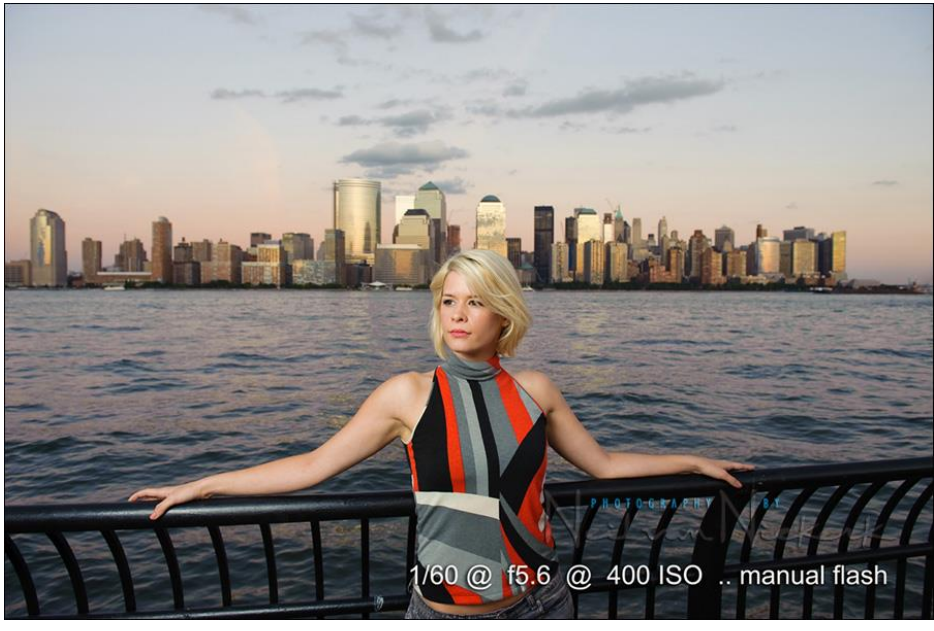
- Decrease flash to ambient ratio.
- Brings up background exposure.
- Allows background motion blur.

Shutter Speed Affects only Ambient Background





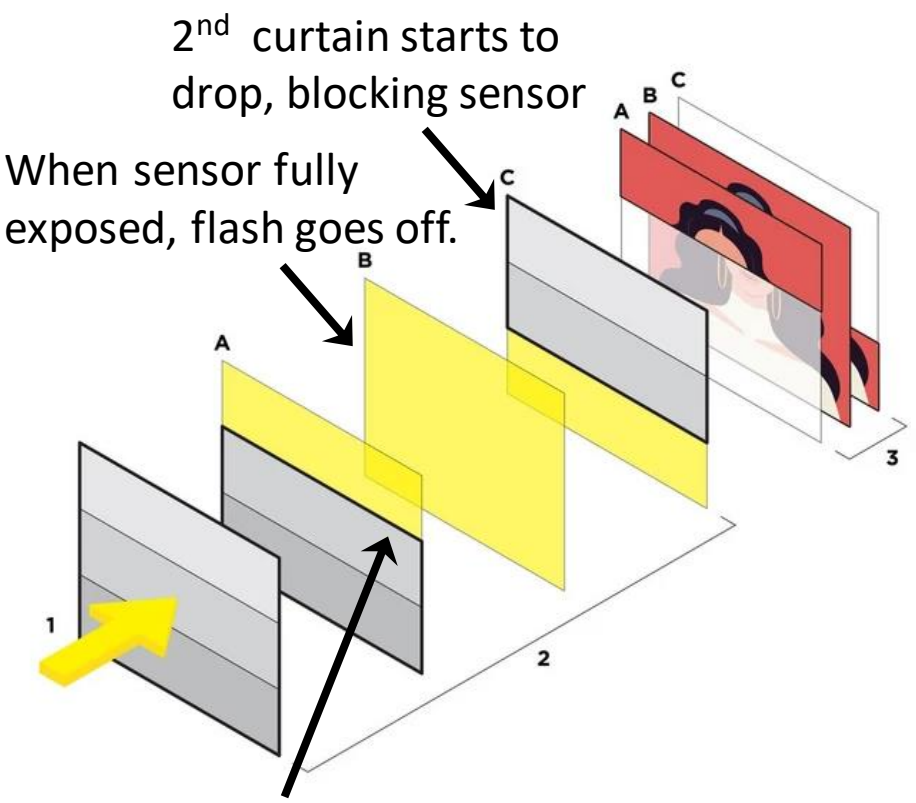




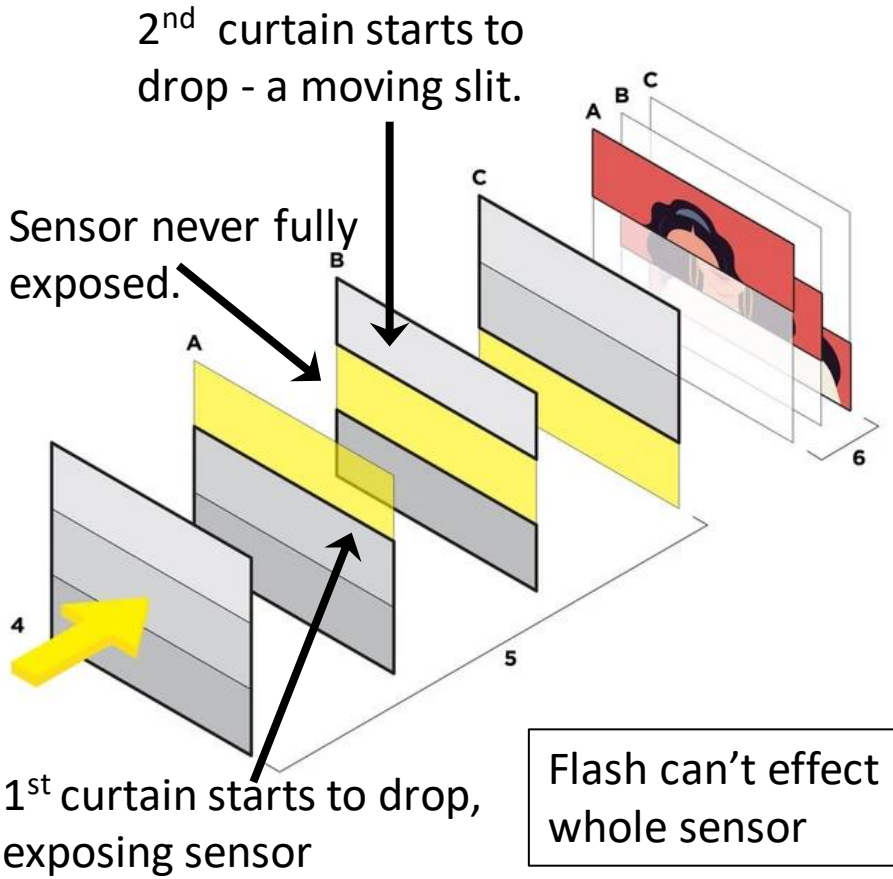
Flash Sync Speed (camera shutter speed)

- Mechanical shutter cameras limit their fastest shutter speeds to > 1/250 sec (or so) for flash sync. They can't freeze fast action. Reason:

1/200 sec



1/500 sec



Flash can't effect whole sensor

Flash Issues with Some Electronic Shutter Cameras

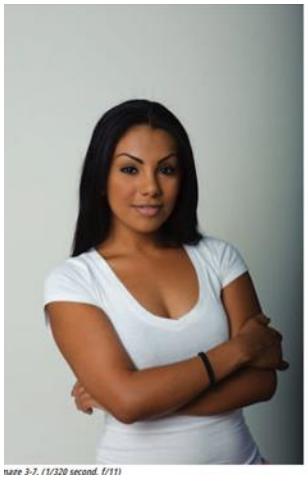
- Some cameras disable flash in electronic shutter mode because flash is faster than readout time of sensor.
- Olympus reduces flash sync speed to 1/50 sec.
- Check your manual if using electronic shutter.

Exceeding Flash Sync Speeds

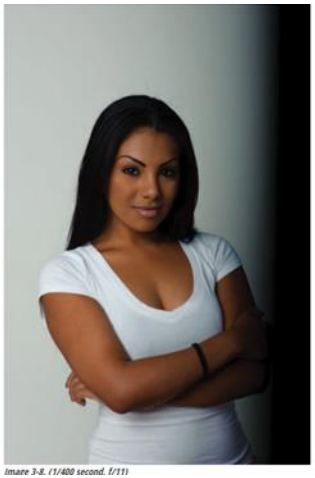
1/125 s

1/200 s

1/250 s

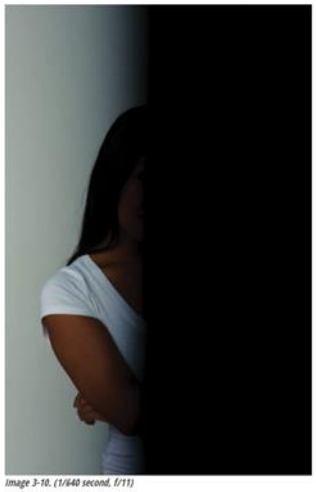


1/320 s



1/400 s

1/500 s



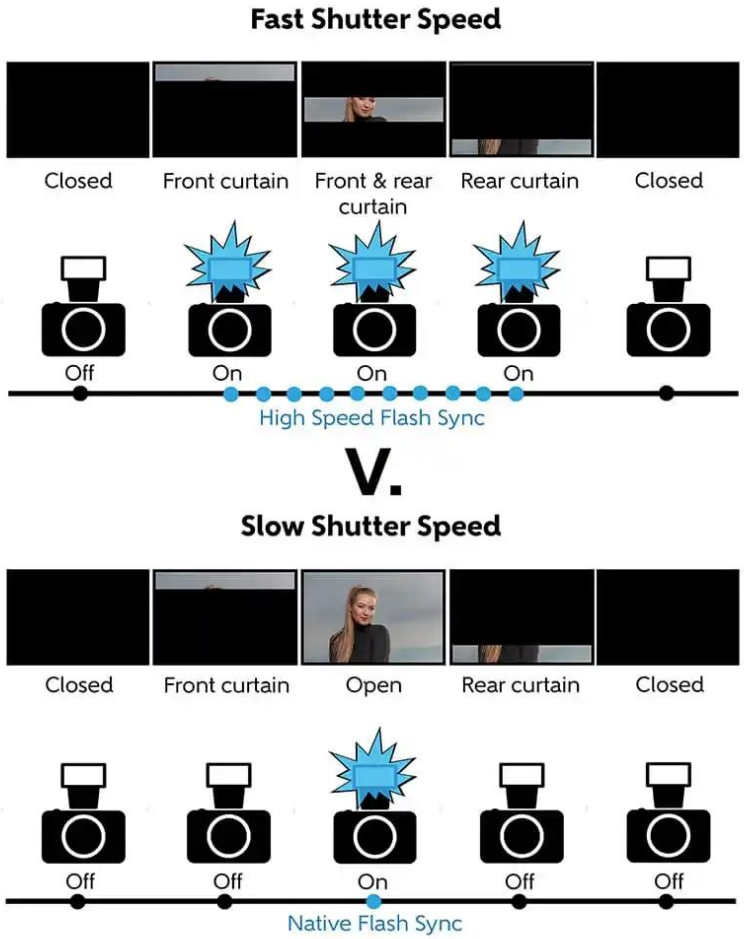
1/640 s

1/800 s

High Speed Sync

(requires shorter distances)

Close-up of High Speed Sync Indicator



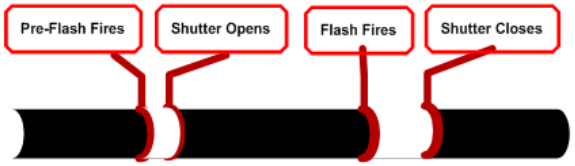
Flash pulses at lower power during entire moving slit exposure duration

Solves sync problem at high shutter speeds

Flash is on only when entire sensor is exposed.

“Drag the Shutter” for Motion Blur
(can sync to Front (1st) or Rear (2nd) curtain)

Long shutter speed with flash synchronized to Front Curtain.



Long shutter speed with flash synchronized to Rear Curtain.

May require: on-camera or cable, & Slow enough (e.g. $\leq$ 1/80 – 1/25 sec)

Fade to Black

– overwhelm ambient light.

Before

After

Adjust camera exposure for black background. Manual exposure setting. Fast shutter.

If flash sync limit isn't fast enough may need high speed sync flash and camera setting to go faster. Can also use shade or black backdrop to help.

Set Flash to Manual and use full power. Get Flash closer to subject. Easy with macro subjects!

Fill Flash

Generally, fill flash is used in situations when your subject is:

- Positioned in front of a brighter background or
- Covered by harsh shadows (such as under the eyes and chin in portraiture)
- Near enough to use flash.

High Dynamic Range, exposed for sky.

Flash on low power, to left of camera.

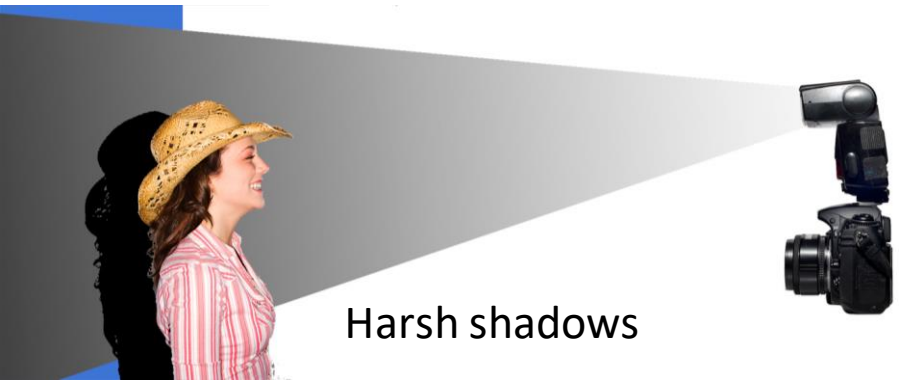
Fill Flash - portraits

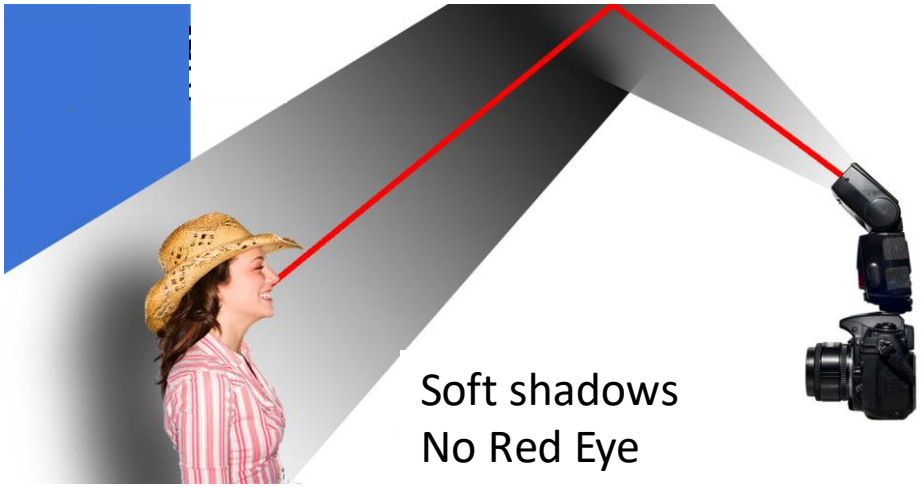
- Low Power, off camera, right side: better than face-on.

Fill Flash modifiers

- If outside, the flash color temperature may be bluer than ambient. Can put a gel (e.g. orange) in front of the flash to warm the color.
- Direct flash may wash out/flatten the image tones. Can diffuse flash with softbox, diffusers, umbrella, etc.

Bounce Flash





- You will need more power as the flash is diffused and softened as it reflects off the ceiling or wall (the light is traveling further).
- The color of the surface used for bouncing will affect the color of the light hitting your subject – white is neutral.
- Try to aim the flash at a point half-way between you and your subject.
- Be careful of high ceilings which will diffuse your light, but also provide less light. If high or dark ceiling, you can use a bounce card instead.

Wireless Remote Triggering

Receiver Transmitter

Simple, inexpensive option

Compatible Flash/Transmitter: Can control flash settings from transmitter

- Radio transmitters send commands to the remote flashes using radio waves.
- IR transmitters send an infrared light signal to the flashes (need line-of-sight).