

# Flash Photography 101

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November 1, 2007  
Notes from the powerpoint (less photos)

## My Philosophy

If you understand the basics, you can do a lot with a little.  
If you don't understand the basics, you can do little with a lot.

## List of things covered

- Flash Applications
- Flash Exposure Basics
- Guide Numbers
- Shutter Sync Speeds
- Types of Flashes
- Flash exposure modes
- Flash Accessories

## Flash Applications

- Substitute Lighting
  - When using flash as the primary light source
- Supplemental Lighting
  - When using the flash to fill or enhance the existing light
- Stop Action Lighting
  - When using the flashes short duration to freeze the subject

## Exposure Basics

- Lens Aperture
  - Determines how much light reaches the film
- Camera Shutter
  - Determines how long the light is exposed to the film
- ISO Speed
  - Determines how sensitive the film is to the light

## Flash Basics

- Two exposures using flash
  - Ambient Light exposure
  - Flash Exposure
- Flash exposure is not affected by shutter speed (at sync speed or slower)
  - The flash begins and ends while the shutter is fully open
- Ambient light exposure is affected by shutter speed
- Flash exposure is dramatically affected by distance (inverse square law)
  - Double the distance requires 4 times the light (2 stops)

Half the distance reduces light requirements by a factor of 4 (2 stops)

- Your camera measures ambient light and flash light separately (Dedicated flashes)  
May or may not automatically adjust shutter speed

### Guide Numbers

- Def: A number representing flash power at a given ISO (typically ISO 100)
- Def: A number derived by multiplying the subject distance by the fstop for a properly exposed photo
  - Guide number of 110' = f11@10' or f22@5'
  - 10' @ f 5.6 = guide number of 56
- The higher the guide number, the more powerful the flash
- May be given in meters or feet
- Caution: Guide numbers given for zoom settings

### X-Sync and 2<sup>nd</sup> Curtain Sync

- Moving auto with X-sync:
  - The flash would fire at the beginning of the exposure.
  - The flash would illuminate the auto and its *frozen* image would be recorded on film.
  - The film would record an image of the auto's lights as they moved across the film frame.
  - The image of the car's lights would be recorded as streaks of light in front of the car.
  - The image on film would imply **backward** movement of the car!
- Moving auto with second curtain sync:
  - The film would record an image of the auto's lights as they moved across the film frame.
  - The image of the car's lights would be recorded as streaks of light.
  - The flash would fire at the end of the exposure.
  - The flash would illuminate the auto and its *frozen* image would be recorded on film, in front of the light streaks.
  - The image on film would imply **forward** movement of the car!

### Types of Flash

- On-board
- Pure Manual
- Automatic Non-Dedicated (Non-TTL)
- Automatic Dedicated (TTL)
  
- Pure Manual
  - User controls exposure via camera
  - May require a sync cord

- Camera on Manual Exposure
- Shutter speed at sync speed or slower
- Shutter speed set for ambient light
- May have partial power settings
  - I.e. 1/2, 1/4/ 1/8 (1, 2, 3 stops)
- Common in studios
- Flash meter is very handy
- Non-Dedicated automatic (non-TTL)
  - Vivitar 283/285HV, Sunpak 285
  - Same as manual
    - May require a sync cord
    - Camera on Manual Exposure
    - Shutter speed at sync speed or slower
    - Shutter speed set for ambient light
    - Common in studios
    - May have sensor levels instead of power levels
      - » I.e. Red, blue, purple, yellow
    - Flash meter is very handy
  - Typically Thyristor Based (Saves power and batteries)
  - Sensor on Flash determines when to shut the flash off
  - Sensor may be movable

## Dedicated Flash Accessories

AC Adapters

Filter packs

Remote sensor cord

Reflectors

Snoots

Diffusers

Flash Accessories - Bounce

Flash Accessories - Brackets

Flash Accessories – Optical Slaves