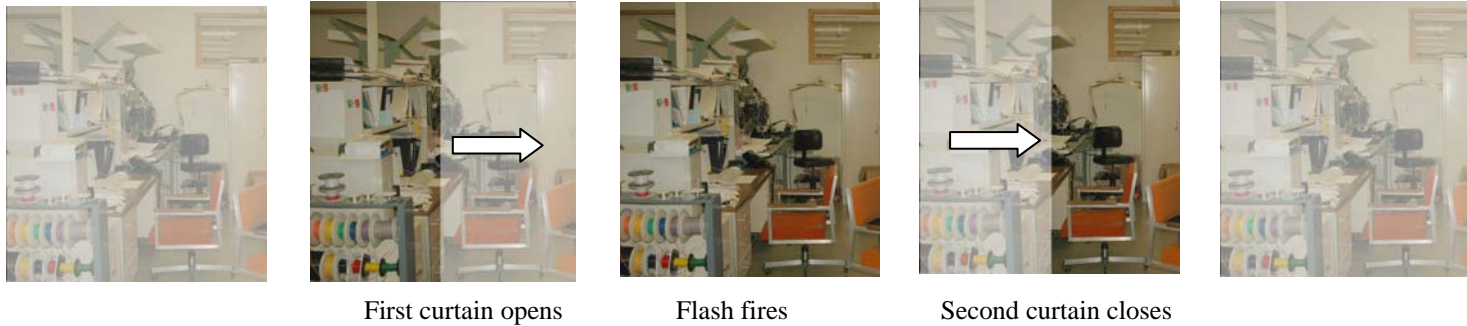


Understanding high speed sync and it's limitations

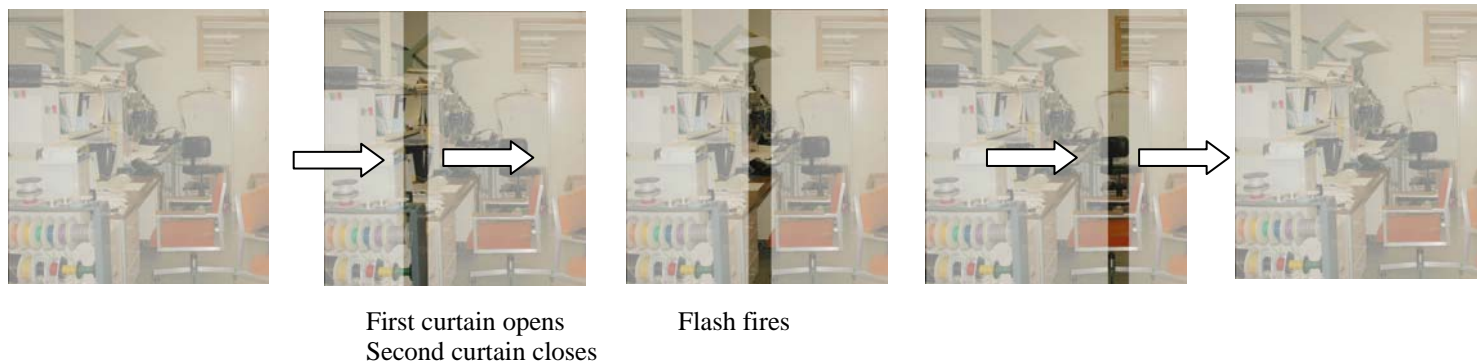
Before we can begin to discuss high speed we need to first review how a camera and flash take a picture.

When the shutter is released the first curtain is opened. The flash fires, correctly exposing the scene. Then the second curtain closes. The shutter time is the amount of time between the opening of the first curtain and the closing of the second curtain.

For example : If the shutter time was set for 1/125, the second curtain will close .008seconds (1/125) after the first curtain starts to open.

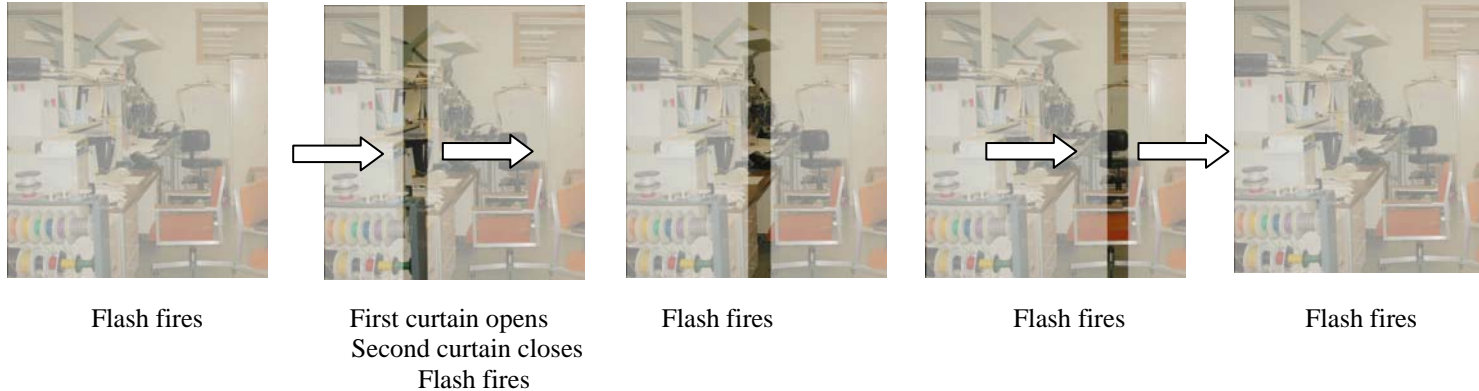


When shooting high speed sync the shutter time is so short, the second curtain begins to close before the first curtain is fully opened.



Notice that if the flash fires as it did before only a narrow strip would be properly exposed.

In order to properly expose the entire scene the flash must fire multiple times, exposing each narrow strip. And to ensure that the first narrow strip is properly exposed the flash must begin firing before the first curtain opens



In the example above I show only 3 narrow strips, but in reality a picture done at high speed sync is made up of dozens of narrow strips. So, when using high speed sync a single picture is actually made up of dozens of smaller flash pictures.

Light output of high speed sync

All the energy that a flash has to take a picture is stored in a capacitor inside the flash itself. When you set the flash to full power you are going to use all that stored energy (F11). When the flash is set to half power you will be using half the stored energy (F8.0), etc.

So you can take one picture at full power (F11), two rapid pictures at half power (F8.0), four rapid pictures at quarter power (F5.6), and so on. As the number of rapid flash pictures goes up the amount of energy available for each individual picture goes down.

When shooting high speed sync the camera will determine the number of strips as well as the width of each strip based on the shutter speed selected. After the camera determines the number of strips (and the number of rapid flashes required), the camera will determine the flash output by dividing the number of required flashes by the total power of the flash.

If the camera determines that the photograph requires 16 strips and your flash is capable of an F11 (full power), the camera will make each strip 1/16 power (F2.8). It is important to note that the camera chooses the number of strips as well as the amount of power used for each strip.

Recommended modes are Shutter priority, or Manual. When shooting in manual be aware that, while you may set your aperture for and F8.0 or F5.6 you are more likely to get an exposure that is considerably lower.