

**When to use Front Curtain (First curtain)  
and Rear Curtain (Second curtain) to sync flash  
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Focal plane camera come with two curtains which normally stop the light from hitting the CCD or indeed the film in older cameras.

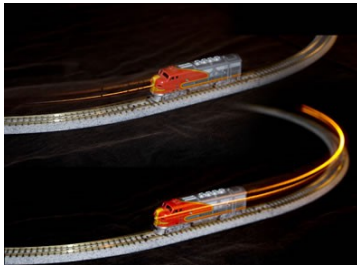
One follows the other across the focal plain with a gap between them according to the shutter speed required. As the speed of the curtain across the plain is constant in all circumstances, the only thing that can be done to effect the effective exposure, is the gap between the first and second curtain. If the speed required is high there is a smaller gap than when the shutter speed is slow, the front curtain may even make it all the way across the plain before the second (rear) curtain even starts, this is true for extended exposure in bulb mode, ie night photography, etc.

Most, if not all, modern cameras have a vertical shutter, and that allows for a higher sync speed.

Front curtain sync is when the camera is using a flash and the flash is set off when the first curtain moves. Rear is when the flash fires as the second curtain moves.

If you use front curtain sync on, say, a moving car, the streak that appears to come from the car will precede it and look odd, in this circumstance it will look far better to use rear curtain, as the streak will be captured on to the CCD or film and then the flash will fire, freezing the action and putting the frozen image ad the front of the streak, therefore making it look more natural.

Some examples..



The first top most train is being shot with front curtain and the lower with rear curtain sync.

The train in the top is frozen with the flash and as the exposure is long enough its movement is captured as a ghost in front of the frozen (flash captured) image.

The train in the lower has its ghost image being captured onto the CCD and then frozen by the rear synchronized flash.



The car above looks like its reversing, but in-fact the camera user has set front sync.

In some circumstances it will not matter when the synchronized flash is front or rear, but in most where the object is moving, it will look odd to be front synchronized. Sometimes it may just look blurred.

In most, if not all shutter speeds, the flash duration is a lot shorter than the shutter speed, and therefore the effects of front or rear sync can be seen to a greater or lesser extent. The duration depends on the distance to the object, the ambient lighting and also the setting of the flash itself, as it could be set to 1/8 power etc. But the duration could be 1/2800 or less of a second. So it can be seen that the duration of the flash will cover only a small portion of the exposure.

If you use a shutter speed that is too quick, you may not get the expected results, as the flash isn't instantaneous and takes time (albeit a small amount) to reach its (the flash) peak.

Some camera have an electronic shutter, and while it may be true that the sync speed can be a lot higher than DSLR's (they can be as low as 1/250 or maybe 1/500 of a sec), electronic shutters can be as fast as 1/4000, but when used with a flash, the exposure has happened before the flash has had a chance to fire and get to its peak output.

It has to be said that there is an alternative shutter, called a leaf shutter and as such doesn't have the disadvantages of the front and rear curtains, when used with a flash. Its construction is much like the iris of the lens that is used to control the aperture, though this version fully closes while the aperture does not.