

MOTION BLUR & FREEZING MOVEMENT

The world is full of movement, motion. The camera can capture the subject as a frozen moment or allow the blur of subject as it sweeps across the film.

Both effects are artistic and can be used with good results. While snap shooters always think of freezing motion to get the sharpest image, the professional looks to motor blur as a serious creative element in still photography.

Controlling subject motion in the image is controlled by shutter speed.

Slow shutters allow motion blur
Fast shutters freeze motion

But the exact shutter speed depends on many factors:

- Speed of the subject.
- Direction of the motion in relation to the camera
- Distance of subject from the camera

TYPICAL SHUTTER SPEEDS REQUIRED TO STOP MOTION:

SUBJECT	Across Path Fills full frame	Across Path Fills half frame	Head-on
Person walking	1/125 sec	1/60 sec	1/60
Jogger	1/250	1/125	1/60
Sprinter	1/500	1/250	1/125
Cyclist	1/500	1/250	1/125
Trotting Horse	1/250	1/125	1/60
Galloping Horse	1/1000	1/500	1/250
Diver	1/1000	1/500	1/250
Tennis Serve	1/1000	1/500	1/250
Car @ 40 mph	1/500	1/250	1/125
Car @ 70 mph	1/1000	1/500	1/250
Skier	1/1000	1/500	1/250
Racer @100mph	1/2000	1/1000	1/500
Train	1/2000	1/1000	1/500

FLASH – Using flash is an easy way to stop motion. The burst of light from an electronic flash lasts only 1/20,000 of a second or less. The only limitation is that the subject must be in the range of the flash. Modern TTL flash units can also calculate the correct exposure.

PANNING – Move the camera along with the subject to stop motion. In panned shots, the background is blurred and only the subject is in focus. Panning tends to accentuate subject movement. Take multiple shots. Not all will work. The trick to panning is smoothness of your pan. Start with high shutter speeds for the pans and decrease the shutter speed as you gain experience.

For racing cars: start with 1/500, then 1/250

For galloping horses: start with 1/60

As you gain experience slow your shutter speed.

At some point the lesser blur of the subject imparts an impressionistic effect.

TRICKS: Move your entire body with the pan. Also try using a monopod to steady the camera.

TRACKING – This is similar to panning, but you move as well as the subject. The typical example is shooting from a moving car. The background is still blurred, but the subject remains sharp. Tracking is actually easier than panning since you have more time to focus and track the subject.

MULTIPLE FLASH – In this approach, the flash is fired several times during a single exposure. Each flash burst captures an image of a moving subject so the final frame has multiple exposures at different points in the movement.

A strobe type flash can do this easily. You can even program the number of flashes to fire. This can also be done manually by locking the camera on BULB (or some long exposure) and manually firing the flash multiple times.

For best results the subject should be against a black background. Setting the correct exposure can be auto calculated by some strobe units. Others may require some trial and error.

RACKING THE ZOOM – Move the zoom while taking the picture. The result is an explosion effect that adds a strong sense of action. Using a slower shutter speed magnifies the effect.

PRE-FOCUSING – Getting a sharp image through these various tricks also requires good focusing. The way to do it is by pre-focusing at a predetermined spot. Both manual focus and autofocus cameras can do this. The real trick is to trip the shutter just prior to when the subject reaches the correct location. This compensates for shutter delays. It takes practice to gain this skill.

AUTOFOCUS -- It may work if the autofocus is fast enough. Also explore your servo or predictive AF, which constantly adjusts focus to keep a moving subject sharp.

OBTAINING MOTION BLUR

Adding motion blur to an image can increase impact by adding a sense of motion. The trick is to add just the right amount of motion to the subject to look convincing, but not just a mistake.

Subject	Moderate Blur	Extensive Blur
Waterfall	1/5 sec	1 sec
Person Walking	1/30	1 /4
Person Running	1/60	1/15
Horse Trotting	1/30	1/8
Horse Galloping	1/125	1/30
Car @ 40 mph	1/125	1/30
Car @ 70 mph	1/250	1/60

These numbers assume the subject is traveling towards the camera. If moving across the path, more blur will be recorded. There are no hard rules for this. Experimentation is the trick.

Another trick is to include something static in the picture. For example, have one dancer stand still while the others move. This will increase the impact of movement.

SLOW-SYNC FLASH – This technique combines flash exposure with slow shutter speeds in low light situations to emphasize movement. The flash will freeze the subject but the ambient light combined with panning adds a touch of motion. To do this set the camera to aperture priority and select a small aperture to get a long shutter speed for more blur. (1/30 – to ¼ second is a good starting point. Set the flash/ambient light ratio to 1:2 which generally means half power for the flash unit. Now pan along with the subject and fire. The flash will freeze the subject, but as you pan the camera, the background will blur. If possible use second curtain flash sync. That will put the blur behind the subject. First curtain flash sync puts blur in front of the subject.

WATERFALLS – These look best at 1/5 to 1 second exposure. Slower than that and you miss detail in the paths the water is falling. Faster than that and you get no blur. Try for f/11 to f/16 to get sharpness and DOF. Obviously ISO 100 film and a tripod is needed for the best image. If you can't get a slow enough shutter with these parameters, use filters. A polarizer takes 2-fstops. After that add ND filters.

LIGHT TAILS – Typically these are the headlight & taillights from moving vehicles. Good tails require long exposures of many seconds. This technique works best in night shooting where the camera can remain open for several minutes. A tripod is critical for this technique.

GHOSTING – There are several ways to add a wispy ghost to your images. The fundamental idea is that capturing a ghost requires it to receive much less exposure than the overall photograph. Double exposures can get a ghost if the ghost exposure is only a fraction of the overall exposure. Set up the camera to capture the full exposure in two multiple exposures. One has the ghost (person) and the other does not. Obviously this works best with very long exposures, so you will need very slow film, small apertures and perhaps ND filters. Another technique works for night photography where the overall exposure is long (several minutes). Walk in front of the camera for a short period and you may be captured as a ghost.