A step-by-step guide to operating the view camera

by Q.-Tuan Luong for the Large Format Page

Operating the view camera is done in a series of steps, whose order is crucial. Reversing some of the steps will ruin the image. Reversing some other steps will unnecessarily *waste time*.

Although this might seem complicated at first, if you always stick to the same sequence, it will become second nature. You will then be able to concentrate on the subject. Here is the sequence that I favor in the field.

1. Choose the camera position, approximate orientation, focal length.
2. Set up and level the tripod and camera.
3. Attach the lens and open it to full aperture.
4. Focus roughly using the focussing knob.
5. Adjust precisely the composition while looking at the ground glass.
6. Focus precisely with tilts/swings.
7. Determine the optimal aperture.
8. Re-adjust slightly the composition (optional but recommended).
9. Adjust filters and compendium shade (optional but recommended).
10. Check for vignetting (optional but recommended).
11. Close the lens, cock the shutter, rap and insert the film holder.
12. Determine the shutter speed.
13. Set the aperture and shutter speed.
14. Remove the dark slide.
15. Look at the subject.
16. Fire the shutter with a cable release.
17. Put the darkslide back in.
18. Remove the filmholder.
19. Make a second identical exposure (optional but recommended).
20. Pack and move to the next spot.

For a similar sequence described in greater detail, see Howard Bond's Check list for view camera users.

In detail

1. **Choose the camera position, approximate orientation, focal length.**
    - Walk around, kneel up and down, and observe your subject. Even for a large landscape a small difference in camera position can be very important. Camera position will determine your perspective.
    - The choice of focal length will determine how much is included in the picture. If you hesitate between two focals, use the shorter one. Unlike with smaller cameras, there is no need to fill the frame, as you are shooting for printing and can crop while making the print with little quality loss.

- Close one eye to eliminate stereo depth. It is useful to have a viewfinding device which helps you visualize a part of the scene as a two-dimensional picture. You can use:
  - A 35mm camera equipped with a lens of a focal equivalent to those on the LF camera (a zoom lens like Nikon 24-120 works well).
  - A LF viewfinder. The best one is the Technika multifocal viewfinder. The older ones covers 90-360, while the newer model covers 75-360 and have a slicker design, so watch out carefully for the specs. They can be found used for $200/$400.
  - A viewing frame. This is piece of cardboard with an opening of the size of your film. The distance you hold it from your eye will correspond to a lens of the focal length. You can attach a string with knots to mark the focals that you own.

  For B&W, you can also look through a colored filter which removes most of the colors. Zone VI makes such a viewing filter/frame.

2. **Set up and level the tripod and camera.**
   Do not set the tripod before completing the previous step. Moving it around with the camera is awkward and makes it difficult to find the optimal position.
   - Try if possible to have the triangle formed by the legs pointing towards the scene (so the leg does not get in your way), and the platform level (so that panning the camera will keep it level). On uneven terrain, make sure your set-up is stable.
   - Make sure that all the controls of your camera are in neutral position and locked. It's pretty annoying to discover that your picture is slightly soft on one side because the lens was swung without you noticing it.
   - Aim the camera towards your subject
   - Level the camera left-to-right using the built-in bubble levels.
   - If there are vertical structures in your subject (which is always the case with architecture), level the camera back-to-front.

3. **Attach the lens and open it to full aperture.**
   - It is a good time to change to a wide-angle belows when using a very wide lens and extensive movements.
   - At full aperture the ground glass is brighter and sharpness judgements are easier to make. For most lenses, the focus shift between full aperture and taking aperture is neglectible.
   - Most lenses have a switch for opening/closing the lens, in addition to the aperture and shutter controls. If yours doesn't, use the B shutter speed with a locking cable release to keep the lens open.

4. **Focus roughly using the focussing knob.**
   This is just so that you can see your subject with the proper magnification. You will refine the focus later.

5. **Adjust precisely the composition while looking at the ground glass.**
   - Use the upside down image on the ground glass to help you pay attention to the abstract placements of the elements of the image.
   - If avoiding convergence of vertical parallel lines is important, which is in general the case with tall subjects (buildings, trees, mountains), use primarily rise/fall for vertical framing.

- If this is not important, which is in general the case with planar subjects (meadows, desert flats, tide pools), use the tripod head tilt.
- Panning with the tripod head is OK if the platform is level, otherwise will require releveling. Better to use lateral shifts.

6. **Focus precisely with tilts/swings.**
   Do not start focussing before the composition is adjusted. Tilting, panning, and rise/fall/shifts (on most cameras) will alter the focus, so you would have to refocus
   - Precise focussing should be done with a lupe rather than with the naked eye.
   - Since this is arguably the most technical part of using a view camera, there are a variety of focussing techniques.

7. **Determine the optimal aperture.**
   This depends on the focus point
   Principles:
   - Even if everything looks sharp, it is in general not advisable to use large apertures because of lens aberrations, smaller image circle, and micro-alignement and film flatness problems.
   - Stopping down more than necessary will result in loss of sharpness due to diffraction. All lenses are limited in resolution to about 1500/N line pairs per mm (the actual resolution on film will be slightly lower since it is a product of lens and film resolutions). At f16, this is 93 lpm, f22:68, f32:46, f45:33, f64:23. Another possible problem is image shake due to longer exposures.
   - Out of focus areas due to unsufficient depth of field are generally more disturbing than overall softness caused by diffraction. In practice, I have found that it is easy to underestimate the amount by which you need to stop down. If everything on the ground glass doesn't look sharp, be prepare to use pretty small apertures !

   Three alternative methods:
   - Visual method: stop down until the most out-of-focus parts look sharp under the lupe.
   - Mechanical method based on image space: measure the difference in extension of the camera (the travel of the focussing rail) when the closest and the furthest points of the scene are focussed. Taking into account only defocus, your f-stop used will be proportional to this distance. The proportionality factor depends on the acceptable circle of confusion. This is facilitated with a DOF knob. I prefer to take into account also diffraction. Then there is an "optimal" method to set the f-stop to obtain the sharpest possible picture.
   - Mechanical method based on object space: estimate distances on the subject and use a DOF table. I feel this method is the less precise of the three unless you use laser range finders.

8. **Re-adjust slightly the composition (optional but recommended).**
   The tilts and and swings might have altered it.

9. **Adjust filters and compendium shade (optional but recommended).**
   Filters darken the ground glass and therefore should not be placed on the lens before focussing.
   - The compendium shade is particularly important if the area outside of the image is

brighter than the image, for example if the sun hits the lens, or shooting on an overcast day with the sky cropped out. The extra light could cause flare and/or reduce contrast. In general, it can only increase contrast.
- Adjust it by looking through the corners of the ground glass so that it almost vignettes.

10. **Check for vignetting (optional but recommended).**
This should be the last step before closing the lens, as vignetting might be due to lack of lens coverage or to obstruction by filters, shade, or bellows, and should be checked at taking aperture
    - Through the corner cut-out of the groundglass look at your wide open lens: the aperture will look somewhat like a cat's eye pupil. Now slowly stop down until your the lens opening shape changes into a round opening in which you see all the aperture blades. This is the largest stop at which you will have no vignetting.
    - Check top and bottom is you used rise/fall or tilt. check left and right if you used lateral shift or swing.
    - If necessary, straighten the bellows and take care of sag.

11. **Close the lens, cock the shutter, rap and insert the film holder.**
    - If you are going to make a long exposure, rap the bottom edge of the holder in your hands. This seats the film in the holder so it doesn't slowly slip down as you expose the sheet of film.
    - Be gentle not to jar the camera
    - Make sure the holder is properly sitted.

12. **Determine the shutter speed.**
Do not determine the exposure earlier, as the light might change
    - Use any type of meter you like (including 35mm cameras)
    - Add exposure time for filters.
    - Add exposure time for bellows extension if you are shooting a close-up.

13. **Set the aperture and shutter speed.**
Leaf shutters come with full shutter speeds only. If you need adjustments of fractional EV values, you'll use the aperture which can be continuously varied, and is generally calibrated in 1/3 f-stops.
In case you're worried about changing the speed on a cocked shutter, the reputed lens machinist and repairman S.K. Grimes says it is OK and quotes the Copal instruction book, packed with new shutters: "Charging the shutter, opening or closing the shutter blades, changing the shutter speed, changing the aperture stop....all these things can be manipulated in any order you like without the least ill effect on the shutter mechanism.",

14. **Remove the dark slide.**
Do not remove it until you are ready to make the exposure. You'd risk light leaks. If you cocked the shutter with the dark slide out, and missed, you would expose your film.
    - Be sure to pull the one closest to the lens, and do a parallel smooth motion.
    - Double check to be sure that it has the white side facing the lens.

15. **Look at the subject.**
    - A person or automobile might get into your composition.

- If shooting vegetation, you will want to wait for a lull.

16. **Fire the shutter with a cable release.**
    You've almost made it !

17. **Put the darkslide back in.**
    Turn the black side towards the lens so that you know that the film has been exposed. On most holders, you would also rotate a hook to lock the dark slide to prevent accidental opening and indicate that the holder contains film (a unlocked holder with black side up would be empty by convention). However I have found those hooks don't stay in the intended position, so i don't rely on them.

18. **Remove the filmholder.**
    Now, you've made it !

19. **Make a second identical exposure (optional but recommended).**
    Once you have gone through all this trouble, it doesn't make much sense to expose only one sheet of film.
    - A second identical exposure is a cheap dupe, a guarantee against dust problems, operator (photographer and lab) error.
    - You can hold it while having the first sheet processed, examine the result, and then alter the processing to have a perfect exposure for the second sheet. This is much more efficient than bracketing.
    - Use the other side of the same holder if possible.
    - In any case, take notes so that you know latter which holders contain an identical image.

20. **Pack and move to the next spot.**
    If you think you are going to use your camera soon, especially with the same lens, don't fold it yet. Some photographers like to carry their camera mounted on the extended tripod over their shoulder, using the dark cloth for cushioning. I prefer to carry in one hand by the handle, with the tripod folded in the other hand or on a strap.

More information

Howard Bond's Check list for view camera users.

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