

Large Format Cameras



Basic information & resources for beginning
large format photography

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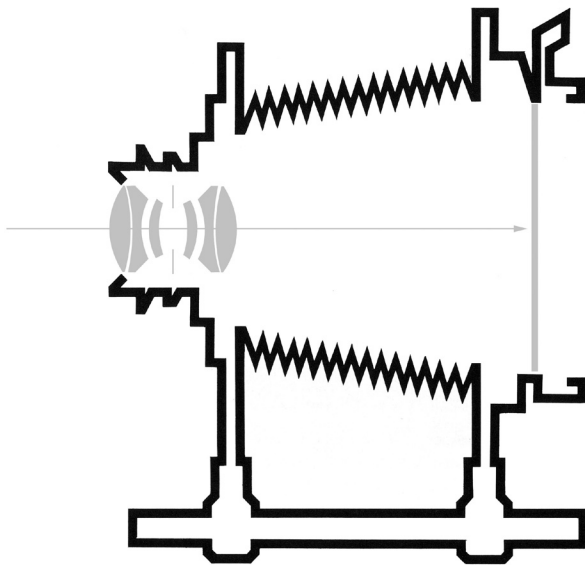
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Introduction

Using a view camera in a lot of ways is a test of fortitude, endurance and can define the very reasons why you make photographs. Large format cameras are heavier, more cumbersome, more demanding in the skills and amount of efforts used to operate and almost always require the use of a tripod. The advantages, over their smaller counterparts, however, are numerous and quite substantial.

Large format, or view cameras, are just as the name implies, and thus deliver much larger negatives than 35mm and medium format cameras. This larger negative results in enhanced detail and image clarity. It also results in an increase in the physical stamina required to simply carry the equipment out into the field. My current field camera, a Linhof Technika IV, weighs almost 15 pounds when attached to the Gitzo tripod. That does not include the dark cloth, film, lenses, focusing loop, light meter, journal, water, and various other items that I general Sherpa about as I endeavor to be a photographer.



Basics

One of the first things you will notice is looking through the ground glass, is that image is upside down. But not just upside down, it's upside down and reversed left to right. The image is shown on the ground glass in the exact manner that it will be transferred to the film, in fact, the ground glass is at the film plane of the film holder to be inserted after the image is found, refined and focused.

View Cameras

A traditional view camera is what most people refer to as a studio camera. It is a monorail type. They are heavy, have vast amounts of movement, adjustments and are extremely flexible in manipulating the final image. They are also quite impractical to use in the field. While in college, I managed to drag 40 pounds of studio equipment through the Columbia River Gorge in Oregon. This experience ultimately resulted in two things: 1.) I fell in love with large format photography. 2.) I subsequently decided to use my Bronica S-2 (a 6x6 medium format camera) to complete my Thesis work.

Field Cameras

The field camera is the studio cameras versatile smaller brother. Foldable, compact and lightweight, the field camera was made to be outdoors and on the move. There are dozens of manufacturers still producing high quality cameras, as well as various plans available for those who wish to make their own. Field cameras typically have less movements, adjustments and accessories available for them, as in landscape photography, all of the movements needed for studio work are either not necessary or impractical.

All view cameras have a bellows system, ground glass, a camera back, use film holders and use special lenses designed specifically for use with large format cameras. Which attach to the front standard by a lens board.

Large Format Cameras

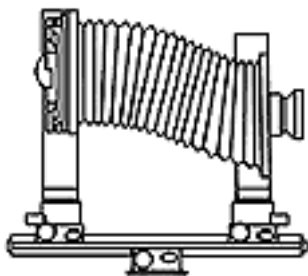
Lenses

Large format lenses differ in several ways from common lenses used in 35mm and medium format cameras. They attach to the camera using a lens board, they must disassemble in order to be mounted to the view camera and lens board, most modern lenses have the leaf shutter built in to the lens body, and in most cases are far more expensive.

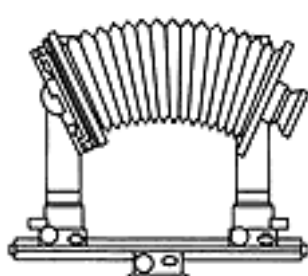
The general function is the same however. There are wide angle and telephoto lenses, as well as a convertible lens which can be reassembled to have its focal length changed depending on how the elements are configured.

Movements

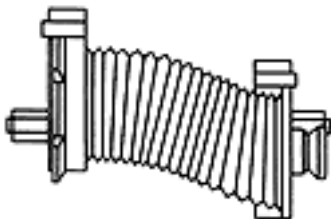
There are four basic movements to view cameras: rise/fall, tilt, shift, and swing. All of these movements can be either subtle or pronounced, depending on what you have in mind for the final image. Using these ad-



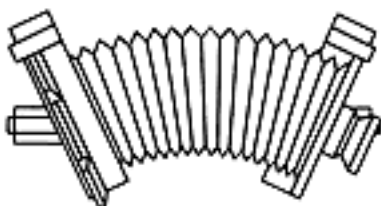
Rise/Fall



Tilt



Shift



Swing

justments (or movements) you can decrease the effects of perspective, alter perception, and even increase the range of focus to the point of infinity.

Bellows Extension

With having a bellows, there comes an additional variable you must take into consideration when determining the proper exposure for the image being created. Bellows extension is the distance that the bellows are extended in relation to the focal length of the lens. Basically, bellows extension (or lens extension) is created by extending the bellows to focus on objects that are close to the camera. This extension really only becomes a concern when the distance of the lens to subject is 8 times the focal length or less. To calculate the bellows extension factor:

$$\text{Bellows extension factor} = \frac{(\text{Bellows extension})^2}{(\text{Focal length})^2}$$

For example, if you use a 6-inch lens, and the distance from the lens to the film plane is 8 1/2 inches, the factor would be 8.5^2 divide by 6^2 . If the indicated shutter speed is 1/30 second, multiplying by 2 gives 2/30 second, or 1/15. To correct the aperture we would convert the factor to f-stops, or one stop (since one stop produces a 2x exposure change). We would thus open the lens one stop from the indicated aperture. You can either adjust the shutter speed or aperture - but do not adjust both.

For more information on focusing, adjusting and using a view camera I would highly recommend the purchase of the Ansel Adams series, in particular *The Camera*. However, all 3 books are an outstanding reference: *The Negative*, *The Print and The Camera*.

**Some of the above text on bellows extension is borrowed directly from Ansel Adams book, *The Camera*.

Large Format Cameras

Focusing

As mentioned before, the image seen through the ground glass on the film back is upside down. So focusing a view camera is a bit of a learned skill. Training your mind to be able to easily understand what it sees on the ground glass seems like it shouldn't be that big of a deal right? Well, it does take some getting used to. Focusing also requires the use of some sort of shade to focus the image, unless you intend on using a range or view finder. The most common shade is a dark cloth. This is simply a black cloth you drape over your head and the camera in order to be able to easily see the image detail and easily focus the camera.

The act of focusing can depend on the type of camera, although most cameras have micro-adjustments allowing for easy movement of the front standard or lens, back and forth. The closer the lens is to the film back, the farther the range of focus. The farther away the lens is from the film back, the closer the range of focus. It is still considered good practice to divide the image area into thirds, and set the focus to 1/3 the way into the image - unless otherwise desired.

The use of a focusing loop is also desired to achieve maximum sharp focus of the image being photographed. The loop allows for particular details to be magnified and checked for sharp focus - without a focusing loop it is pretty much a crap-shoot as far as which part of the image will be in absolute sharp focus.

Movements

As mentioned before, the various movements can adjust and alter how an image is focused and which areas are in focus and which areas are not. These movements are quite varied and can get fairly advanced, but by employing defined and tested principles, you can achieve images where the focus is nearly infinite - in that the entire image can be in sharp focus - from the closest objects to the farthest.

For more information of these principles a simple web search on Google for the following will turn up numerous excellent resources.

The Scheimpflug rule

The Hinge rule

References

The Ansel Adams Photography Series

The Negative

The Print

The Camera

Excellent series of books and provides comprehensive information regarding the 3 major aspects of photography.

Linhof Practice

Mostly information regarding the use of Linhof cameras, but provides invaluable information regarding many different aspects of using view cameras in general.

View Camera Magazine

A wonderful periodical dedicated to large format photography of all kinds and sizes. Features equipment reviews, advertising, and articles about photographers, techniques and seminars.

Photographers

Bradford Washburn

Ferit Kuyas

Joel Leivick

John Sexton

Minor White

Vittorio Sella

Carleton Watkins

William Henry Jackson

Darius Kinsey

Websites

www.f32.net

www.viewcamera.com

www.photo.net

www.benderphoto.com

<http://www.trenholm.org/hmmerk/index.html#SRpicR>

FOCAL LENGTH CONVERSIONS

35mm	6x6	6x7	6x9	6x12	4x5	5x7	8x10
18	33	37	42	53	65	90	130
21	39	43	48	60	75	105	150
22	41	45	52	65	80	110	160
25	46	50	58	75	90	125	180
28	54	60	65	85	105	150	210
32	58	65	75	90	120	160	240
37	67	75	90	105	135	180	270
43	80	90	100	125	150	210	300
45	80	90	105	135	165	240	330
52	95	105	120	150	180	260	360
60	110	120	135	180	210	300	420
65	120	135	150	195	240	330	480
73	135	150	170	210	260	350	520
85	150	165	180	240	300	400	600
105	190	210	240	300	370	500	740
135	240	270	300	380	470	640	940