

# Large Format Film Photography



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## Who is this book for?

This book is written for anyone who is using or has an interest in using large format film. As most people move up to sheet film from some sort of smaller format, be it digital or film, it is assumed that readers will have some general photography experience. Where my last ebook *Film in a Digital Age* covered the basics and moved into advanced film technique, this one will build upon that knowledge and focus on information specifically related to large format photography.

It isn't necessary to have any previous experience with big film to get a lot of value out of this ebook. Many people's heads start



*"Coastal Oak" - Big Sur, California - February 2018  
Ektar 100 4x5, 75mm lens - 2 seconds at f32, no filters*

to spin when researching large format, and one of the many goals of this writing is to help people understand what they are getting into. For those with some or even extensive background in sheet film, I hope this book helps you with new ideas and becomes a reference for many years.

Large format is a very broad and endless subject, but this book will condense everything into a practical resource that is accessible to anyone. Here are some of the goals for this ebook:

- Teach people with no large format experience how to get started, from understanding the unusual equipment to exposing sheets perfectly.
- Become a reference for those with experience and share new methods for those who have already mastered the format. We can always continue to learn in the field of photography and large format is no exception.
- Build upon the material in my last ebook *Film in a Digital Age* without rehashing all of it.
- Focus on landscape usage with large format film as this is my area of expertise.
- Keep things from getting overly technical. While we will go over techniques thoroughly I don't want to bore people with endless specifications, technical jargon, and gear talk. I prefer to think that photography is a blend of emotion and science, not leaning too heavily on either side. As with my last book the goal here is to be practical.
- Share tips and tricks to keep things budget-minded. Large format doesn't require a large bank account to be used.



## Large Format Lenses

Before we move onto movements and creating images, it's important to take some time to discuss lenses and how they work with large format. Again, this section may be aimed more at beginners who are working on piecing together a large format kit but there will also be some information for intermediate users that will give us the foundations we need as we move on to mastering camera movements.

Below you can see all the labeled parts of a modern large format lens. Not much has changed over the decades to the basic design and function, though some of the older shutters may use different speeds or have slightly different levers. All of these lenses are fully mechanical, with a ring that turns to set the shutter speed (1 second down to 1/400<sup>th</sup> of a second, with Bulb



Large Format Lenses

and T mode for longer exposures), a lever that slides to set the aperture, and a lever that holds the lens open for image viewing on the ground glass. There are no batteries or electronics to assist function, if a lens shutter is disassembled the innards are comprised of a plethora of springs, gears, and finely machined plates that make all the magic happen.

On some very old lenses there won't be a shutter at all. These are called *barrel lenses* and are generally for specialty use either on cameras with focal plane shutters or by simply covering the lens with a cap when you are done with the exposure.

## What lenses can I use on my large format camera?

One of the biggest differences between large format lenses and those for other formats is that the lenses generally aren't designed to work with a specific camera. They are more or less universal so long as they have enough *coverage* for the film size that you plan to use. For many people this makes the selection of lenses a daunting task as the choices are myriad and some of the terminology confusing. Let's take a look at some of the factors to consider with different lenses.

## Focal Length

As one of the biggest artistic choices we have, focal length determines the angle of view and the level of magnification that will result in our images - making a huge difference when choosing compositions. Since the film size is so much larger than smaller formats such as 35mm, it takes a much longer lens to achieve an equivalent field of view. While it's a little hard to calculate exactly since the 5:4 ratio of large format is a bit different than the 3:2 of 35mm, the diagonal dimension of 4x5



*“Towers and Flowers” - Wyoming, August 2019*

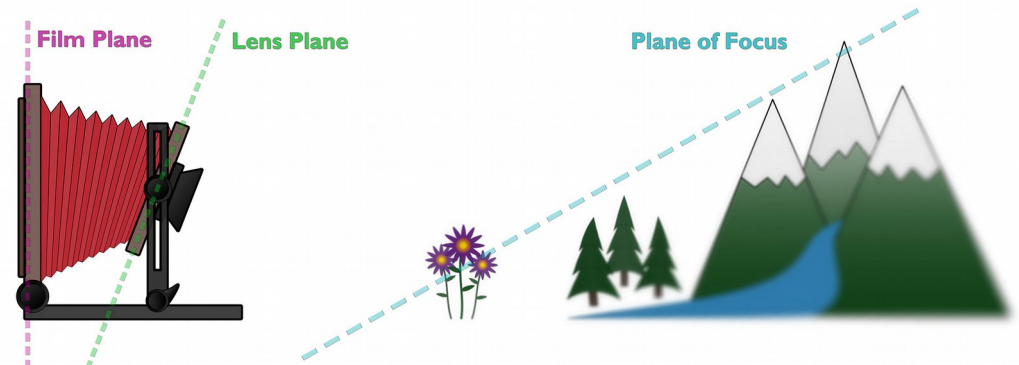
*Portra 160, 75mm lens - 2 seconds at f22, 1 stop soft GND filter*

*A touch of tilt kept the peaks in sharp focus with the flowers.*

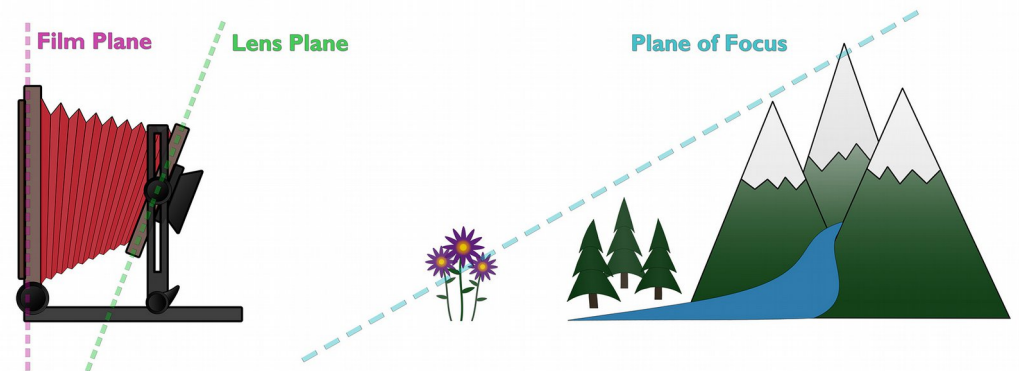
This is where tilt comes into play. Tilting the lens rotates the plane of focus so that it is no longer parallel with the film plane and opens up a world of opportunities. With landscapes this is used to significantly increase our apparent depth of focus. In the diagram above you can see that even with the lens wide open, it's possible to get flowers that are a mere 12 inches away from the lens in focus with peaks that are a mile or more distant.

The plane of focus itself is still the same “depth” that it was before it was tilted at the same aperture, but we have changed

### Lens Tilt Used



**Lens tilted, aperture kept wide open - flowers and mountain tops are sharp, parts of midground out-of-focus**



**Lens tilted, aperture stopped down - entire image is acceptably sharp**

Its orientation (along with the shape of it) and brought more useful parts of the image into sharp focus with the lens wide open. If you had tilted the lens to bring the tips of the peaks and flowers in focus with each other like this example image, the mid-ground would likely be somewhat out-of-focus. To correct this it's important to stop the lens down, usually to f22 or so on 4x5, to ensure that the mid-ground and other outlying objects become reasonably sharp. Now everything in the image appears in perfect focus, something that would not have been possible without tilting the plane of focus.



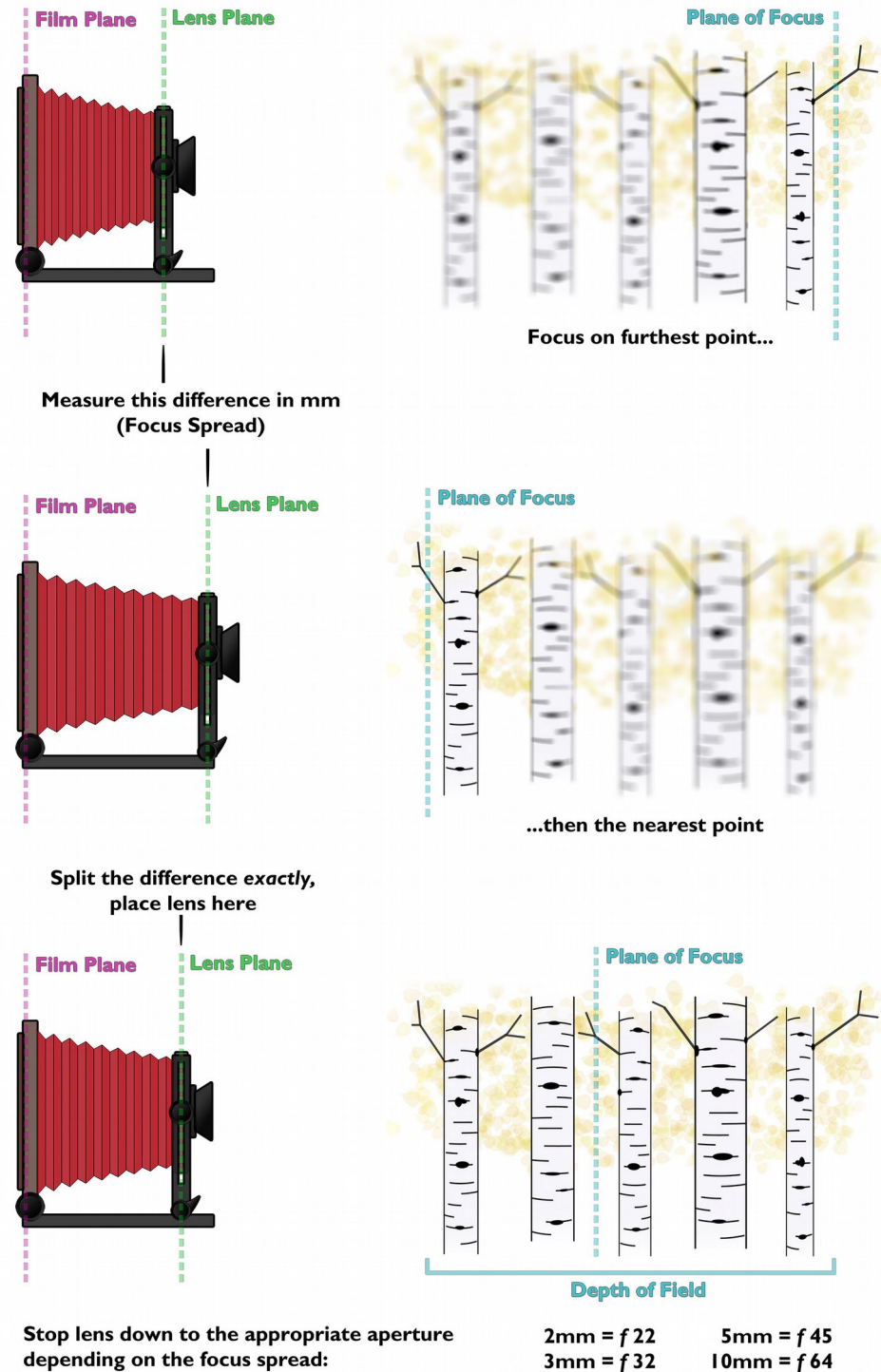
paper and apply them to the camera bed. You can get my printer-ready scales [here](#) that should fit onto most cameras. Even if you choose not to place a scale on your camera, perhaps this method will help you understand the relation between focus spread and aperture.

The process is quite easy: Focus on the farthest object you need to be sharp using your loupe. Look at the scale on your bed and see how far out the rail is in mm. Let's use an example and say that it was out by 5mm. Now focus on the nearest object in your scene and look at the bed scale again. Let's say that in our example it is 8mm out now. The difference between these two numbers is the focus spread, which in our illustration is 3mm. The focus spread determines what aperture will be needed for complete depth of field according to this table:

| Acceptable Aperture |                 | Optimal Aperture  |                 |
|---------------------|-----------------|-------------------|-----------------|
| Focus Spread (mm)   | <i>f</i> Number | Focus Spread (mm) | <i>f</i> Number |
| 2mm                 | <i>f</i> 16     | 1mm               | <i>f</i> 16     |
| 3mm                 | <i>f</i> 22     | 2mm               | <i>f</i> 22     |
| 4mm                 | <i>f</i> 32     | 3mm               | <i>f</i> 32     |
| 6mm                 | <i>f</i> 45     | 5mm               | <i>f</i> 45     |
| 10mm                | <i>f</i> 64     | 10mm              | <i>f</i> 64     |

Using our example of a scene with a focus spread of 3mm, it would be *ideal* to stop the lens down to *f*32. If wind or dim light was an issue and a faster shutter speed was desired, it would be *acceptable* to stop down to *f*22. The entire scene would still be in focus, but you might be losing a tiny bit of sharpness at the extreme near and far ranges.

### Focus Spread and Aperture



### Reciprocity Chart for Common Slide Films

| Film Type   | No adjustment | If Meter Reads   | Then Expose For       |
|---|---------------|--|-----------------------|
| <b>Fuji Velvia 50</b>   | Up to 2"      | 4"   | 5"                    |
|   |               | 8"   | 12"                   |
|   |               | 15"  | 25"                   |
|   |               | 30"  | 1 minute              |
|   |               | 1 minute   | 2 minutes, 20 seconds |
|   |               | 2 minutes  | ~ 5 minutes           |
| <b>Fuji Velvia 100</b><br><small>(Astia 100F is the same)</small> | Up to 60"     | 2 minutes  | 2 minutes, 40 seconds |
|   |               | 4 minutes  | 6 minutes             |
|   |               | 8 minutes  | 13 minutes            |
| <b>Fuji Provia 100F</b>   | Up to 120"    | 4 minutes  | 5 minutes             |
|   |               | Beyond 4 minutes not published by Fuji, performance is stellar |                       |
| <b>Kodak E100</b><br><small>(My unofficial testing)</small>       | Up to 10"     | 30"  | 35"                   |
|   |               | 1 minute   | 1 minute, 15"         |
|   |               | 2 minutes  | 2 minutes, 45"        |

There are two factors to compensate for when doing very long exposures:

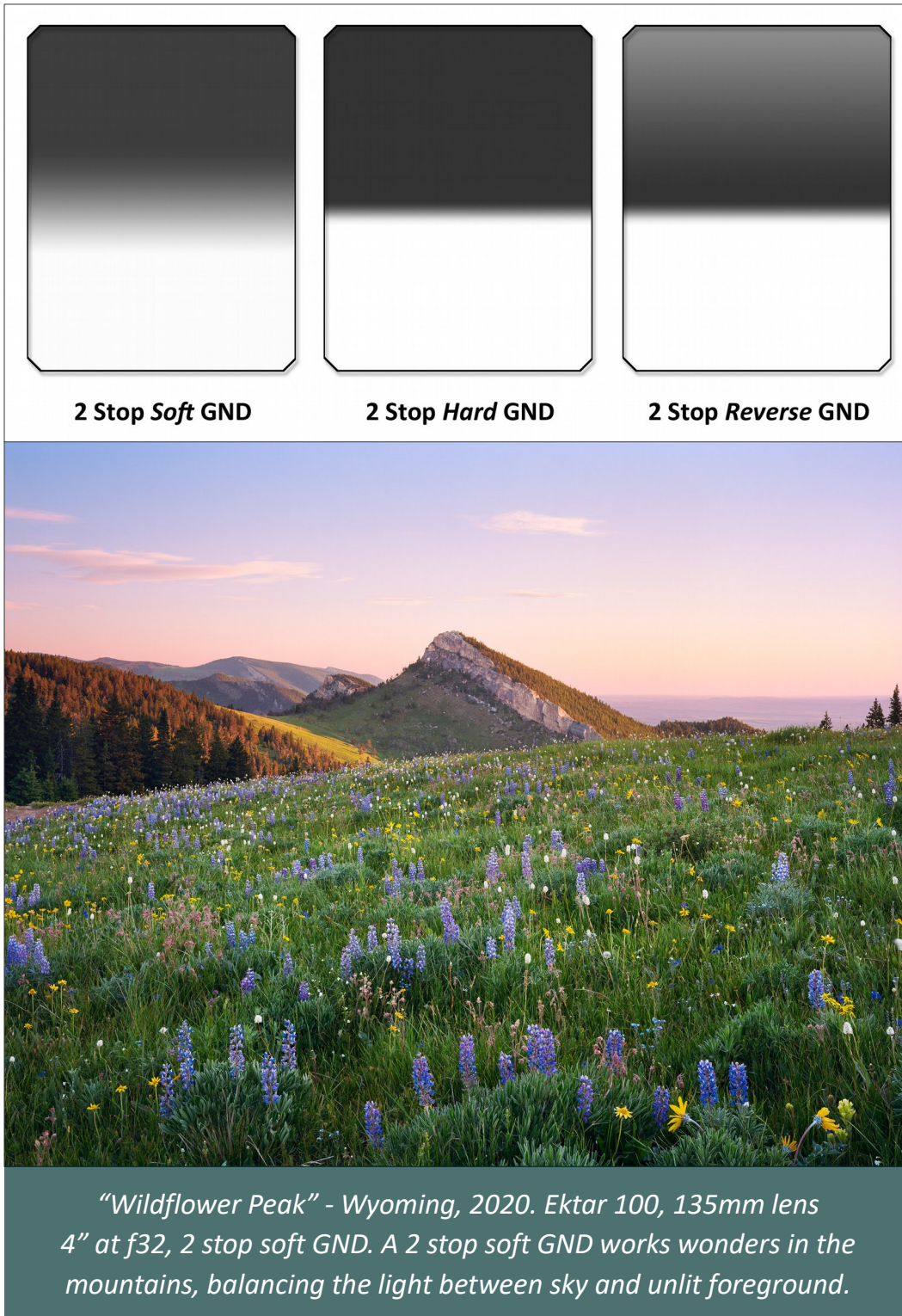
- The exposure time must be increased by adding additional seconds or minutes to the metered exposure time.
- A color correction filter may be used. Film manufacturers will usually put out recommendations for color correction filters to compensate for the color shift as exposure time increases. In practice, this is quite uncommon these days. Most people enjoy the color shifts of certain film stocks, creating a unique feel to twilight and night-time exposures. It would now be more common to make any corrections digitally after scanning, if desired at all.

*These charts have been reworked from my last ebook, now showing the actual exposure time required for a given meter reading rather than a factor of how many stops to add. Many find this presentation a little easier to work with as no math is required.*

*"Marcellina Twilight" - Provia 100f, 1 minute at f32, warming filter  
Provia is known for excellent reciprocity, allowing for long exposures with hardly any compensation. It could be considered prudent to use a warming filter (81b) on Provia for long twilight exposures, it's typically the only film type where I make use of a color correction filter.*







### Soft vs Hard Edged Filters

The image at left shows a good example of what soft and hard edged filters look like. It’s clearly visible that the transition from dark to clear is a lot more gradual on the far left filter, while the other two have a sudden change in opacity. These make it possible to work with different types of landscapes. Hard edged filters can be suitable for very flat and straight horizons, such as the open prairie or when photographing from the rim of a desert canyon. If there’s anything jutting up into the sky such as a mountain, tree or structure a soft edged filter is usually the better choice. On the far right is a reverse GND, which has a hard transition at the horizon line and then becomes lens dense towards the top. These are a bit of a specialty filter to work with a common scenario when shooting towards the sunset, where the brightest portion of the scene is near the horizon and the highest point in the sky is less intense.

Focal length and aperture also play a key role in how hard or soft the GND edge appears in the final image. The goal with these filters is that their use goes unnoticed, we don’t want to see a pronounced dark line where the filter was placed. When using a 90mm lens (on 4x5) stopped down to  $f22$ , the transition area of a hard edged filter will be very abrupt so placement must be *perfect* to avoid a visible edge. On the other hand, a long 300mm lens will soften the gradient since the filter will be so far out of focus - though this changes dramatically as the lens is stopped down and the depth of field increases. This makes me hesitant to use hard edged filters on wide angle lenses unless the horizon line is truly flat and you can be certain of filter placement. Hard filters become more forgiving and usable on standard and telephoto focal lengths.



## Panoramas

Sometimes a particular scene just begs to be captured in a wide panoramic format. With such a huge area of film to work with there's no need to stitch images together the way it's often done with digital panoramas. Just half a sheet of 4x5 film can easily make excellent prints of 60 inches or even much longer. There's really three ways to go about capturing panoramic images with a view camera:

- Shoot the entire sheet of film and crop later.
- Use a 6x12 or 6x17 roll film back

- Use a customized half darkslide to block half the film, allowing two panoramas to be exposed on one sheet.

My preferred method is the first option. It works quite well to plan an image out as a panorama on the ground glass and just shoot the entire sheet of film and crop later. The biggest argument for this technique is that it guarantees the most flexibility when it comes to print sizes. Nearly every image I've shot on a dedicated 6x17cm camera resulted in customers asking if the print can be made taller. When a roll film back is used there's no way to ever get that extra height from the



*"Homestead Rainbow" - Montana, May 2020. Velvia 50, 135mm lens - ¼ second at f22, no filters. Cropping half a sheet of 4x5 film makes for excellent panoramic images. I had to work quickly in this stormy light, so it was nice not to fiddle with any extra film backs.*





*Jobo 2523 Drum (right) and 2509n reel, a developing option that can work both on a Jobo processor or by hand.*

The choice of developing system will come down to budget and convenience to you. The wide range of variables also means that a system may work for one photographer but not everyone else. When starting off with C41 sheets, expect to occasionally have some problems while you dial in your agitation, presoak, and chemistry. Try to reduce the number of variables by mixing up developer with distilled water and being very consistent in your methods. Don't try learning with your most important sheets until you have confidence in your process. If you really can't get a particular developing system to work repeatedly it may be time to try another method. Home developing is for those with patience who are willing to take a few risks!

## Color Chemistry

My last ebook went over the process of developing b&w film from start to finish, this time we're going to focus more on color film to compliment the past writing. Let's take a moment to look at the chemistry options available for both E-6 and C-41 processing. While it's possible to create them entirely from scratch most of us will want to use the available kits. Which kit you go with depends on how many sheets you plan on shooting before the concentrates will expire. In the United States, the best place to get chemistry will be [Freestyle Photo](#). With all of these kits you will need the following supplies:

- Graduated cylinders to carefully measure precise liquids.
- Distilled water to mix up each chemical, 1 gallon of distilled water usually costs 99 cents and should mix up one full liter kit.
- 1 liter bottles that seal tightly for each step, the less air in the containers the better.
- A tray for the final rinse (stabilizer)
- An accurate thermometer for 38°C

Each kit will come with *very precise* instructions that must be followed exactly. These instructions will tell you clearly how to mix up each chemical. Some may recommend different times for each step as well as agitation methods. If the instructions on the chemistry kit contradict those that came with your developing system, go with the directions that came with your developing tank. For example: the chemistry may recommend 60 second agitation intervals, but the tank manufacturer may recommend more frequent 30 second intervals. Put faith in the people who designed the tank and go with 30 seconds.