

## View Single Post

Thread: Focusing Questions

27th of February 2007 (Tue),  
16:12

#45


zilch0md

Member

Join Date: Apr 2002  
Posts: 150 Re: Focusing Questions

Hi Drustan,

Quote:

Originally Posted by **Drustan**   
*Can someone explain in lay man's terms how to take a proper shot when using MF. And what are the advantages of manual focusing rather than using the camera's AF?*

I want to give it a shot. Here's the fundamental stuff you're probably missing:

Imagine a picket fence that runs from the foreground to the background of your intended frame. Now imagine that each picket has been numbered, from 1 to 100, as you go from the closest picket to the farthest.

When you focus a lens at picket #50, half-way into the scene, that picket will be the sharpest subject in the picture. Looking at the final print, as you move your eye away from that picket, either toward the camera or away from it, the "sharpness" will deteriorate, but will still be found acceptable to the eye for some distance in both directions (both toward and away from the sharpest picket). The picket that is closest to the camera (picket #1) and the picket that is farthest from the camera (picket #100) are likely to appear "out of focus" when your lens is focused on picket #50.

It turns out that if you use a larger f-Number (a smaller aperture), the Depth of Field increases. What does that mean? It means that if you are focused on picket #50 using f/4 (a small f-Number, large aperture) the final print will show fewer pickets in focus than if you were using f/22 (a larger f-Number, smaller aperture). Depending on the focal length of your lens, the enlargement factor necessary for your chosen print size, and the viewing distance, f/4 might show only pickets #30 through #70 to be acceptably sharp in the final print. But if you "stop down" to a larger f-Number (say f/8 instead of f/4), pickets #20 through #80 might be found acceptably sharp in the final print. Stopping down to f/22, everything from picket #5 through picket #95 might become acceptably sharp. If you want all the pickets to be sharp, you can back away from the nearest picket, re-focus on #50, and f/22 might actually give you enough Depth of Field to make every picket appear as sharp in the final print as picket #50.

The good news is that the range of acceptable "sharpness" can be predicted very accurately, using a Depth of Field calculator. See the DOFMaster link provided above for a DoF calculator that's both customizable and easy to work with in the field (and free).

When customizing a DoF calculator like the DOFMaster spinning disk calculator, you tell it the focal length of your lens (if you have more than one focal length, you need to create more than one calculator). You also tell it what "Circle of Confusion" diameter you want to maintain in your final prints. I gave a formula for determining the ideal circle of confusion diameter in my first post, this thread.

In the field, equipped with a DoF calculator that's correct for the focal length you are using, you must first determine the distances to the nearest and farthest subjects that you want to appear acceptably sharp in the final print. (Use the distance scale on your lens barrel, a rangefinder, a tape measure, whatever works for you...) You can then use the DoF calculator to figure out two things:

The f-Number that will provide just enough Depth of Field to make your chosen Near and Far subjects acceptably sharp in the final print (everything in between will also be sharp). -AND- The distance at which you should manually focus your lens.

The advantage offered by manually focusing with a DoF calculator in hand is one of control, but it's only practical when shooting static subjects (landscapes, architectural interiors, table-top still-lives, etc.) It allows you to predict with great surety just exactly what will appear acceptably sharp in the final print (assuming you've specified the correct Circle of Confusion diameter when customizing the DoF calculator for your anticipated enlargement factor and print viewing distance). In the field, you can choose to limit the depth of field to a narrow range of subject distances (pickets #40 through #60, for example), to a wide range of distances (pickets #1 through #100), or any range of distances in between.

The DOFMaster calculators are very easy to use in the field. The hard part (and it's not that tough) is getting your act together at home to come up with the DoF calculators. If you shoot landscapes (or other static subjects) and you want some help designing DOFMaster calculator(s) that are customized for your focal lengths and anticipated print sizes, just send me an e-mail to the address seen on the Contact page at my web site. This invitation is open to anyone who wants to take the plunge.

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