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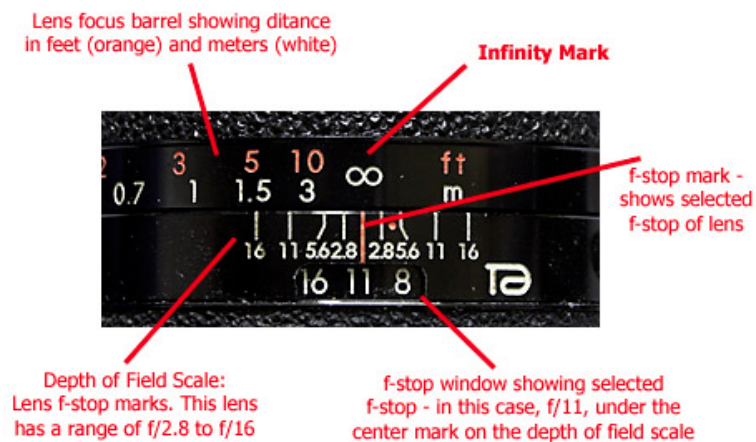
Hyperfocal Focusing

When should you use hyperfocal focusing? Well, sometimes when shooting a landscape, you want everything sharp from the front to the back of the scene. Setting a small aperture such as f/16, f/22 or even f/32 can help, but if you really want to maximize [depth of field](#), hyperfocal focusing is the technique you need to use.

To do this, you need a camera where you can switch to manual focusing and a lens inscribed with a depth of field scale (not all modern lenses have these markings these days, especially zoom lenses). If you're not familiar with these kinds of lens markings, here's a quick explanation:

Lens Markings Primer

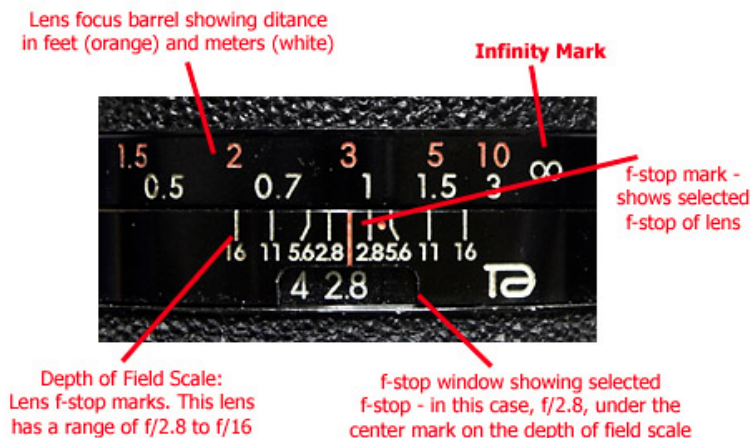
The picture below of a typical lens (in this case a 28mm) shows four sets of markings. At top is the distance scale (on the lens' focus barrel) showing figures in feet and meters (this also shows the infinity position).



Below that are a set of lines beneath which are the f-stops of the lens. This is the depth of field scale. For each f-stop, there are two equidistant marks, one to the left and one to the right of the central mark on the scale.

The bottom set of figures shows the selected f-stop for the lens. These are on the lens aperture ring and, as you change the aperture, the selected f-stop under the central line on the depth of field scale will tell you what aperture you've selected.

To find out what part of a scene is in focus is simply a matter of reading the distance scales between the two marks for your selected f-stop on the depth of field scale. For example, let's say I've focused on something that's 3 feet away. If my lens is set at f/2.8, then reading the distance values at the two "2.8" marks on the lens shows that everything just shy of 3 feet to about 3.5 feet will be in focus (a little guesstimation is required in reading the distances). This is fine for isolating your subject from everything else.



If I close the lens down to f/11, then reading the distances for the two "11" marks shows that everything between just over 2 feet and 5 feet will be in focus.

If the lens is set to focus on infinity (the infinity mark is over the central mark on the depth of field scale), then you only need to read off the distance value for the f-stop mark to the left of the central depth of field scale as everything between it and infinity will be in focus. In this next picture, if I'd set my f-stop to f/5.6, everything from just over 10 feet to infinity would be in focus. If I'd selected f/16, it would be everything from 5 feet to infinity.



Hyperfocal Focusing

Hyperfocal focusing is based on the fact that [depth of field](#) typically extends 2/3 behind the point focused on and 1/3 in front, but if you focus on infinity, the [depth of field](#) behind is completely wasted. You can make use of it if you refocus, putting the infinity mark (an "8" on its side) on the focusing ring against the aperture set on the depth of field scale (this is known as the hyperfocal point). If, for example, you set a 28mm lens to f/11 and focus on infinity, everything from about 9 feet (2.5m) to infinity will be sharp. Align the infinity mark against the f/11 position to give hyperfocal focusing and the depth of field now extends from 4 feet (1.2m) to infinity, which is essential if you want foreground interest to be pin-sharp. If you set your lens to f/16 and rotate the focus barrel to place the infinity mark over the "16" position, then reading the scales shows that everything between just under 3 feet to infinity will be sharp.



This image shows a 28mm lens with the lens set to focus on infinity at f/11 - the infinity mark is over the long red mark (above the "11" in the lower lens window).

This image shows the 28mm lens with the lens set to hyperfocus (at f/11) - the lens' focus barrel has been moved so that the infinity mark is now over the "11" mark on the lens.

The **Hyperfocal distance** is the that point above the central mark on the depth of field scale when the infinity mark has been put over the required f-stop mark on the depth of field scale. In the case of the 28mm lens at f/11, that's 9 feet / 2.5m. At f/16, the hyperfocal distance would be 5 feet. Remember that the hyperfocal distance will be different for lenses of different [focal length](#) an different f-stops.

This table shows the distances that will be in sharp focus for a 28mm lens set to focus at infinity (left) and set using hyperfocal focusing (right):

f-stop	Lens Set at Infinity	Lens Using Hyperfocal Focusing
f/16	5 feet / 1.5 m to infinity	2.8 feet / 0.8 m to infinity
f/11	9 feet / 2.5 m to infinity	4 feet / 1.2 m to infinity
f/5.6	13 feet / 3.5 m to infinity	7 feet / 2 m to infinity

The table below shows the hyperfocal distance for different lens and f-stop combinations. The figures have been calculated mathematically (which I won't bore you with the details here - unless somebody asks me to!). If your lens has a distance scale but lacks a depth of field scale, you can use this table to set your lens to the hyperfocal distance required.

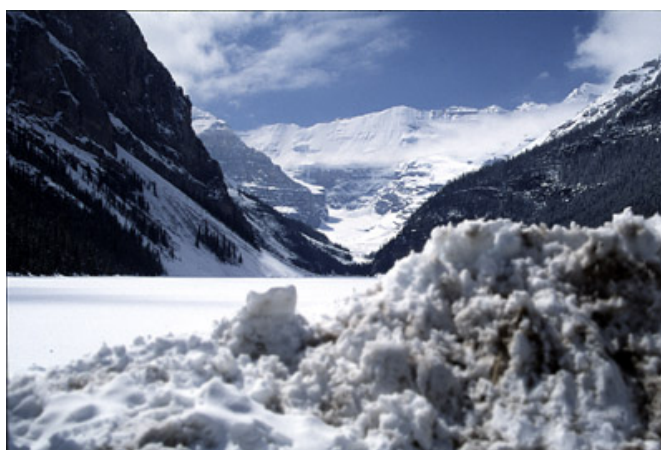
The wider the angle of a lens, the shorter its focal length and the deeper its depth of field. So, as an example, an 18mm lens will have deeper (longer) depth of field than a 105mm. Also, the smaller the aperture you use the greater the depth of field; i.e. for a lens of any given [focal length](#), there's more depth of field with it at f/16 than at f/4, for example. This table gives the approximate hyperfocal distances for common lenses used at various f-stops:

Hyperfocal Distances	Focal Length									
	17mm		20mm		24mm		28mm		35mm	
Aperture (f)	m	ft	m	ft	m	ft	m	ft	m	ft
1.4	-	-	-	-	-	-	22.2	72.7	34.6	113.6
2	-	-	-	-	11.5	37.8	15.7	51.4	24.5	80.3
2.8	4.1	13.4	5.7	18.6	8.1	26.7	11.1	36.4	17.3	56.8
4	2.9	9.5	4.0	13.1	5.8	18.9	7.8	25.7	12.2	40.2
5.6	2.0	6.7	2.8	9.3	4.1	13.4	5.5	18.2	8.7	28.4
8	1.4	4.7	2.0	6.6	2.9	9.4	3.9	12.9	6.1	20.1
11	1.0	3.4	1.4	4.6	2.0	6.7	2.8	9.1	4.3	14.2
16	0.7	2.4	1.0	3.3	1.4	4.7	2.0	6.4	3.1	10.0
22	0.5	1.7	0.7	2.3	1.0	3.3	1.4	4.5	2.2	7.1

Seeing the Difference

In the two images of the lens above, the picture on the left shows the standard way of setting a lens to focus on infinity.

In the image on the right, the lens focus barrel has been rotated so that the infinity mark rests above the f/11 ("11") mark on the lens. The lens is hyperfocally focused. Here's the difference between two images, one focused at infinity (top), the other hyperfocally focused (bottom):



Normal infinity focusing - note the blurred foreground at right



Hyperfocal focusing - note the sharp foreground at right

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