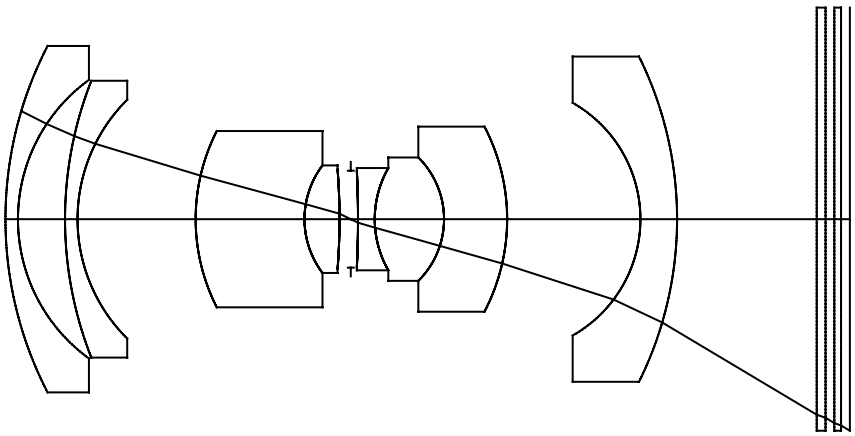
903SWC Biogon 38 for digital imaging

Background

Because the Biogon 38 is designed to be a symmetrical wide angle lens, the distance from the rear lens element to the image plane is relatively short. This means that central light rays will have a much shorter distance to travel through the IR filter and sensor cover glass than peripheral rays hitting the image edge. The effect of this is that the sharpness plane will bend away from the lens as we move from the image centre to the image edge.

The result of this is that even though the Biogon 38 will produce fantastic image quality on film, the performance together with digital imaging is not as good because it was never designed with this appication in mind.

An example of a lens that is designed especially for digital imaging and where the influence of the IR filter and the cover glass has been considered in the design process is the HCD 28 for the H3D cameras.



903SWC Biogon 38 with a digital sensor 36x48 mm
with IR filter and cover glass

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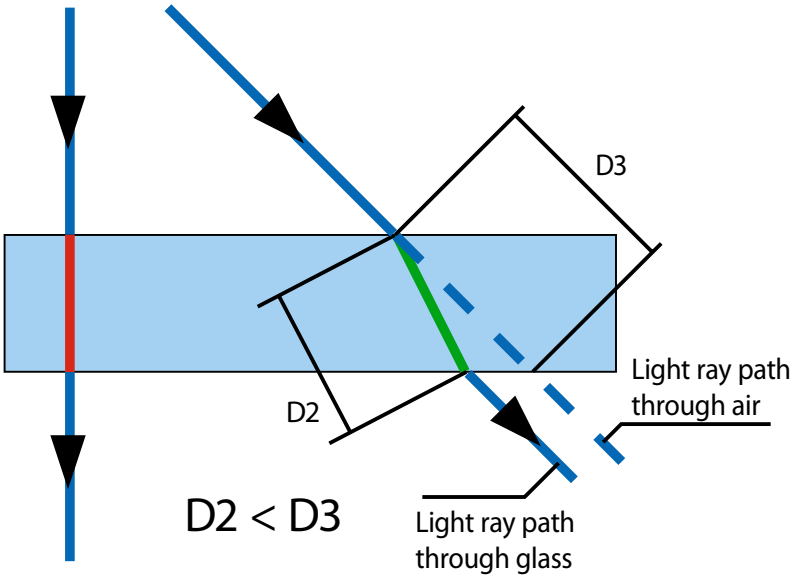
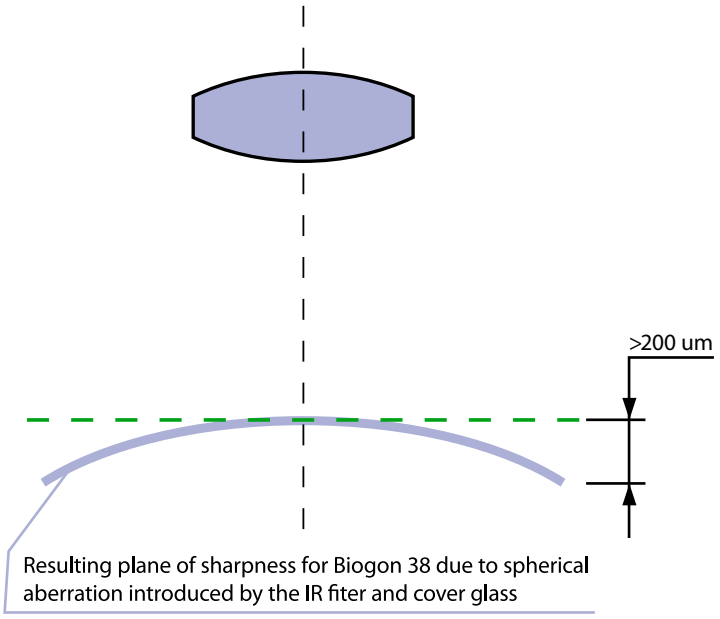
Light rays hitting the glass surface with an oblique angle will have a different distance to travel compared to if the glass was not there.





Conclusion

The Biogon 38 mm lens is designed to be used with film where it will show very high image sharpness over the entire image area. When it is instead used with a digital sensor having two layers of glass in front of the sensitive area, the sharpness will drop towards the image edge as a result of spherical aberration.

Stopping down the lens will improve the image quality but for demanding applications, e.g. aerial photography, where you have a flat subject and you are forced to used full aperture or close, it is not recommended to use the Biogon 38 mm lens.

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