

Aberration of magnifier lenses

In general, aberration results from the different refraction of light rays passing through the centre and periphery of a lens.

The aberration of a magnifier lens can easily be demonstrated by placing the lens on graph paper or an Amsler grid, which is also a commonly used eye test.

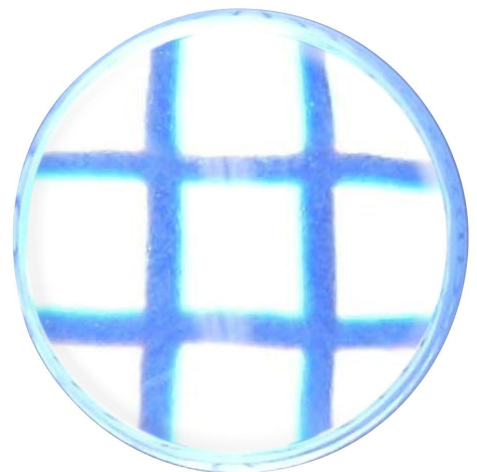
The following two lens images show two different lenses of similar diameter mounted in fixed-focus stand magnifiers placed on the same graph paper with blue lines. The pictures were taken with a standard digital camera at the lens-eye distance specified by the magnifier manufacturers.

SCHWEIZER aspheric lightweight lens

The enlarged lines are perfectly parallel.

Only the lines at the very remote edge of the lens periphery are slightly curved.

Almost the entire field of view is undistorted.



Other lens

Only the enlarged lines of the central square are parallel.

Beyond the central square the lines are clearly curved.

About two-third of the field of view is distorted. Consequently, the slightly higher magnification achieved with this lens compared to the SCHWEIZER lens above is of no advantage.

