



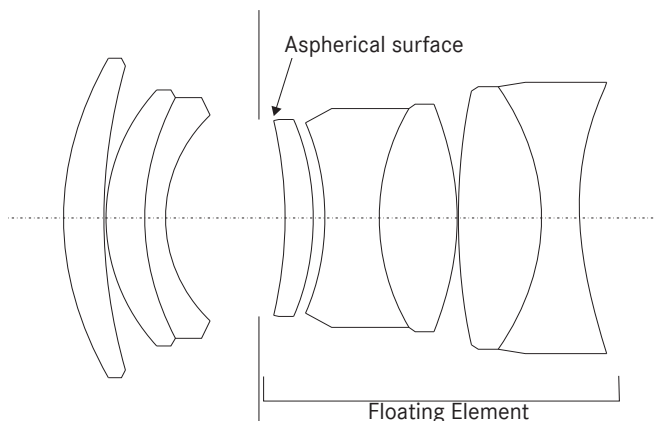
# LEICA APO-SUMMICRON-M 50 mm f/2 ASPH.



More than 30 years after the launch of Summicron-M 1:2/50 mm, which is still available, the Leica APO Summicron-M 1:2/50 mm ASPH. represents a totally new development. With its compact body - only marginally longer and slightly heavier than the Summicron-M 1:2/50 mm, and with an almost identical diameter, it provides visibly higher image quality. On the Leica APO Summicron-M 1:2/50 mm ASPH. the exceptional correction enables all aberrations to be reduced to a minimum level that is negligible in digital photography. Its key features include excellent contrast rendition, all the way to the corners of the image, even with a fully open aperture. The use of a „floating element“ ensures that this is retained, even for close-up shots. Vignetting is limited to a maximum - i.e. in the corners of the image - of just 2 stops at full aperture in 35 mm format, or around 1 on the Leica M8 models. Stopping down to 2.8 visibly reduces this light deterioration towards the edge of the image, with practically only the natural vignetting remaining. Distortion is very low at a maximum of just 0.4 % (pin cushion), which is practically imperceptible. A total of eight lens elements are used to achieve this exceptional performance. To realize the apochromatic correction (resulting in a common focusing plane for three light wavelengths), three are made of glass types with high anomalous partial color dispersion, while two of the others have a high refractive index. The aspherical surface of the first lens in the rear group helps to reduce spherical aberration and flatten the image field. While the optical construction in front of the aperture is a Gaussian type, the arrangement of the lens elements behind it is similar to that in the Summilux-M 1:1.4/35 mm ASPH. This group comprises a „floating element“, which is moved independently of the rest of the construction during focusing.

Summary: The Leica APO Summicron-M 1:2/50 mm ASPH. delivers exceptional picture quality and sets new standards in 35 mm digital photography.

## Optical design





# LEICA APO-SUMMICRON-M 50 mm f/2 ASPH.

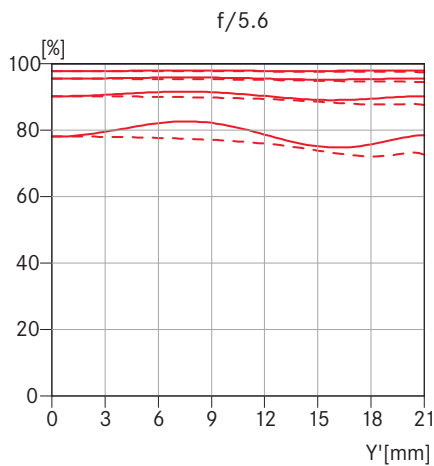
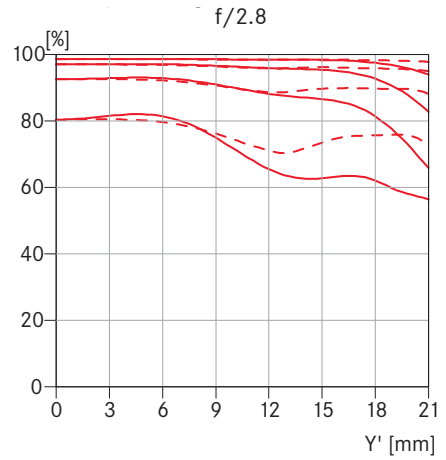
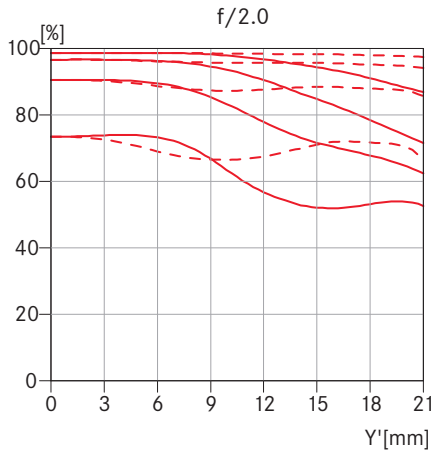


— Engineering drawing

## Technical Data

<b>Angle of view</b> (diagonal, horizontal, vertical)	47° / 40° / 27° (With Leica M8 models: 36° / 30° / 20°)
<b>Optical design</b>	<b>Number of lenses/groups:</b> 8 / 5 <b>Position of entrance pupil</b> (from bayonet flange): 24.4 mm <b>Focus range:</b> 0.7 m to ∞
<b>Distance setting</b>	<b>Scales:</b> Combined meter / graduation <b>Smallest object field:</b> approx. 271 mm x 407 mm (With Leica M8 models: 203 mm x 305 mm) <b>Largest reproduction ratio:</b> approx. 1:11.3
<b>Aperture</b>	<b>Setting / Function:</b> prefix with click-stops, half steps <b>Lowest value:</b> 16
<b>Bayonet</b>	Leica M quick-change bayonet
<b>Lens hood</b>	Built-in, extendable by rotating
<b>Filter mount</b>	Female thread for screw-on E39 filters, non-rotating
<b>Dimensions and weight</b>	<b>Length:</b> approx. 47 mm <b>Largest diameter:</b> approx. 53 mm <b>Weight:</b> approx. 300 g

— MTF-graphs

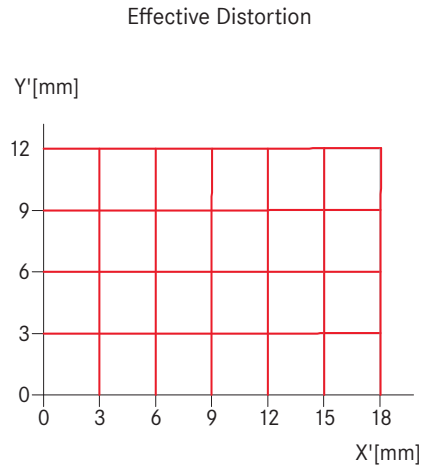
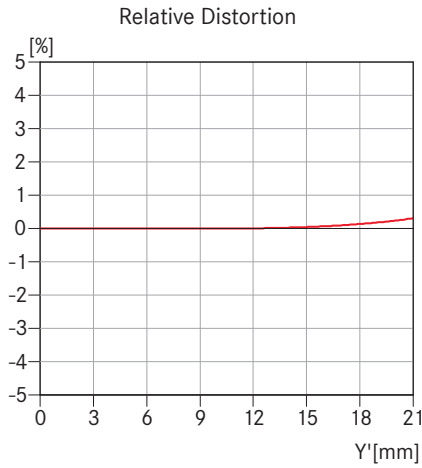


The MTF is indicated at full aperture, at f/2,8 and f/5,6 at long taking distances (infinity). Shown is the contrast in percentage for 5, 10, 20 and 40 lp/mm across the height of the 35 mm film format, for tangential (dotted line) and sagittal (solid line) structures, in white light. The 5 and 10 lp/mm will give an indication regarding the contrast ratio for large object structures. The 20 and 40 lp/mm records the resolution of finer and finest object structures.

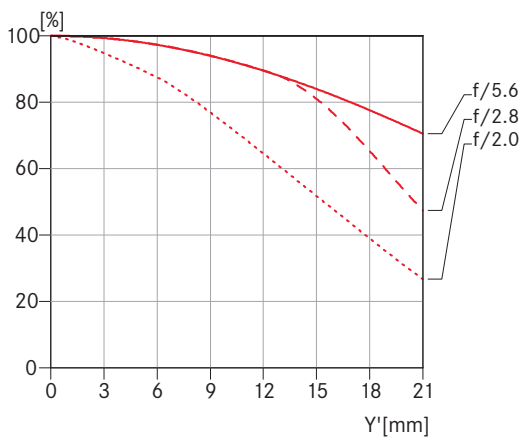
- tangential structures
- - - sagittal structures



## — Distortion



## — Vignetting



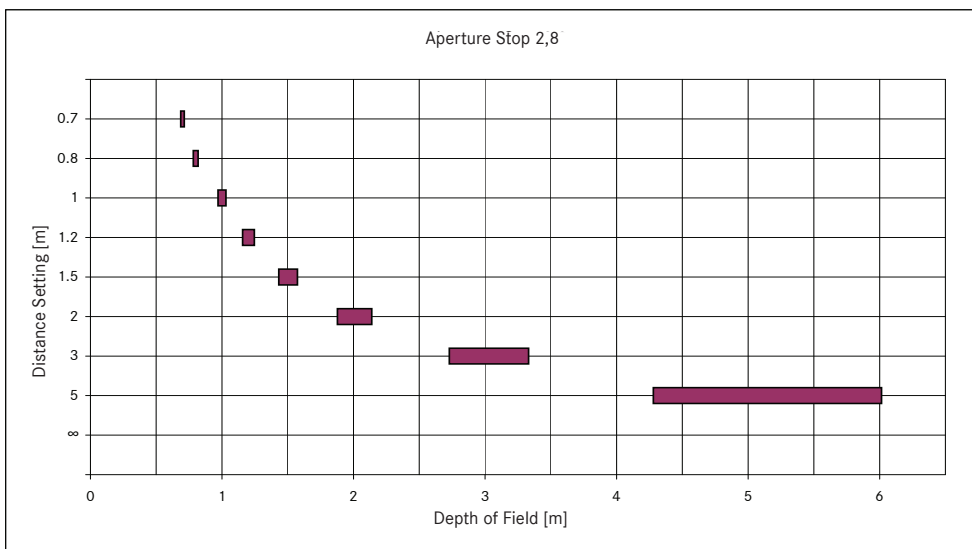
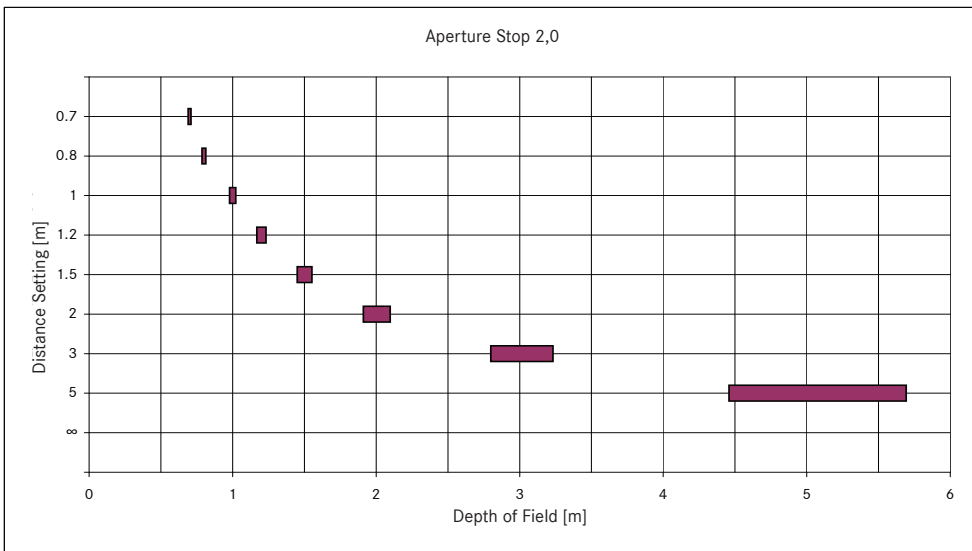
Distortion is the deviation of the real image height (in the picture) from the ideal image height. The relative distortion is the percentage deviation. The ideal image height results from the object height and the magnification. The image height of 21.6 mm is the radial distance between the edge and the middle of the image field for the 24 mm x 36 mm format. The graph of the effective distortion illustrates the appearance of straight horizontal and vertical lines in the picture.

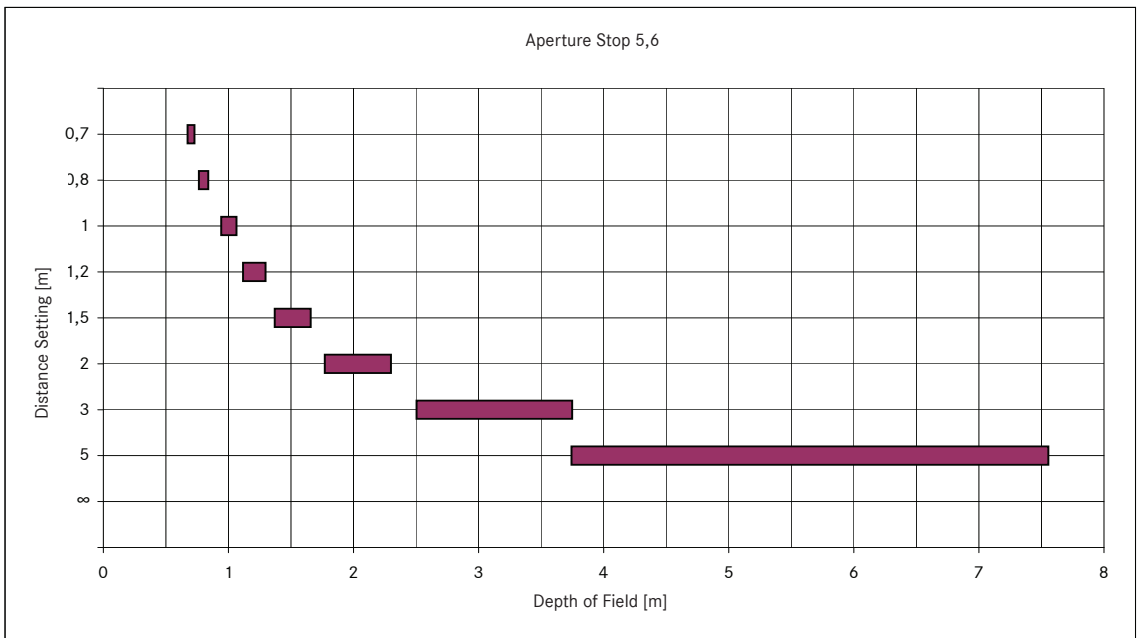
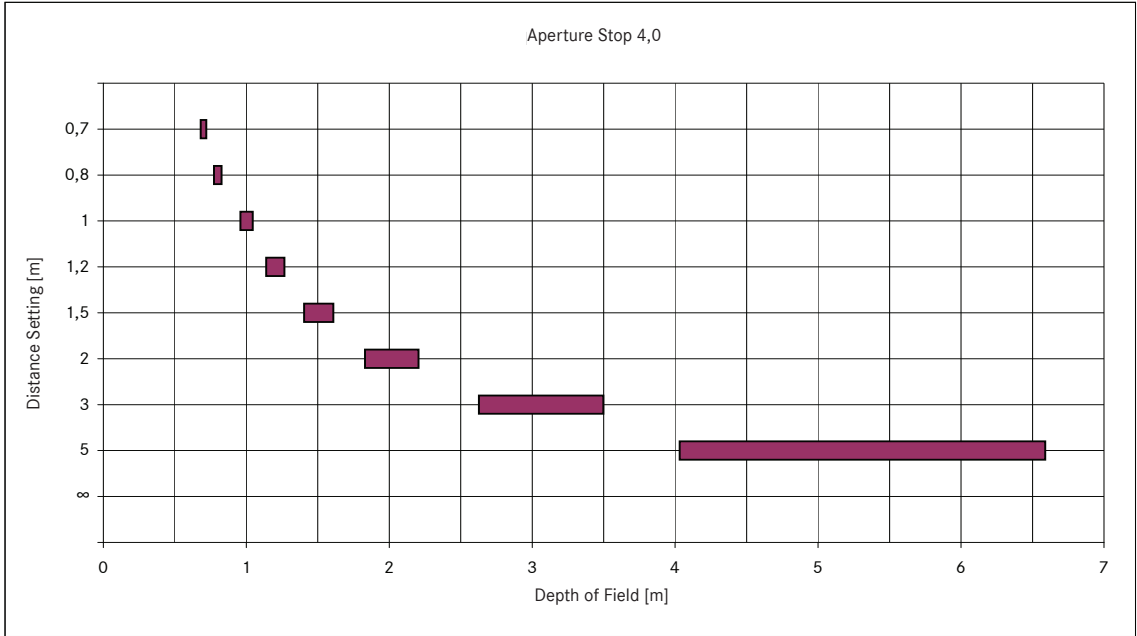
Vignetting is a continuous decrease of the illumination towards the edges of the image field. The graph shows the percentage lost of illumination over the image height. 100% means no vignetting.

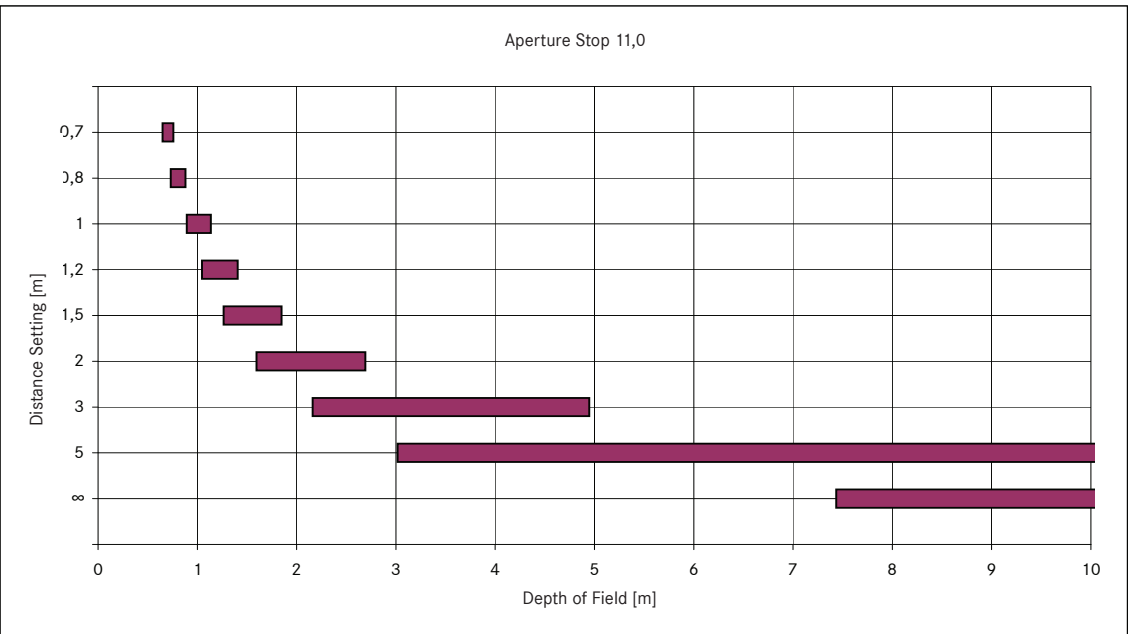
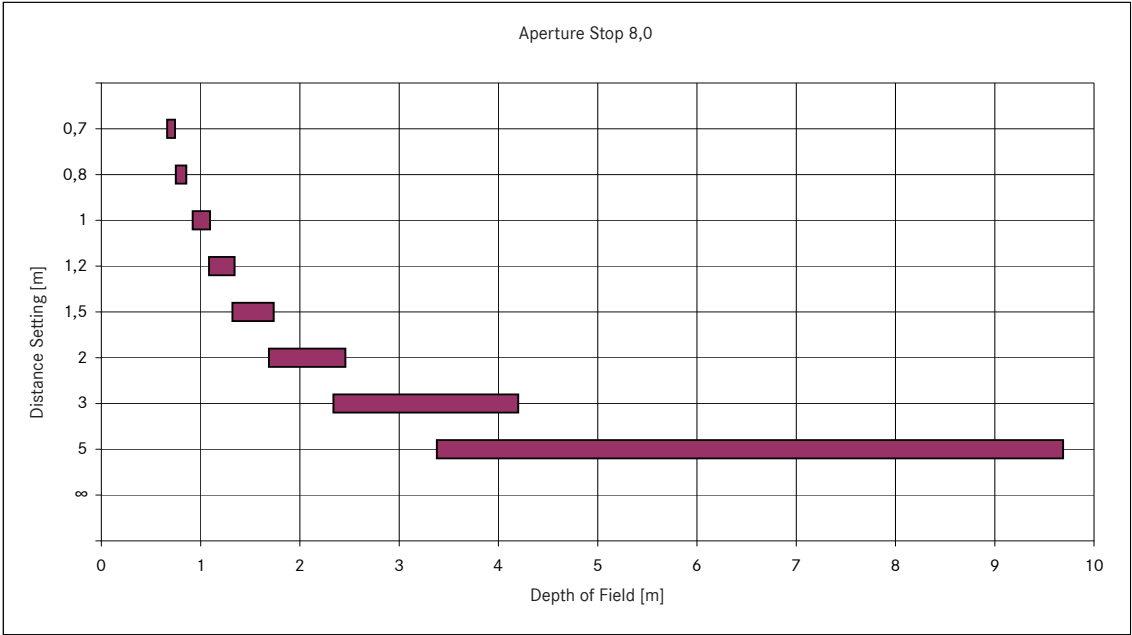


### — Depth of field table

Distance Setting [m]	Aperture Stop							Magnification
	2,0	2,8	4,0	5,6	8,0	11,0	16,0	
0,7	0,690 - 0,710	0,686 - 0,714	0,681 - 0,721	0,673 - 0,729	0,662 - 0,743	0,649 - 0,760	0,629 - 0,792	1/11,3
0,8	0,787 - 0,814	0,782 - 0,819	0,774 - 0,828	0,764 - 0,840	0,750 - 0,858	0,733 - 0,882	0,706 - 0,926	1/13,2
1	0,979 - 1,023	0,971 - 1,032	0,958 - 1,046	0,943 - 1,065	0,920 - 1,096	0,894 - 1,137	0,853 - 1,214	1/17,1
1,2	1,169 - 1,233	1,157 - 1,247	1,139 - 1,268	1,117 - 1,297	1,085 - 1,345	1,047 - 1,409	0,991 - 1,531	1/21
1,5	1,450 - 1,554	1,432 - 1,575	1,404 - 1,610	1,370 - 1,659	1,321 - 1,739	1,264 - 1,850	1,181 - 2,071	1/26,8
2	1,910 - 2,099	1,878 - 2,139	1,830 - 2,205	1,771 - 2,300	1,688 - 2,459	1,595 - 2,693	1,462 - 3,203	1/36,5
3	2,799 - 3,233	2,729 - 3,332	2,627 - 3,499	2,503 - 3,749	2,338 - 4,201	2,161 - 4,950	1,919 - 7,055	1/55,8
5	4,458 - 5,694	4,280 - 6,016	4,032 - 6,591	3,743 - 7,556	3,381 - 9,690	3,017 - 15,01	2,560 - 185,1	1/94,5
∞	40,20 - ∞	29,05 - ∞	20,36 - ∞	14,55 - ∞	10,20 - ∞	7,435 - ∞	5,128 - ∞	1/∞









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