LEICA **SUMMARON-M** 28 mm f/5.6

Technical Data.
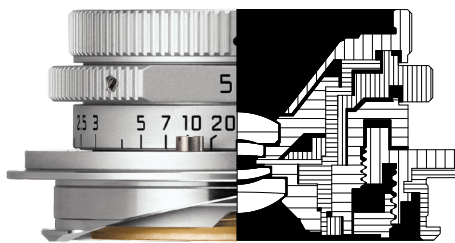

Illustration 1:1

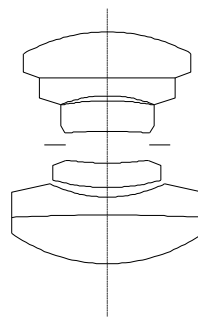| Lens	Leica Summaron-M 28 mm f/5.6
Order number	11 695
Angle of view (diagonal, horizontal, vertical)	For 35 mm (24 x 36 mm): 75°/65°/46°
Optical design	Number of elements/groups: 6/4 Position of entrance pupil in front of the bayonet: 2.4 mm Focusing range: 1 m to infinity
Distance setting	Scala: combined meter-increments Smallest object field: for 35 mm: 801 x 1201 mm Largest reproduction ratio: 1:33.4
Aperture	Setting/type: prefix with click stops, full steps Smallest aperture: f/22 Number of aperture blades: 8
Bayonet	Leica M quick-change bayonet
Filter thread	E34
Lens hood	Clip-on (supplied)
Dimensions and weight	Length: approx. 18/39 mm (without/with lens hood) Largest diameter without lens hood: approx. 51 mm (without lens hood) Weight: approx. 165 g (without lens hood)

LEICA **SUMMARON-M** 28 mm f/5.6

ENGINEERING DRAWING

LENS SHAPE

Illustrations 1:1

This Leica Summaron 28 mm f/5.6 is a replica of the model originally introduced in 1955. With its 6 lens elements arranged strictly symmetrically around the aperture in 4 groups, it has the same optical design. Its extremely compact mechanical construction also corresponds to the original. Unlike this, however, the current model is equipped with the M bayonet including 6 bit code. Furthermore, various external details have been adapted to the appearance of the current M lenses, for example the shape of the focus unlock button, the diameter of the aperture ring and the knurling.

Even when fully open, the lens is characterized by high-contrast rendering in large areas of the field of view. Stopping down to 11 greatly improves the imaging performance in the corners of the picture. Although stopping down further enhances the picture corners even more, this is at the expense of the overall contrast, i.e. the imaging performance is more even overall. When the aperture is open, vignetting is max., i.e. in the image corners, approx. 2.5 aperture stages. By stopping down to 8 vignetting can be reduced to approx. 1.8 aperture stages. Distortion is negligible.

Summary: Due to its imaging properties and its focal length, the new edition of the Leica Summaron 28 mm f/5.6 is suitable for quick and discreet photography, in other words spontaneous snapshots. Its extremely small dimensions together with the camera make an extremely manageable unit that is easy to carry.

LEICA **SUMMARON-M** 28 mm f/5.6

MTF DIAGRAMS

Aperture Stop 5.6

Aperture Stop 11.0

Aperture Stop 8.0

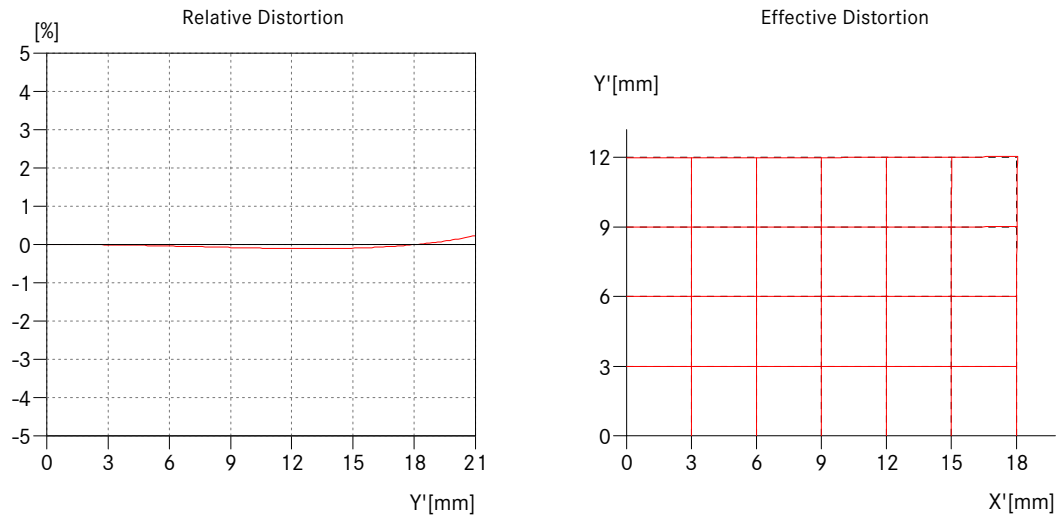Sagittal structures

Tangential structures
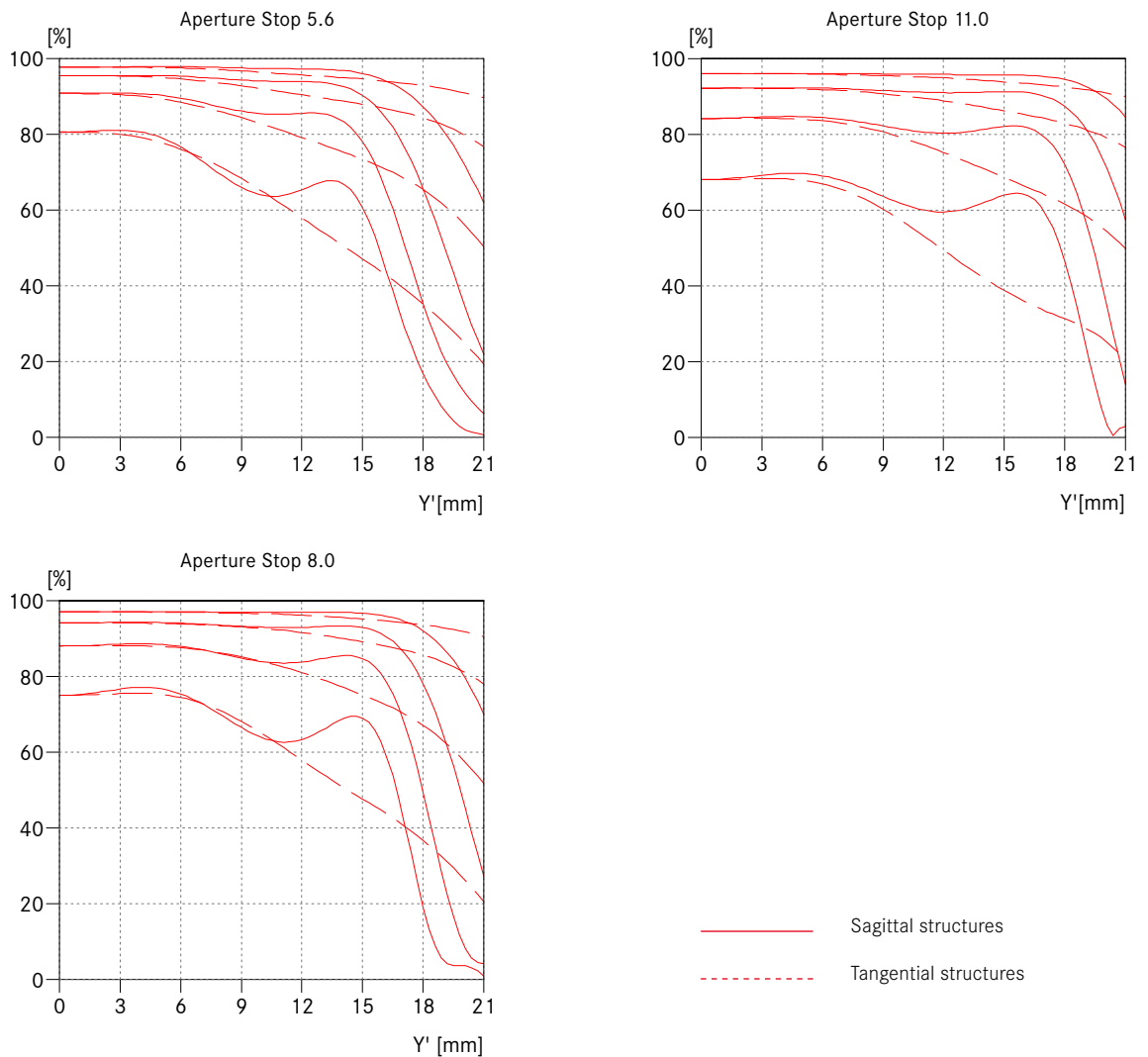
MTF GRAPHS   The MTF is shown in each case for the maximum aperture and the aperture value 8.0 and 11.0 for long focusing distances (infinity). The contrast is plotted for 5, 10, 20, 40 lines/mm for the height of the format for tangential (dashed line) and sagittal structures (continuous line) for white light. The plots for 5 and 10 lines/mm provide an impression of the contrast performance for coarser object structures and the 20 and 40 lines/mm plots document the resolving power for fine and finest object structures.
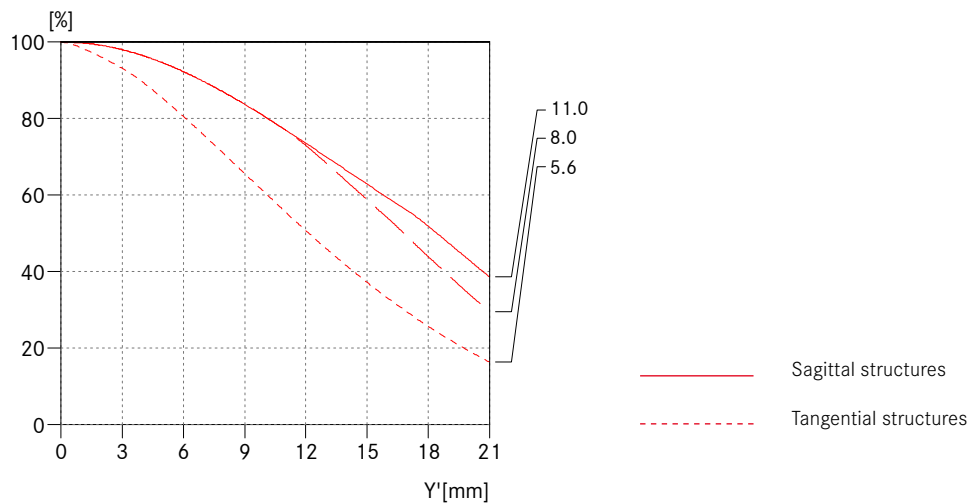
LEICA **SUMMARON-M** 28 mm f/5.6

DISTORTION

Relative Distortion

[%]

Y'[mm]

Effective Distortion

Y'[mm]

X'[mm]

VIGNETTING

[%]

11.0
8.0
5.6

Y'[mm]

——————— Sagittal structures

- - - - - - - Tangential structures

DISTORTION   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 format 24 mm x 36 mm. The graph of the effective distortion illustrates the appearance of straight horizontal and vertical lines in the picture.
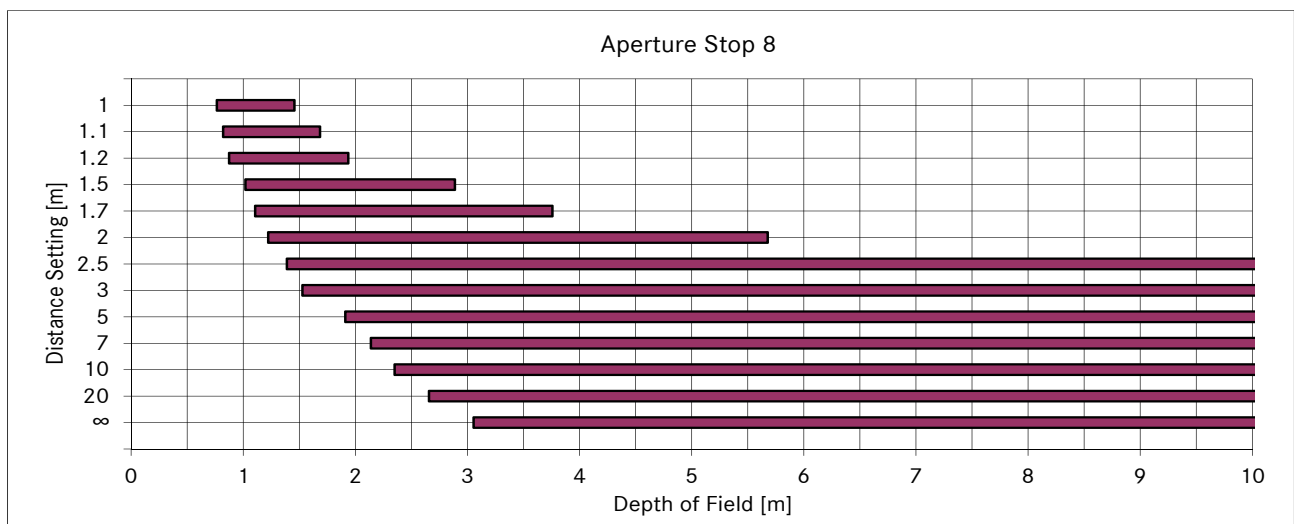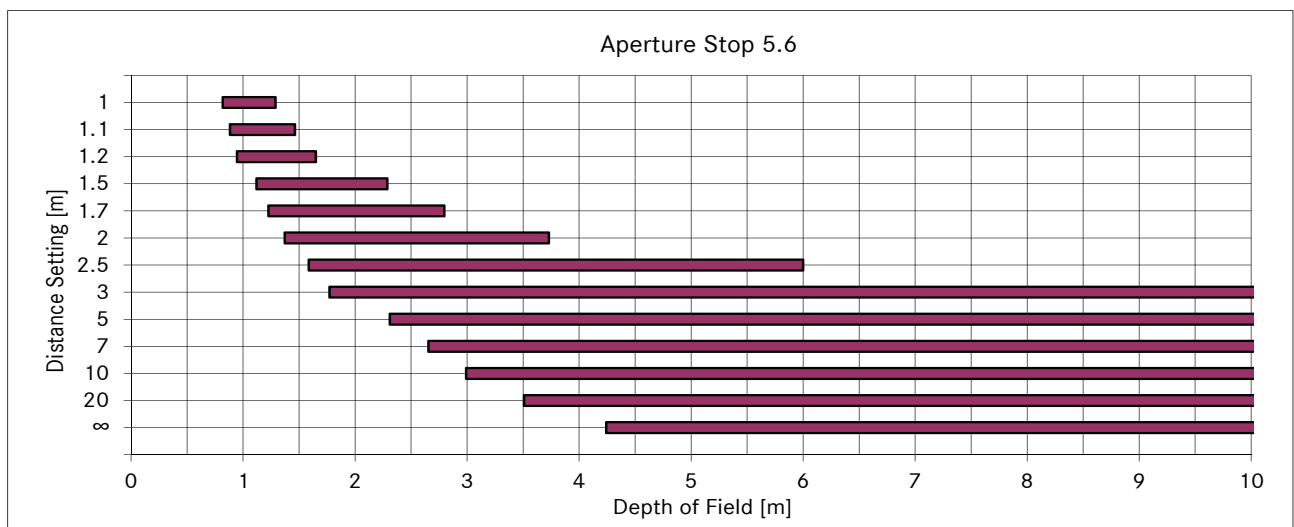
VIGNETTING   Vignetting is a continous decrease of the illumination to the edges of the image field. The graph shows the percentage loss of illumination over the image height. 100% means no vignetting.

LEICA **SUMMARON-M** 28 mm f/5.6

DEPTH OF FIELD TABLE

		Aperture Stop									Magnification
		5.6		8.0		11.0		16.0		22.0	
Distance Setting [m]	1	0.819 – 1.290		0.765 – 1.457		0.704 – 1.763		0.622 – 2.729		0.546 – 8.185	1/33.4
	1.1	0.884 – 1.464		0.821 – 1.685		0.750 – 2.111		0.657 – 3.680		0.573 – 38.45	1/36.9
	1.2	0.946 – 1.649		0.874 – 1.937		0.794 – 2.527		0.690 – 5.186		0.598 – ∞	1/40.5
	1.5	1.120 – 2.287		1.020 – 2.889		0.912 – 4.457		0.776 – 51.98		0.660 – ∞	1/51.1
	1.7	1.226 – 2.796		1.106 – 3.757		0.980 – 6.958		0.824 – ∞		0.694 – ∞	1/58.2
	2	1.373 – 3.730		1.223 – 5.678		1.070 – 18.87		0.886 – ∞		0.736 – ∞	1/68.8
	2.5	1.587 – 6.001		1.390 – 13.50		1.194 – ∞		0.968 – ∞		0.791 – ∞	1/86.5
	3	1.772 – 10.10		1.529 – 164.7		1.294 – ∞		1.032 – ∞		0.833 – ∞	1/104.2
	5	2.310 – ∞		1.910 – ∞		1.555 – ∞		1.190 – ∞		0.931 – ∞	1/175.1
	7	2.656 – ∞		2.139 – ∞		1.702 – ∞		1.273 – ∞		0.980 – ∞	1/246
	10	2.991 – ∞		2.351 – ∞		1.832 – ∞		1.343 – ∞		1.021 – ∞	1/352.2
	20	3.508 – ∞		2.657 – ∞		2.011 – ∞		1.436 – ∞		1.073 – ∞	1/706.5
	∞	4.242 – ∞		3.054 – ∞		2.230 – ∞		1.542 – ∞		1.130 – ∞	1/∞

Aperture Stop 5.6

Aperture Stop 8

LEICA **SUMMARON-M** 28 mm f/5.6

Aperture Stop 11

Aperture Stop 16

Aperture Stop 22