LEICA **APO MACRO SUMMARIT-S** 120 mm f/2.5 / CS

Technical Data.

Illustration 1:2

TECHNICAL DATA

Order no.	11070 (CS: 11052)
Image angle (diagonal, horizontal, vertical)	approx. 25° / 21° / 24°, corresponds to approx. 96 mm focal length in 35 mm format
Optical design Number of lenses / groups	9 / 7
Entrance pupil	infinity: 11.39 mm (in front of bayonet in incident light direction), close focus limit: 77.23 mm (in front of bayonet in incident light direction)
Focusing range	0,57 m to ∞
Distance setting Scales	Combined meter/feet graduation
Smallest object field	64 mm × 95 mm
Largest reproduction ratio	1 : 2,1
Aperture Setting / Function	Electronically controlled diaphragm, set using setting/ selection dial on camera, including half values
Lowest value	22
Bayonet	Leica S bayonet
Filter mount / Lens hood	External bayonet for lens hood (included), internal thread for E72 filter, filter mount does not rotate
Dimensions and weight Length to bayonet mount	approx. 128 / 202 mm (without / with lens hood)
Largest diameter	approx. 91 / 103 mm (without / with lens hood)
Weight	approx. 1135 / 1205 g (without / with central shutter)

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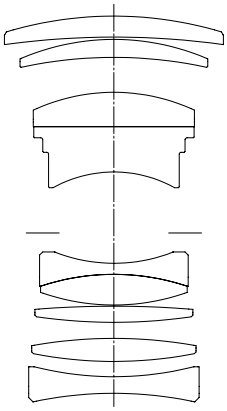
ENGINEERING DRAWING

Illustration 1:2

LENS SHAPE



The APO Macro-Summarit-S 120 mm f/2.5 plays a true dual role in the Leica S-System: On the one hand, it is a macro lens with a maximum reproduction ratio of 1:2 that renders even the finest details with perfection. On the other hand, its focal length, equivalent to 100 mm in 35 mm format, makes it an ideal moderate telephoto lens for portrait photography, particularly as its unusually large initial aperture allows perfect isolation of portrait subjects from their backgrounds.

Its design and construction is equally elaborate: of the nine lenses arranged in seven groups, three are made of special glass with anomalous partial dispersion. The exceptionally low dispersion (colour scattering) of two of these is instrumental in keeping chromatic aberrations to a minimum. Its front-group focusing design features a floating element, i.e. an independently moving lens group that ensures spectacular imaging performance throughout the entire focusing range, even at the closest of focusing distances. Although the lens does not feature a completely sealed barrel due to the extreme extension of its close-up range, it is very effectively protected against the influences of water droplets, dust and moisture.

The optical design of the lens ensures that aberrations such as vignetting or distortion remain imperceptible. The contrast performance of the APO Macro-Summarit-S 120 mm f/2.5 is already so good at maximum aperture that stopping down to smaller apertures brings only an insignificant increase in contrast rendition, and even then, only in the extreme corners of the image. The combination of a moderate telephoto focal length, full macro-capability and an unusually fast initial aperture of f/2.5, and an alternative version with a central shutter, make this a unique lens in every respect.

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Lens with lens hood, illustration 1:2

Lens hood in transport position, illustration 1:2

SCOPE OF DELIVERY

	Lens cover S E72 (Order no. 16018), Rear lens cover S (Order no. 16020), Lens pouch (Order no. 439-606.101-000), Lens hood (Order no. 12402)

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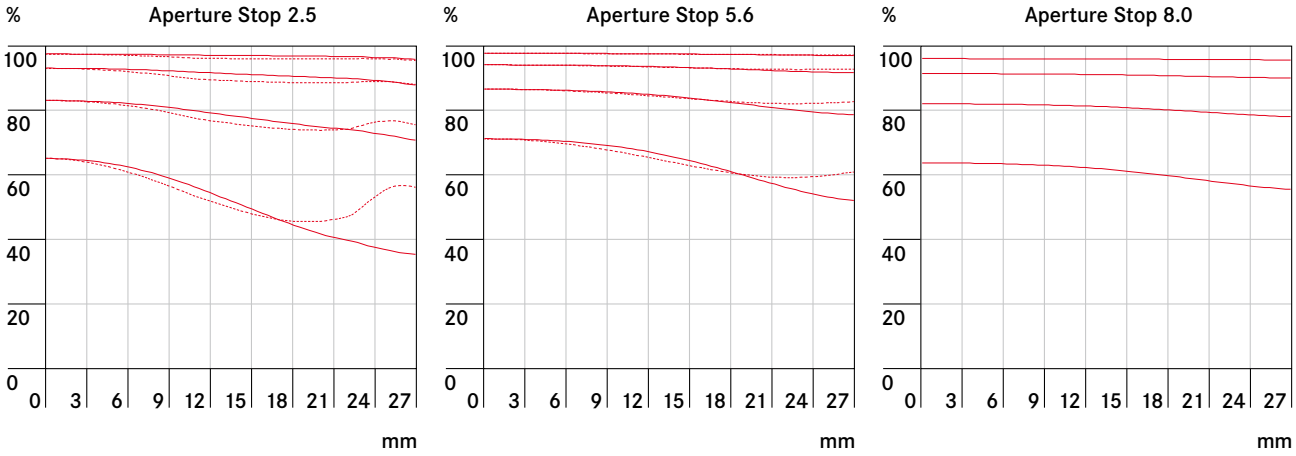
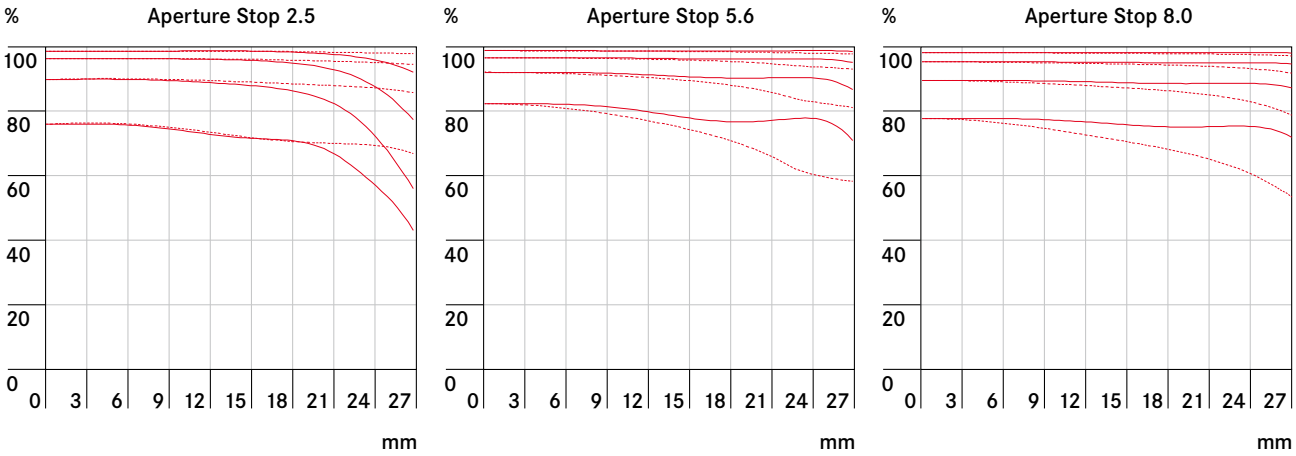
MTF GRAPHS

Focusing distance



Infinity (∞)



Sagittal structures

Tangential structures

MTF GRAPHS

The MTF is indicated both at full aperture and at f/5.6 and f/8 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.

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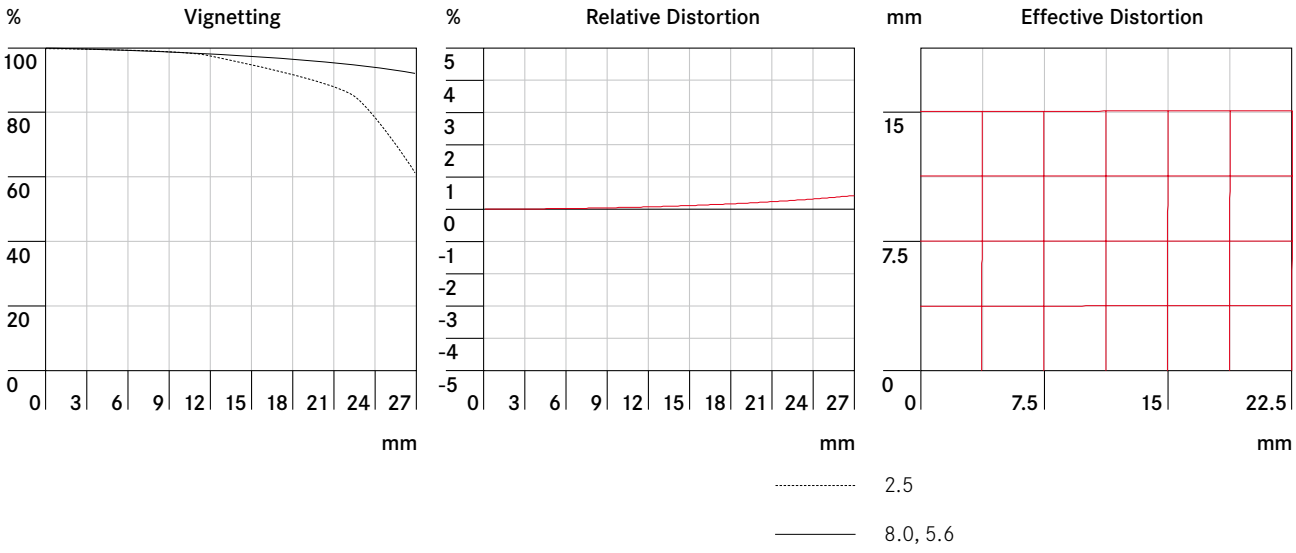
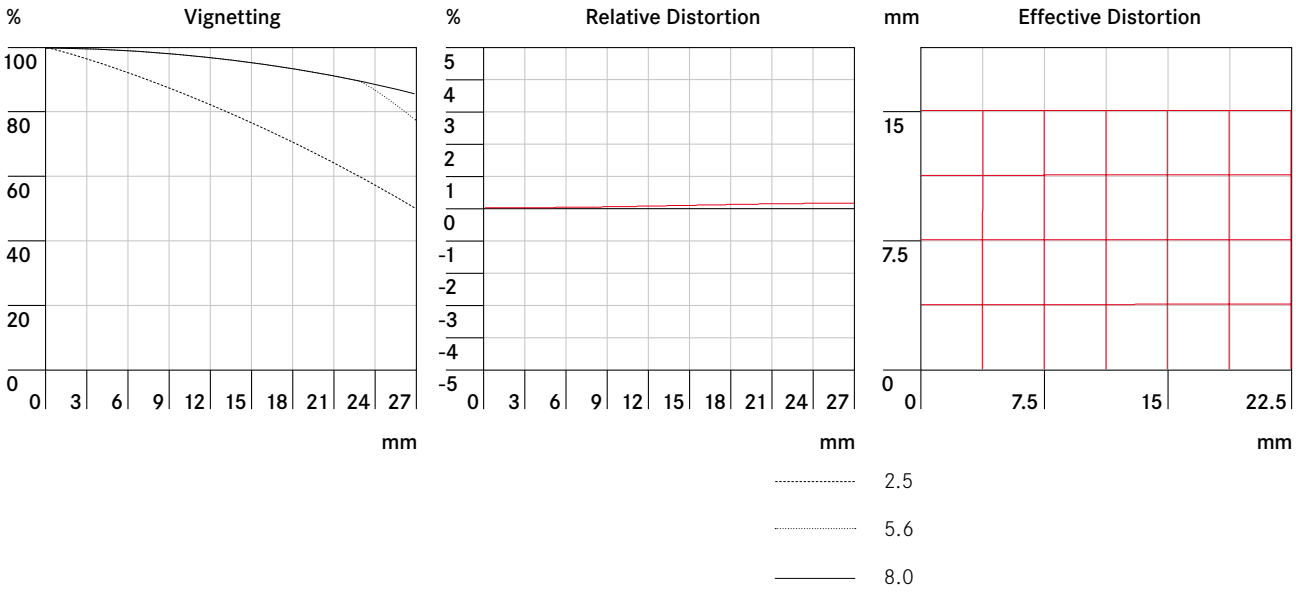
VIGNETTING-/DISTORTION DIAGRAM

Focusing distance



Infinity (∞)



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 27.04 mm is the radial distance between the edge and the middle of the image field for the format 30 mm × 45 mm. The graph of the effective distortion illustrates the appearance of straight horizontal and vertical lines in the picture.

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.

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DEPTH OF FIELD TABLE

∞ feet ∞ m	Aperture Stop							Magnification
	2,8	4	5,6	8	11	16	22	
0,57	0,567 – 0,569	0,566 – 0,570	0,566 – 0,571	0,565 – 0,572	0,563 – 0,573	0,561 – 0,575	0,559 – 0,578	1/2,12
0,58	0,579 – 0,581	0,578 – 0,582	0,577 – 0,583	0,576 – 0,584	0,575 – 0,585	0,573 – 0,588	0,570 – 0,591	1/2,25
0,6	0,599 – 0,601	0,598 – 0,602	0,597 – 0,603	0,596 – 0,604	0,594 – 0,606	0,592 – 0,609	0,589 – 0,612	1/2,46
0,62	0,619 – 0,621	0,618 – 0,622	0,617 – 0,623	0,615 – 0,625	0,614 – 0,626	0,611 – 0,629	0,608 – 0,633	1/2,66
0,65	0,648 – 0,652	0,647 – 0,653	0,646 – 0,654	0,645 – 0,655	0,643 – 0,657	0,640 – 0,661	0,636 – 0,665	1/2,96
0,68	0,678 – 0,682	0,677 – 0,683	0,676 – 0,684	0,674 – 0,686	0,672 – 0,688	0,668 – 0,692	0,664 – 0,697	1/3,24
0,7	0,698 – 0,702	0,697 – 0,703	0,696 – 0,705	0,694 – 0,706	0,691 – 0,709	0,687 – 0,713	0,683 – 0,718	1/3,42
0,75	0,748 – 0,752	0,746 – 0,754	0,745 – 0,755	0,742 – 0,758	0,740 – 0,761	0,735 – 0,766	0,730 – 0,772	1/3,88
0,8	0,797 – 0,803	0,796 – 0,805	0,794 – 0,806	0,791 – 0,809	0,788 – 0,813	0,782 – 0,818	0,776 – 0,826	1/4,33
0,85	0,847 – 0,853	0,845 – 0,855	0,843 – 0,857	0,840 – 0,861	0,836 – 0,865	0,830 – 0,871	0,822 – 0,880	1/4,78
0,9	0,896 – 0,904	0,894 – 0,906	0,892 – 0,908	0,888 – 0,912	0,884 – 0,917	0,877 – 0,925	0,868 – 0,934	1/5,23
1	0,995 – 1,005	0,992 – 1,008	0,989 – 1,011	0,985 – 1,015	0,980 – 1,021	0,971 – 1,031	0,960 – 1,044	1/6,12
1,1	1,09 – 1,11	1,09 – 1,11	1,09 – 1,11	1,08 – 1,12	1,08 – 1,13	1,06 – 1,14	1,05 – 1,16	1/6,99
1,2	1,19 – 1,21	1,19 – 1,21	1,18 – 1,22	1,18 – 1,22	1,17 – 1,23	1,16 – 1,25	1,14 – 1,3	1/7,84
1,3	1,29 – 1,31	1,29 – 1,31	1,28 – 1,32	1,27 – 1,33	1,26 – 1,34	1,25 – 1,36	1,23 – 1,4	1/8,69
1,5	1,49 – 1,51	1,48 – 1,52	1,48 – 1,53	1,46 – 1,54	1,45 – 1,55	1,43 – 1,58	1,41 – 1,6	1/10,4
1,7	1,69 – 1,72	1,68 – 1,72	1,67 – 1,73	1,65 – 1,75	1,64 – 1,77	1,61 – 1,80	1,58 – 1,8	1/12
2	1,98 – 2,02	1,97 – 2,03	1,95 – 2,05	1,94 – 2,07	1,91 – 2,10	1,87 – 2,15	1,83 – 2,2	1/14,5
2,5	2,47 – 2,54	2,45 – 2,56	2,43 – 2,58	1,94 – 2,07	2,36 – 2,66	2,30 – 2,74	2,24 – 2,8	1/18,7
3	2,95 – 3,05	2,92 – 3,08	2,90 – 3,11	2,85 – 3,16	2,80 – 3,23	2,72 – 3,35	2,63 – 3,5	1/22,8
4	3,91 – 4,09	3,87 – 4,15	3,81 – 4,21	3,74 – 4,30	3,65 – 4,43	3,51 – 4,65	3,36 – 5,0	1/31,1
5	4,86 – 5,15	4,79 – 5,23	4,71 – 5,33	4,60 – 5,48	4,46 – 5,69	4,25 – 6,07	4,03 – 6,6	1/39,4
7	6,73 – 7,29	6,59 – 7,46	6,44 – 7,67	6,23 – 7,99	5,98 – 8,44	5,61 – 9,32	5,22 – 10,7	1/55,9
15	13,80 – 16,44	13,22 – 17,33	12,63 – 18,48	11,83 – 20,52	10,96 – 23,81	9,77 – 32,51	8,64 – 58,0	1/122
∞	170,4 – ∞	110,9 – ∞	79,2 – ∞	55,5 – ∞	40,4 – ∞	27,8 – ∞	20,2 – ∞	1/∞

Set distance [m]

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