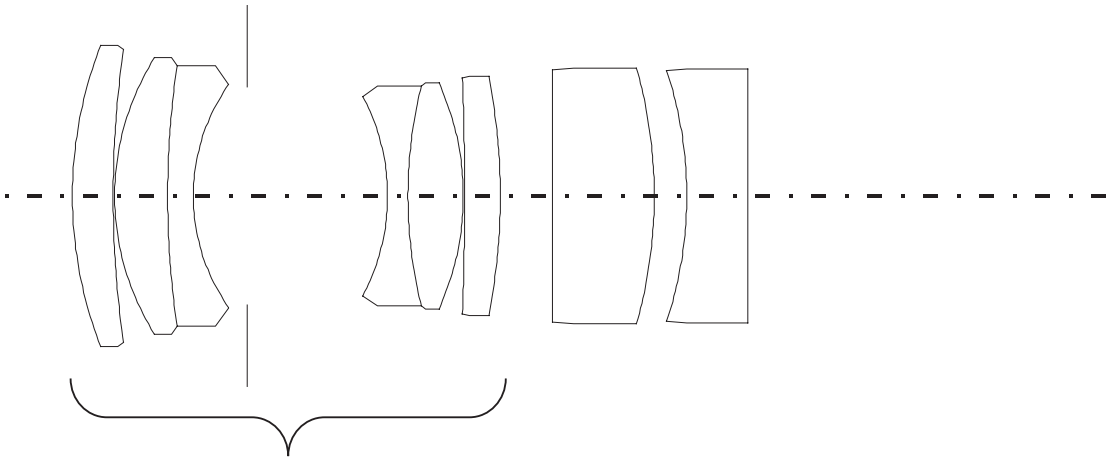
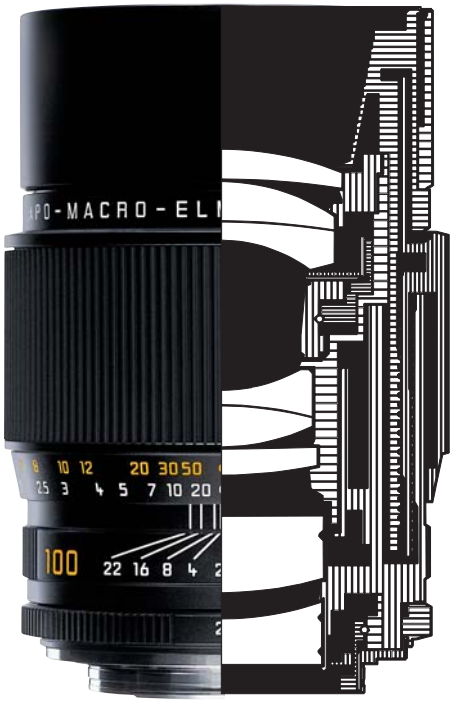
Its overall performance makes it the great role model in the 35 mm field : Where else are sharpness and contrast, vignetting and distortion at all focusing distances and in all applications so exemplary ? That extends the range of applications of the LEICA APO-MACRO-ELMARIT-R 100 mm f/2.8 far beyond macro photography. Thus it also produces brilliant results in situations that are typical for medium tele lenses. And its focal length of 100 mm already enables it to enlarge subjects from a distance. That makes it much easier, for instance, to illuminate and to photograph shy small animals. When combined with the LEICA ELPRO 1:2–1:1, designed especially for use with this lens, the macro range can be explored down to a reproduction ratio of 1:1.

Lens shape

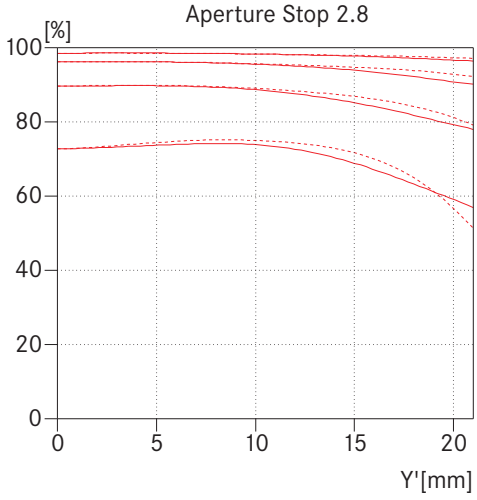


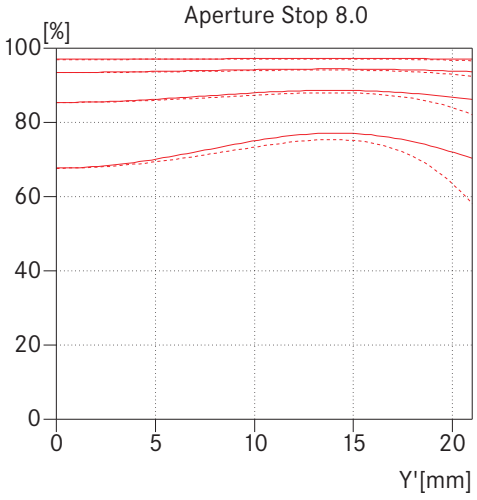


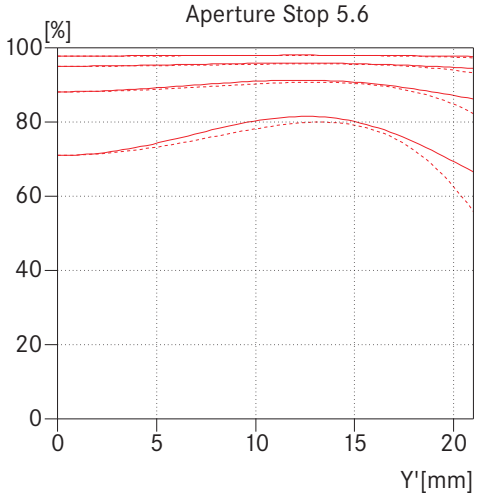
Engineering drawing

Technical Data	
Angle of view (diagonal, horizontal, vertical)	24°, 20°, 13.7°
Optical design	**Number of elements / groups:** 8 / 6 **Focal length:** 100 mm **Entrance pupil:** 22 mm (related to the first lens surface in light direction) **Focusing range:** 45 cm to Infinity, with ELPRO 1:2-1:1 down to 30 cm
Distance setting	**Scale:** Combined meter/feet-increments down to 0.7 m, engraved reproduction ratios from 1:5 to 1:2 **Smallest object field:** 48 x 72 mm, with ELPRO 1:2-1:1 22 x 35 mm **Highest reproduction ratio:** 1:2, with ELPRO 1:2-1:1 1.1:1
Diaphragm	**Setting / Type:** Preset diaphragm with clickstops (including half values), Fully automatic diaphragm **Smallest aperture:** f/22
Bayonet	LEICA R quick-change bayonet for LEICA R3 to LEICA R9 with mechanical, and, for LEICA R8/R9, additional electronic exposure control
Filter (type)	Internal thread for screw-in type filters E 60
Lens hood	Built-in, telescopic
Dimensions and weight	**Length:** 104.5 mm **Largest diameter:** 73 mm **Weight:** approx. 760 g

MTF graphs





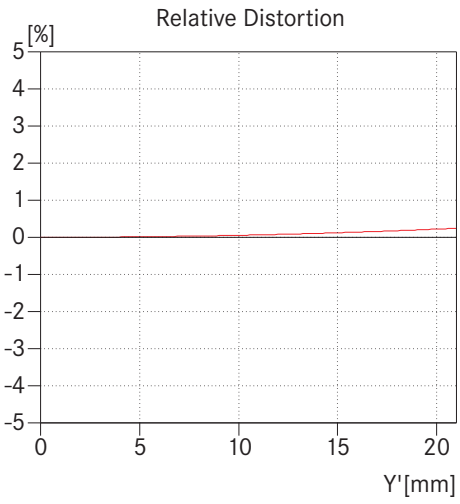


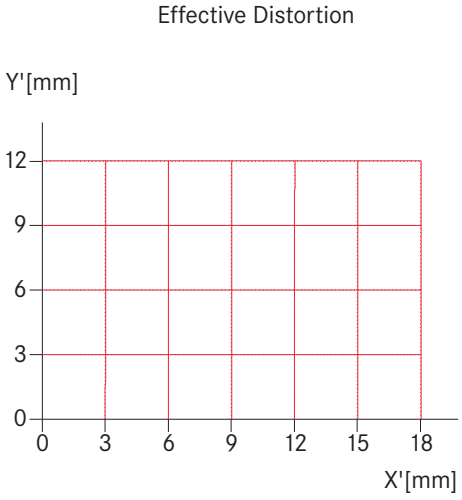
The MTF is indicated both at full aperture and at f/5.6 at long taking distances (infinity). Shown is the contrast in percentage for 5, 10, 20 and 40 lp/mm accross the height of the 35 mm film format, for tangential (dotted line) and sagittal (solid line) structures, in white light. The 5 and 10 lp/mm 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.

sagittal structures

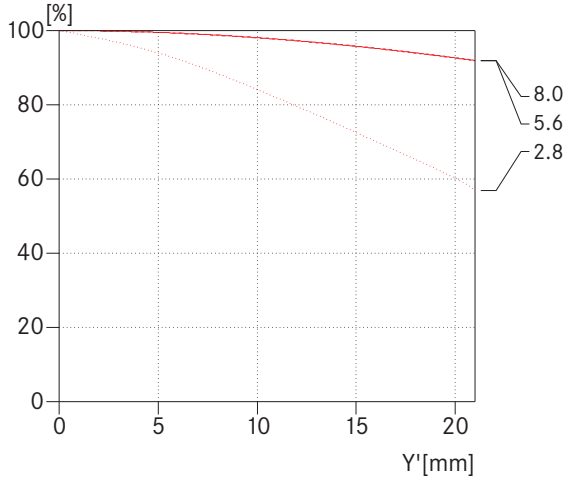
tangential structures

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 21.6mm is the radial distance between the edge and the middle of the image field for the format 24mm x 36mm. The graph of the effective distortion illustrates the appearance of straight horizontal and vertical lines in the picture.

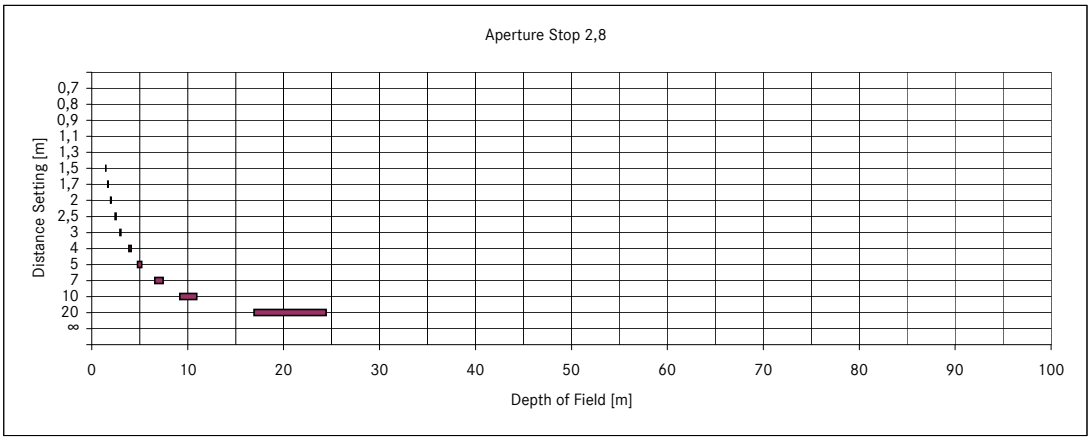
Vignetting is a continous decrease of the illumination to the edges of the image field. The graph shows the percentage lost of illumination over the image height. 100% means no vignetting.

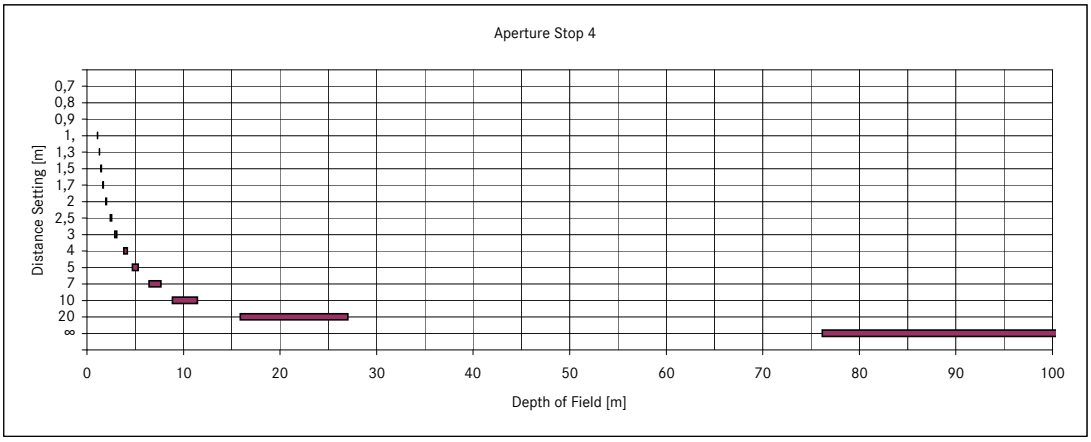
sagittal structures

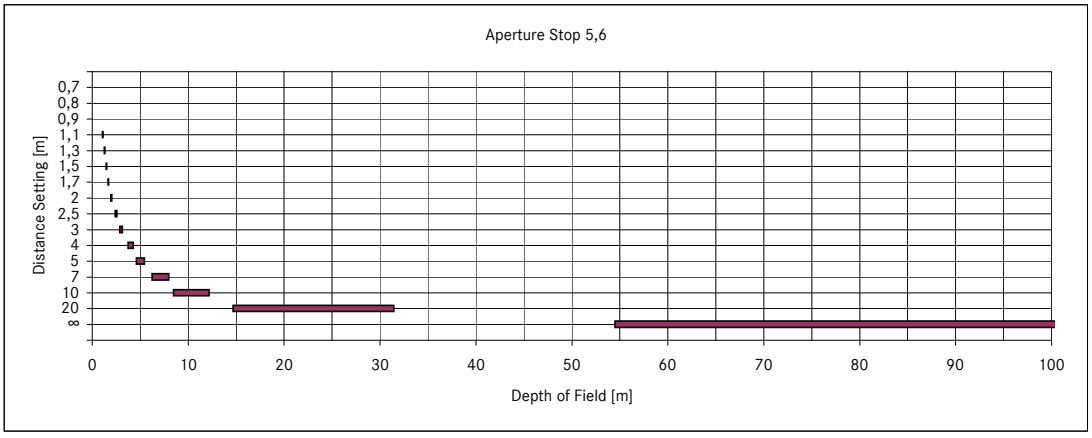
tangential structures

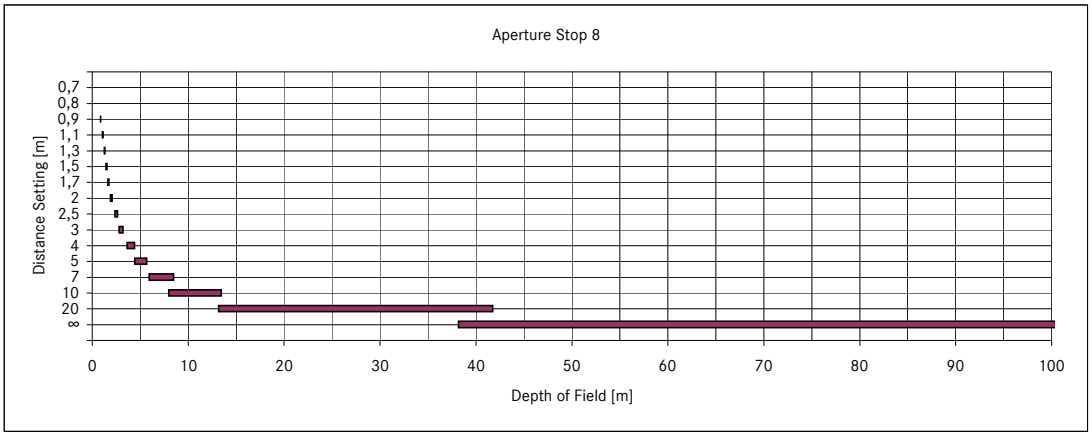
Depth of field table

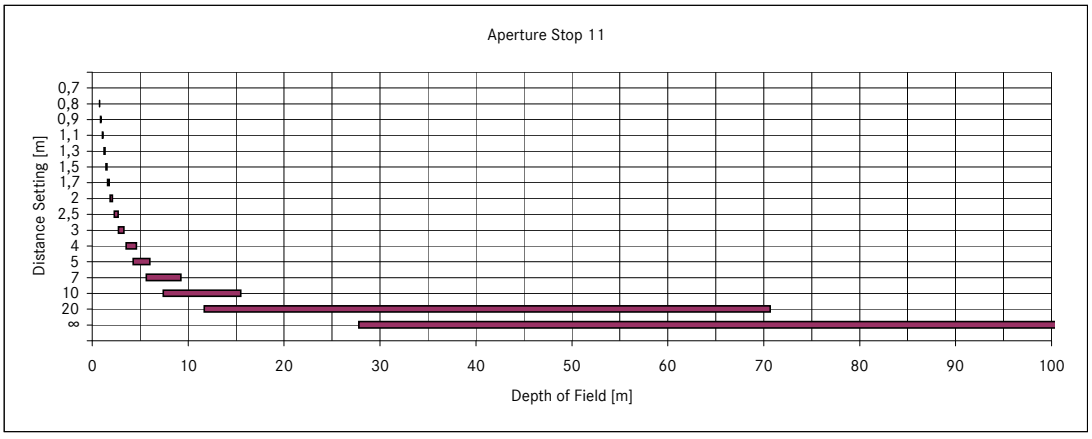
Distance Setting [m]	Aperture Stop 2,8	4	5,6	8	11	16	22	Magnification
0,7	0,697 - 0,703	0,696 - 0,704	0,694 - 0,706	0,692 - 0,709	0,688 - 0,712	0,683 - 0,718	0,677 - 0,725	1/4,69
0,8	0,796 - 0,804	0,794 - 0,806	0,792 - 0,809	0,788 - 0,812	0,784 - 0,817	0,777 - 0,825	0,769 - 0,835	1/5,73
0,9	0,894 - 0,906	0,892 - 0,908	0,889 - 0,911	0,884 - 0,916	0,879 - 0,923	0,869 - 0,933	0,859 - 0,946	1/6,75
1,1	1,091 - 1,109	1,087 - 1,113	1,083 - 1,118	1,075 - 1,126	1,066 - 1,136	1,052 - 1,153	1,035 - 1,175	1/8,78
1,3	1,287 - 1,313	1,282 - 1,319	1,275 - 1,326	1,264 - 1,338	1,251 - 1,353	1,231 - 1,379	1,207 - 1,411	1/10,8
1,5	1,482 - 1,518	1,475 - 1,526	1,466 - 1,536	1,451 - 1,552	1,434 - 1,573	1,406 - 1,609	1,374 - 1,654	1/12,8
1,7	1,677 - 1,724	1,668 - 1,734	1,655 - 1,748	1,637 - 1,769	1,614 - 1,796	1,578 - 1,844	1,537 - 1,905	1/14,8
2	1,967 - 2,034	1,954 - 2,048	1,937 - 2,068	1,911 - 2,098	1,880 - 2,138	1,830 - 2,208	1,774 - 2,298	1/17,8
2,5	2,448 - 2,554	2,427 - 2,577	2,399 - 2,610	2,359 - 2,660	2,310 - 2,726	2,234 - 2,843	2,149 - 2,998	1/22,8
3	2,925 - 3,080	2,894 - 3,114	2,854 - 3,162	2,796 - 3,237	2,727 - 3,337	2,619 - 3,517	2,501 - 3,762	1/27,8
4	3,865 - 4,145	3,811 - 4,210	3,740 - 4,300	3,639 - 4,443	3,521 - 4,636	3,340 - 4,999	3,147 - 5,520	1/37,8
5	4,788 - 5,232	4,704 - 5,336	4,596 - 5,484	4,443 - 5,721	4,266 - 6,049	4,000 - 6,690	3,723 - 7,671	1/47,8
7	6,588 - 7,468	6,427 - 7,687	6,225 - 8,000	5,944 - 8,523	5,627 - 9,283	5,169 - 10,91	4,710 - 13,83	1/67,7
10	9,173 - 10,99	8,861 - 11,48	8,477 - 12,20	7,960 - 13,47	7,397 - 15,50	6,618 - 20,69	5,878 - 34,72	1/97,6
20	16,92 - 24,46	15,88 - 27,05	14,67 - 31,48	13,17 - 41,76	11,68 - 70,70	9,837 - ∞	8,272 - ∞	1/197
∞	108,9 - ∞	76,16 - ∞	54,48 - ∞	38,18 - ∞	27,80 - ∞	19,15 - ∞	13,96 - ∞	1/∞

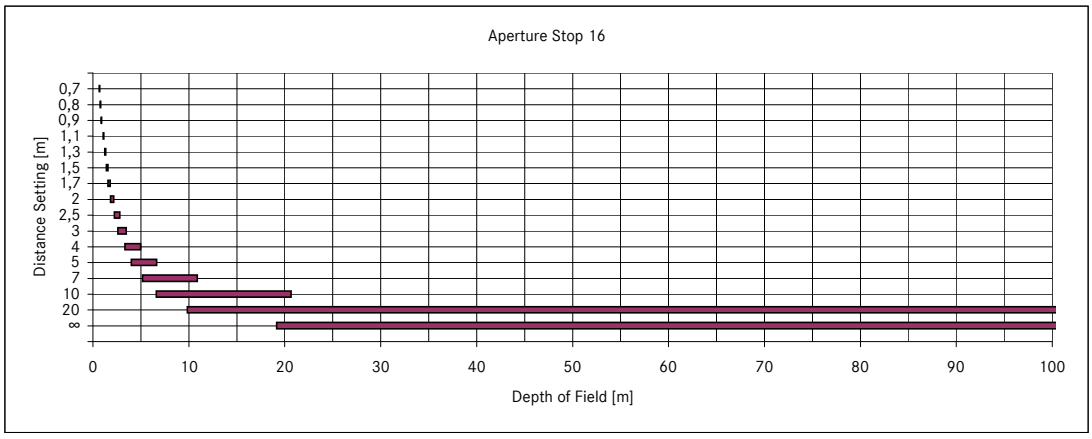


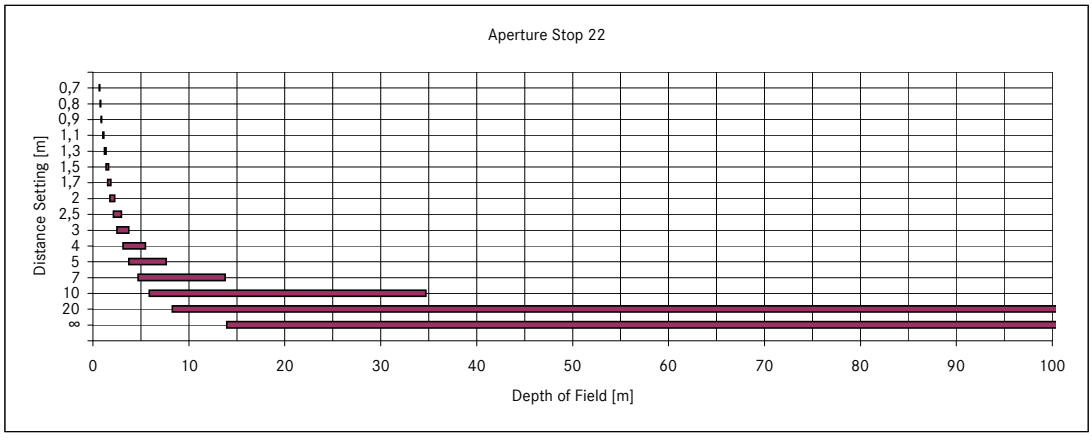



Aperture Stop 5,6
Distance Setting [m]
0,7
0,8
0,9
1,1
1,3
1,5
1,7
2
2,5
3
4
5
7
10
20
∞
0
10
20
30
40
50
60
70
80
90
100
Depth of Field [m]


Aperture Stop 8
Distance Setting [m]
0,7
0,8
0,9
1,1
1,3
1,5
1,7
2
2,5
3
4
5
7
10
20
∞
0
10
20
30
40
50
60
70
80
90
100
Depth of Field [m]


Aperture Stop 11
Distance Setting [m]
0,7
0,8
0,9
1,1
1,3
1,5
1,7
2
2,5
3
4
5
7
10
20
∞
0
10
20
30
40
50
60
70
80
90
100
Depth of Field [m]


Aperture Stop 16
Distance Setting [m]
0,7
0,8
0,9
1,1
1,3
1,5
1,7
2
2,5
3
4
5
7
10
20
∞
0
10
20
30
40
50
60
70
80
90
100
Depth of Field [m]


Aperture Stop 22
Distance Setting [m]
0,7
0,8
0,9
1,1
1,3
1,5
1,7
2
2,5
3
4
5
7
10
20
∞
0
10
20
30
40
50
60
70
80
90
100
Depth of Field [m]