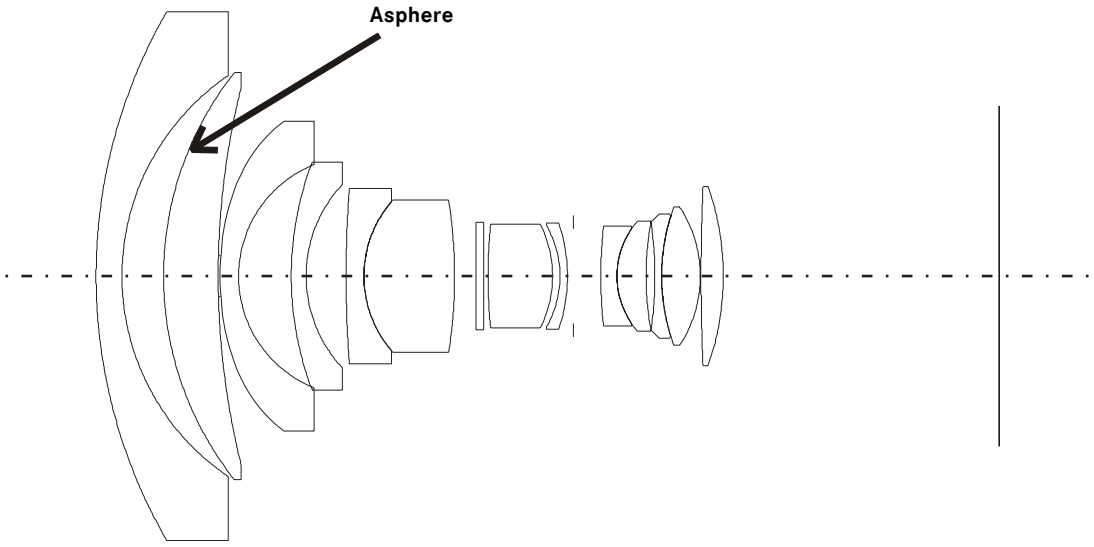
The optical design, with internal focusing, has 13 lens elements in 10 groups, one with an aspherical surface. This super-wide-angle lens has virtually no flare, it is not sensitive to reflections and delivers first-class images at full aperture. Contrast and sharpness are extremely high, so that the finest details are resolved into the very corners of the image. The Super-Elmarit-R has a built-in filter revolver with a neutral density filter, a KB 12 artificial light conversion filter, a yellow-green filter and an orange filter. Its very wide angle of view and its impressive rendition of perspectives are superbly suitable for landscape and architectural photography, as well as for covering the full scene in confined interior quarters. Dynamic perspectives with dominant foregrounds are made possible by the large angle of view and the short near focusing distance of only 18 cm (7 in).

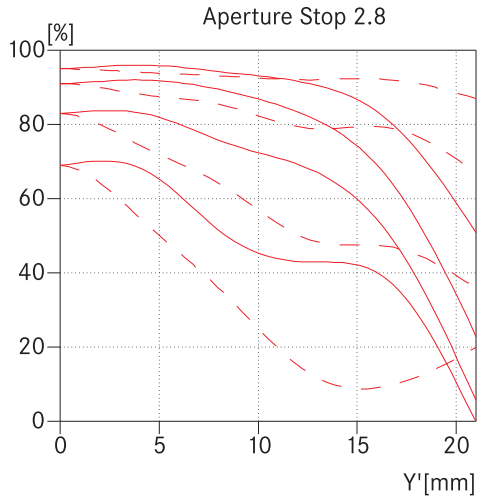
Lens shape

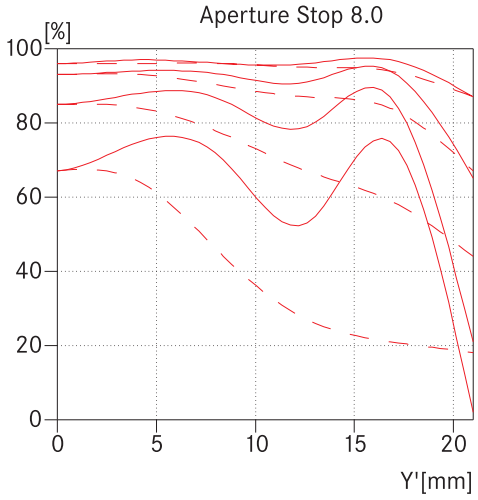


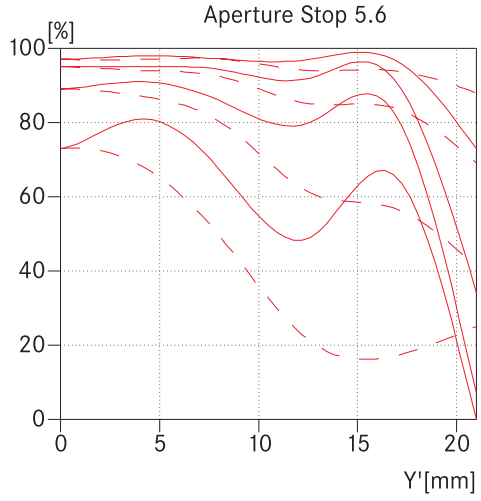
Engineering drawing

Technical Data	
Angle of view (diagonal, horizontal, vertical)	111°, 100°, 77°
Optical design	**Number of elements / groups:** 13 / 10 **Focal length:** 15 mm **Focusing range:** 0.18 m to Infinity
Distance setting	**Scale:** Combined meter/feet-increments **Smallest object field:** 127 mm x 191 mm **Highest reproduction ratio:** 1:5.3
Diaphragm	**Setting / Type:** Preset diaphragm with clickstops (including half values), Fully automatic diaphragm **Smallest aperture:** 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)	Built-in turret with 4 filters: NDx1 (neutral density), yellow-green YG, orange OR, and blue (conversion filter KB12)
Lens hood	Built-in, rigid, scalloped
Dimensions and weight	**Length:** 85.3 mm **Largest diameter:** 83.5 mm **Weight:** approx. 710 g

MTF graphs





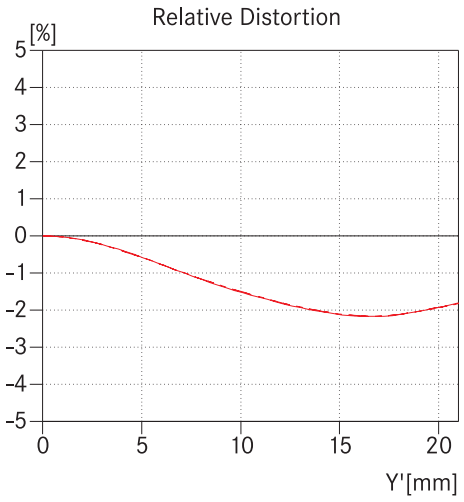


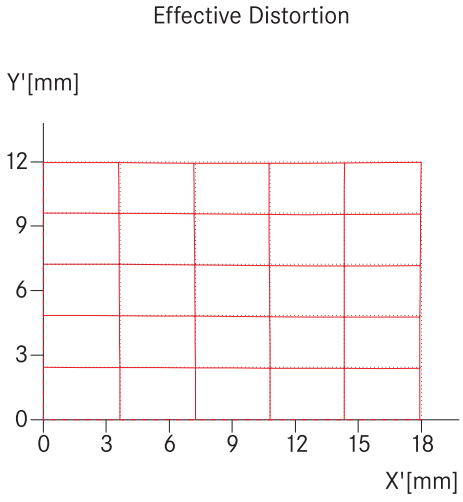
The MTF is indicated both at full aperture and at f/5.6 at long taking distances (infinity). Shown is the contrast in percentage for 5, 10, 20 and 40 lp/mm accross the height of the 35 mm film format, for tangential (dotted line) and sagittal (solid line) structures, in white light. The 5 and 10 lp/mm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

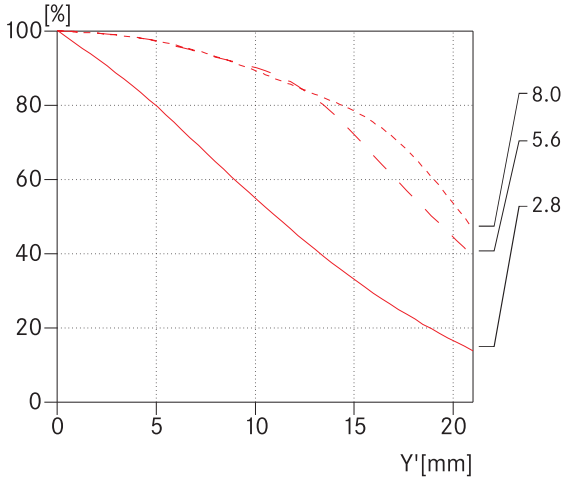
tangential structures

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.

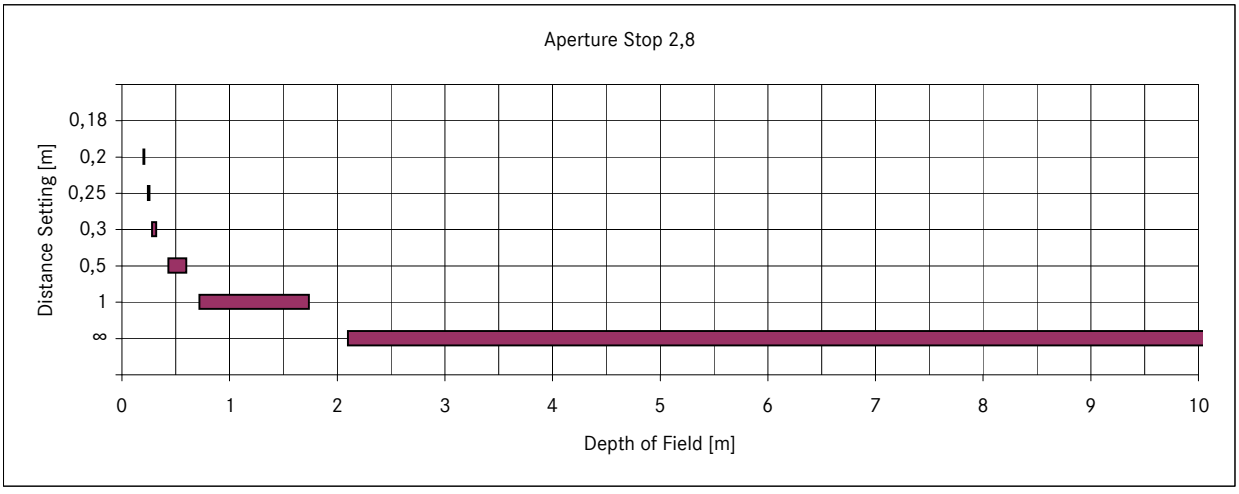
Vignetting is a continous decrease of the illumination to the edges of the image field. The graph shows the percentage lost of illumination over the image height. 100% means no vignetting.

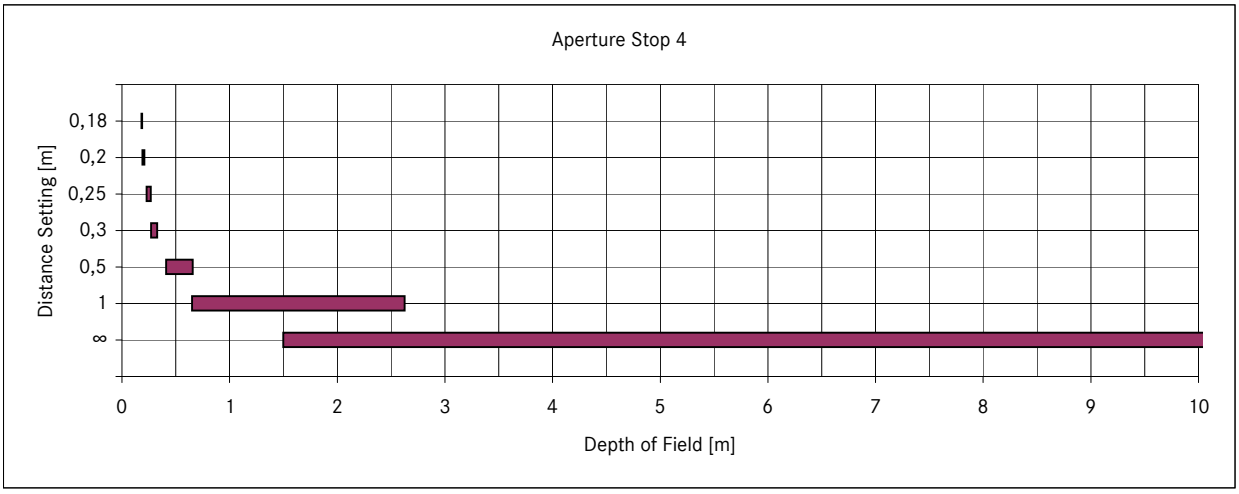
sagittal structures

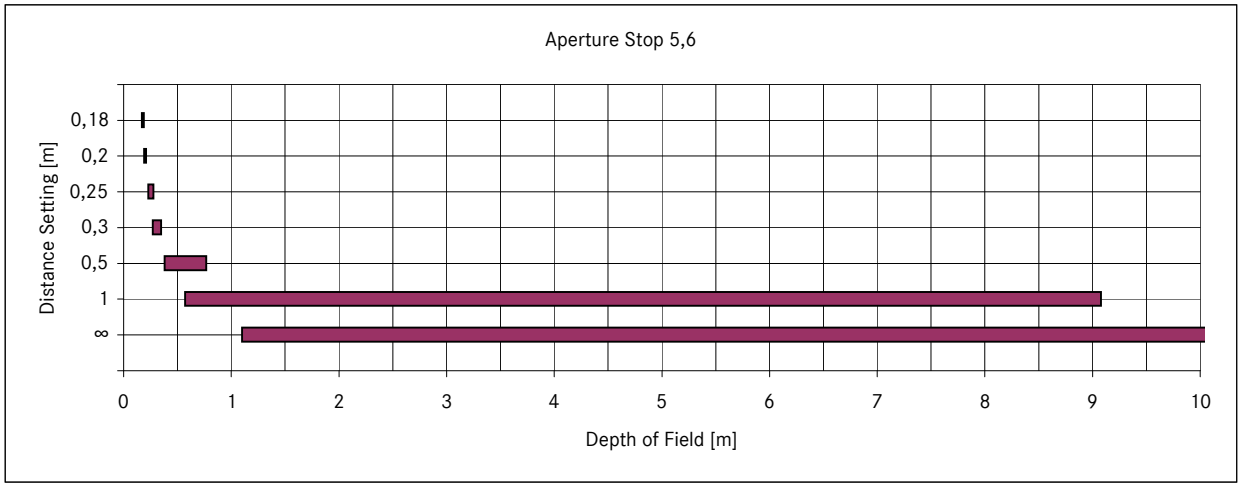
tangential structures

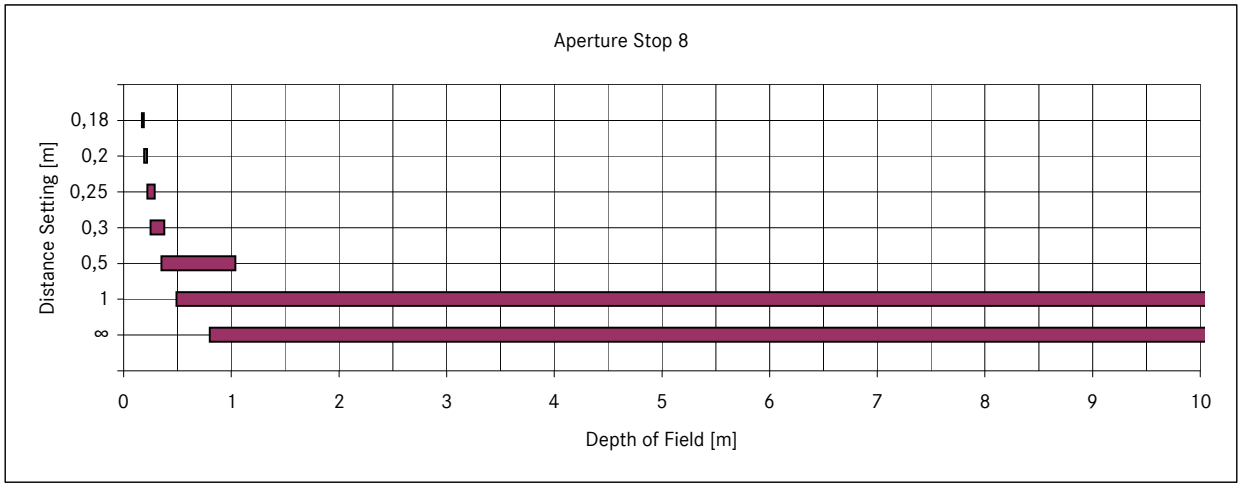
Depth of field table

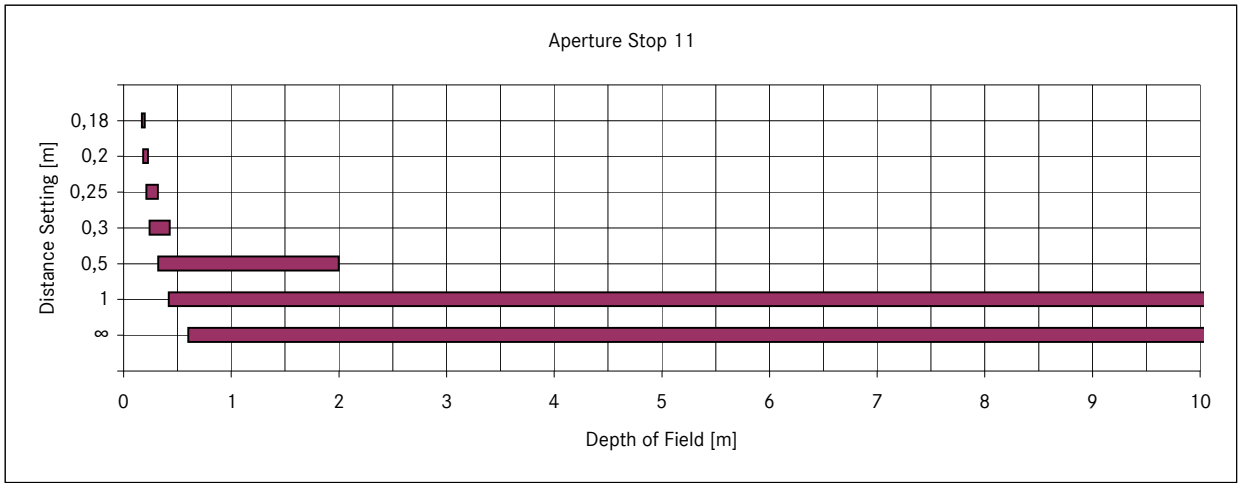
Distance Setting [m]	Aperture Stop 2,8	4	5,6	8	11	16	22	Magnification
0,18	0,18 - 0,18	0,18 - 0,19	0,17 - 0,19	0,17 - 0,19	0,17 - 0,20	0,16 - 0,20	0,16 - 0,22	1/10,6
0,2	0,20 - 0,21	0,19 - 0,21	0,19 - 0,21	0,19 - 0,22	0,18 - 0,23	0,18 - 0,24	0,17 - 0,27	1/11,9
0,25	0,24 - 0,26	0,23 - 0,27	0,23 - 0,28	0,22 - 0,29	0,21 - 0,32	0,20 - 0,37	0,19 - 0,48	1/15,1
0,3	0,28 - 0,32	0,27 - 0,33	0,27 - 0,35	0,25 - 0,38	0,24 - 0,43	0,22 - 0,58	0,23 - 1,07	1/18,3
0,5	0,43 - 0,60	0,41 - 0,66	0,38 - 0,77	0,35 - 1,04	0,32 - 2,00	0,28 - ∞	0,25 - ∞	1/31,2
1	0,72 - 1,74	0,65 - 2,63	0,57 - 9,08	0,49 - ∞	0,42 - ∞	0,35 - ∞	0,29 - ∞	1/128
∞	2,10 - ∞	1,50 - ∞	1,10 - ∞	0,80 - ∞	0,60 - ∞	0,44 - ∞	0,35 - ∞	1/∞

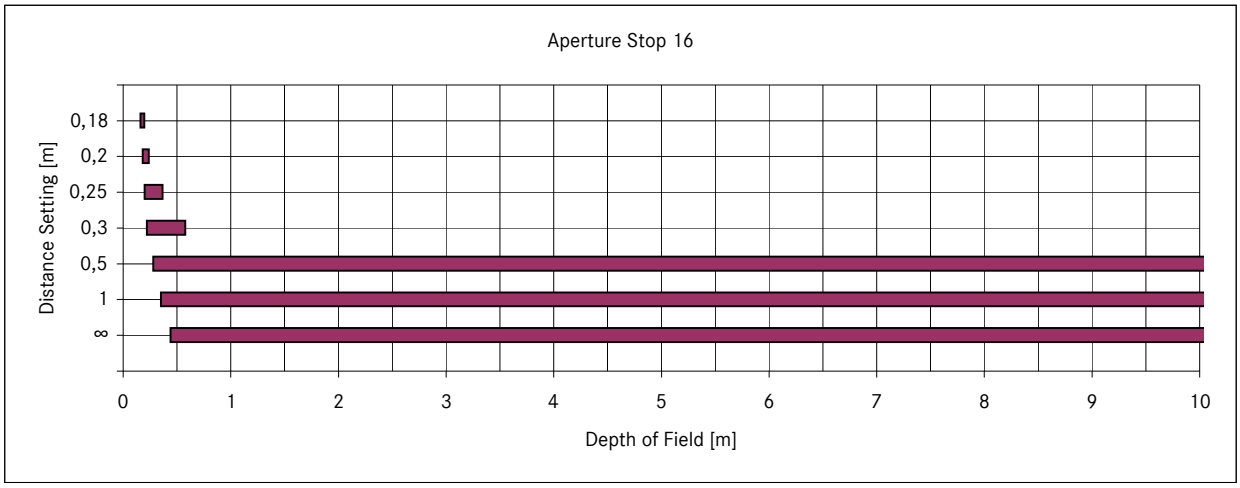


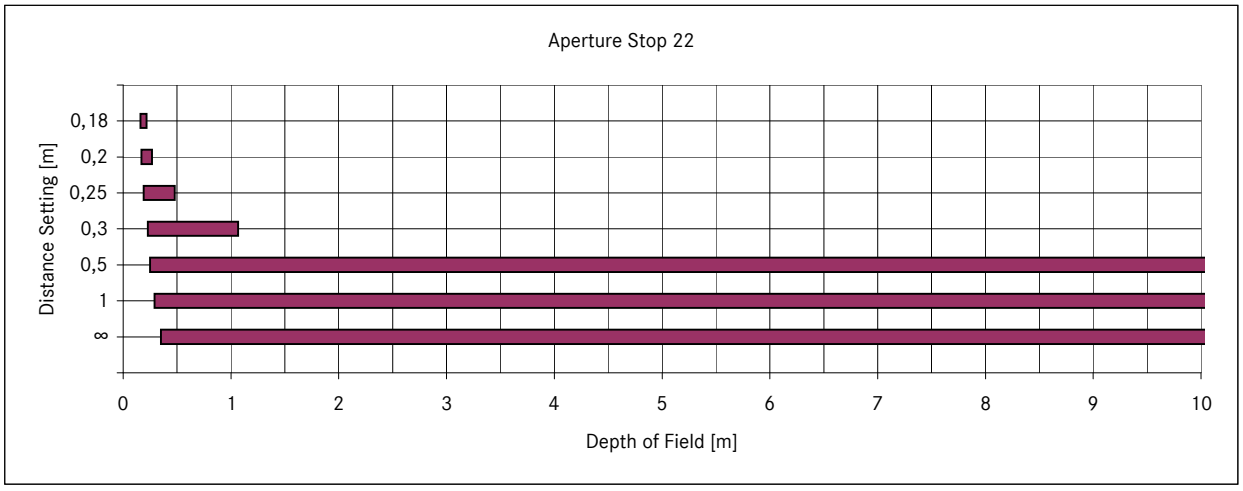



Aperture Stop 5,6
Distance Setting [m]
0,18
0,2
0,25
0,3
0,5
1
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]


Aperture Stop 8
Distance Setting [m]
0,18
0,2
0,25
0,3
0,5
1
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]


Aperture Stop 11
Distance Setting [m]
0,18
0,2
0,25
0,3
0,5
1
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]





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