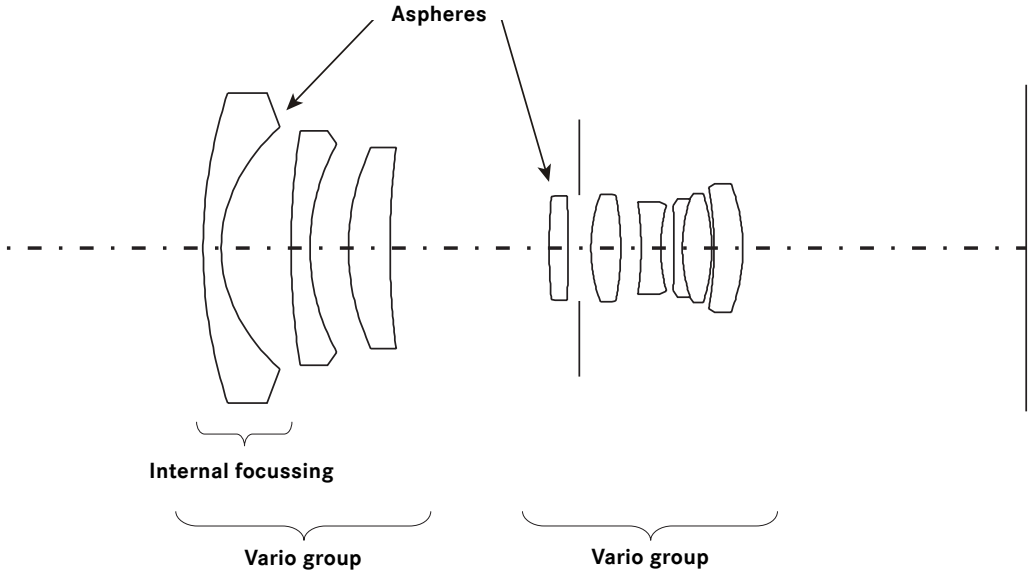
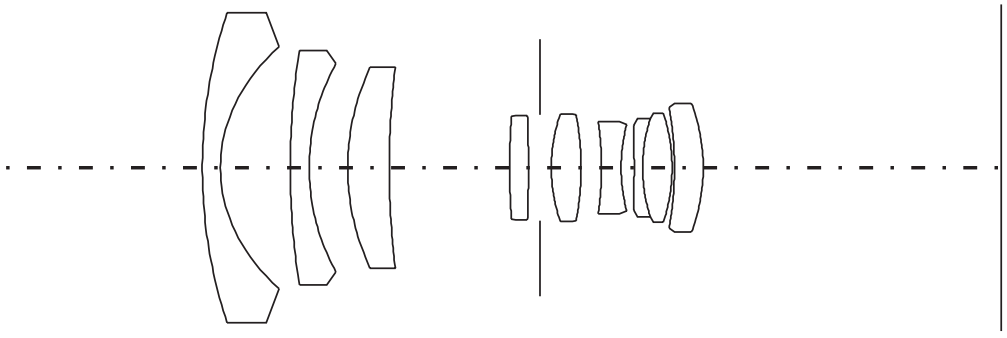
A compact, lightweight zoom lens that covers the full range of the most frequently used focal lengths in the wide-angle range. Even at full aperture, both contrast and sharpness are comparable to those of lenses with fixed focal lengths. In spite of its compact design, it has an unusually high performance. That is due to the use of two aspherical surfaces and two lens elements made of high-refraction optical glass and glass with anomalous partial dispersion. Its aspherical surfaces are fabricated with a highly modern precision polishing process. For a wide-angle lens, susceptibility to reflections and barrel distortion are low. With its highly practical range of focal lengths and its outstanding imaging performance, this lens masters especially those tasks for which one would otherwise need four different wide-angle lenses : From photographing people and their nearby surroundings to spacious landscape photographs with a great feeling of depth. As a wide-angle zoom lens, the use of only two additional zoom lenses can form a high-performance, lightweight and complete outfit – for instance the LEICA VARIO-ELMAR-R 35–70 mm f/4 as the normal focal length and the LEICA VARIO-ELMAR-R 80–200 mm f/4 as the tele lens.

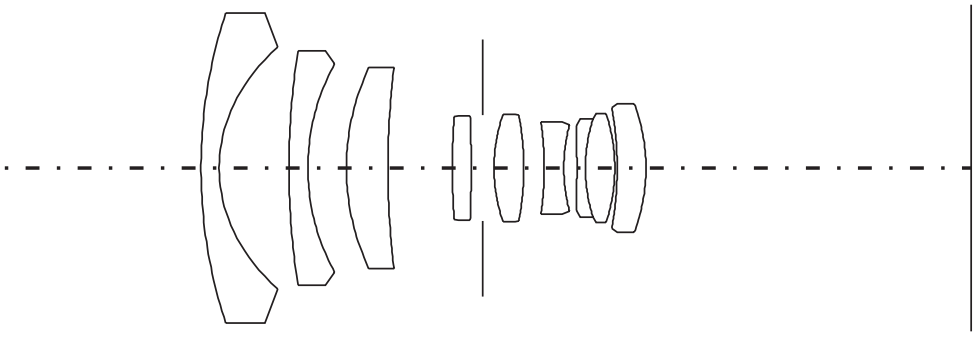
Lens shape 21 mm



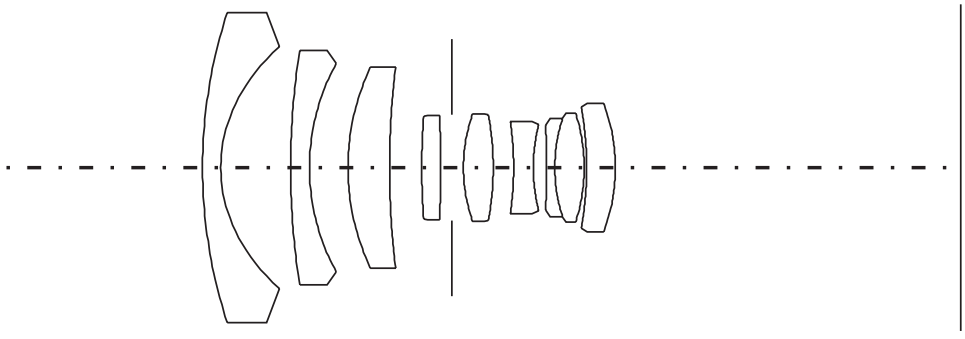
Lens shape 24 mm



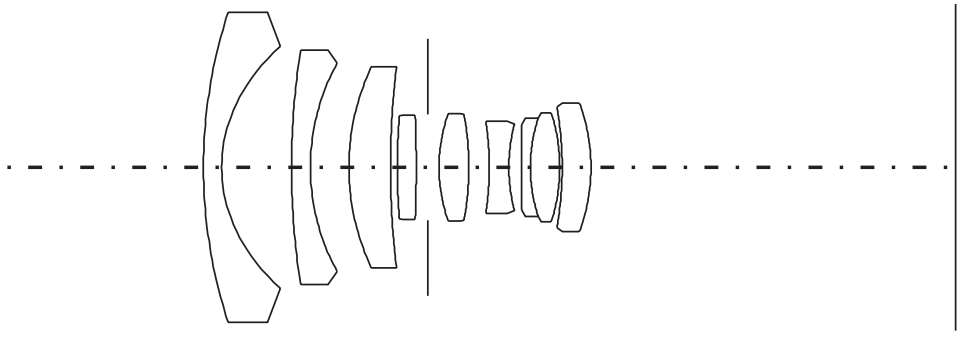
Lens shape 28 mm



Lens shape 31 mm



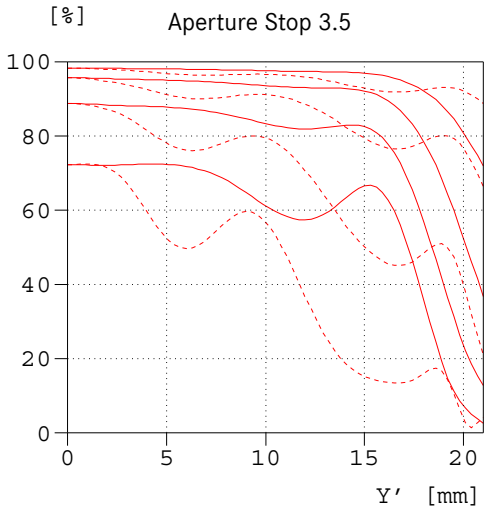
Lens shape 35 mm

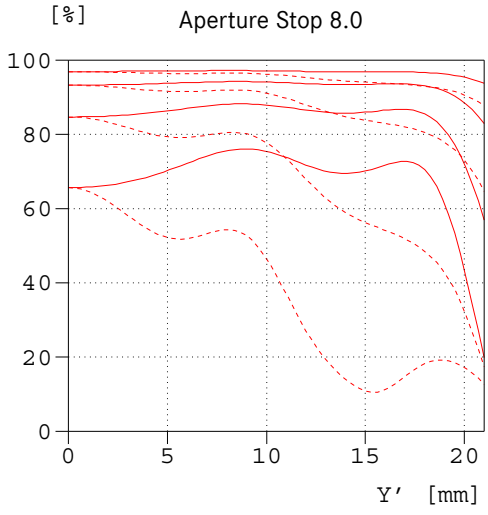


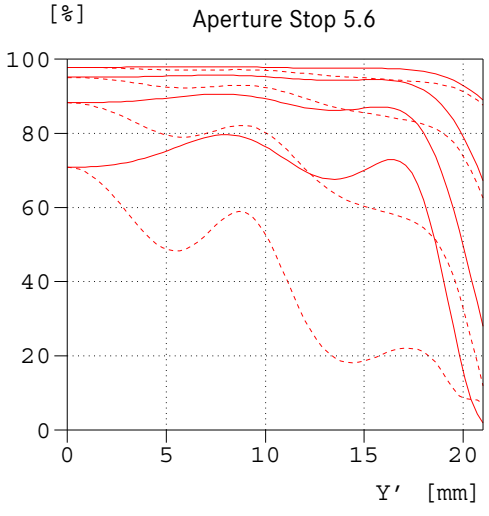
Engineering drawing

Technical Data	
Angle of view (diagonal, horizontal, vertical)	Focal length 21 mm: 91.6° Focal length 35 mm: 63.4°
Optical design	**Number of elements / groups:** 9 / 8 **Focusing range:** 0.5 m to infinity
Distance setting	**Scale:** Combined meter/feet-increments **Smallest object field:** 21 mm focal length: 462 x 692 mm, 35 mm focal length: 300 x 450 mm **Highest reproduction ratio:** 21mm focal length: 1:19.2, 35 mm focal length: 1:12.5
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 67
Lens hood	Separate, petal shaped sections
Dimensions and weight	**Length:** ca. 66.3 mm **Largest diameter:** ca. 75 mm **Weight:** ca. 500 g

MTF graphs 21 mm





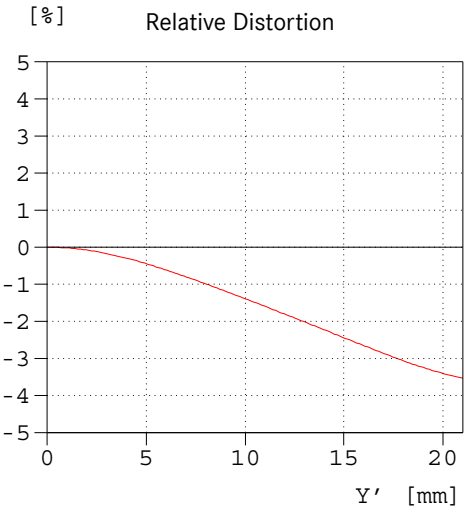


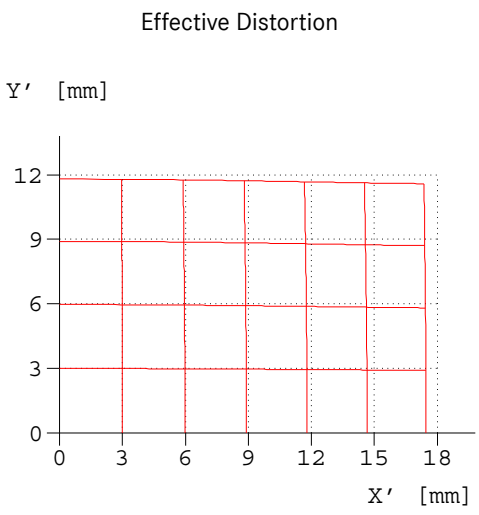
The MTF is indicated both at full aperture and at f/5.6 at long taking distances (infinity). Shown is the contrast in percentage for 5, 10, 20 and 40 lp/mm accross the height of the 35 mm film format, for tangential (dotted line) and sagittal (solid line) structures, in white light. The 5 and 10 lp/mm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

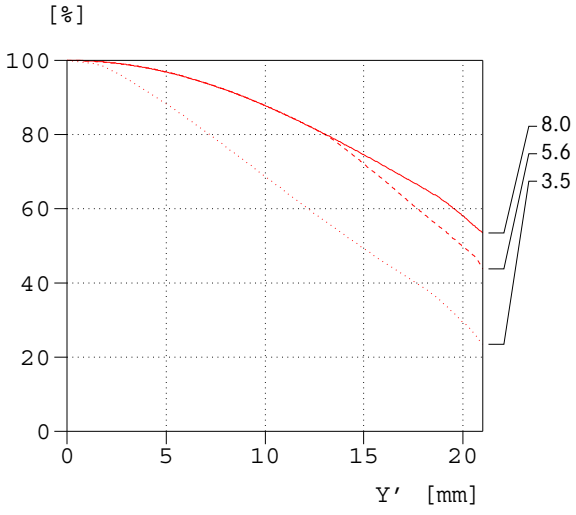
tangential structures

Distortion 21 mm





Vignetting 21 mm



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.

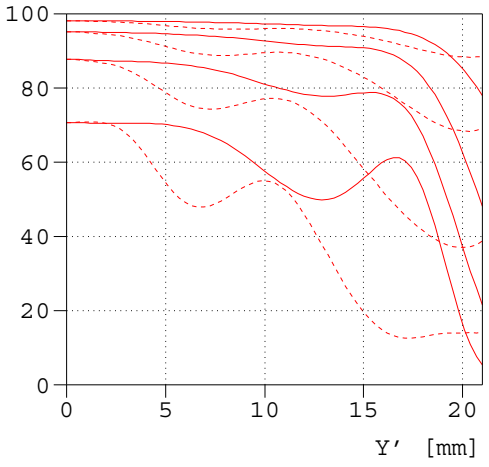
Vignetting is a continous decrease of the illumination to the edges of the image field. The graph shows the percentage lost of illumination over the image height. 100% means no vignetting.

sagittal structures

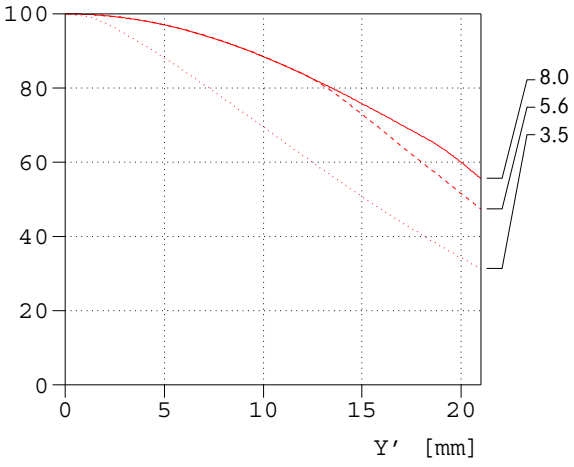
tangential structures

24 mm

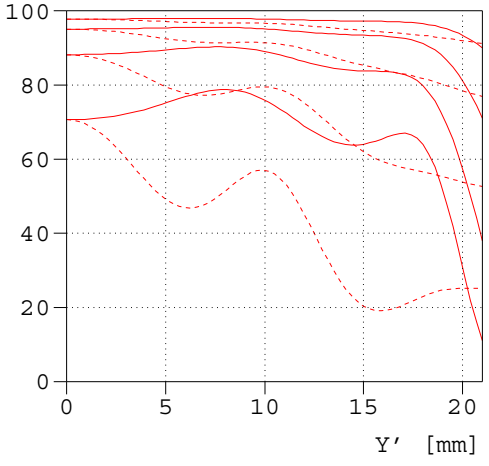
Aperture Stop 3.5



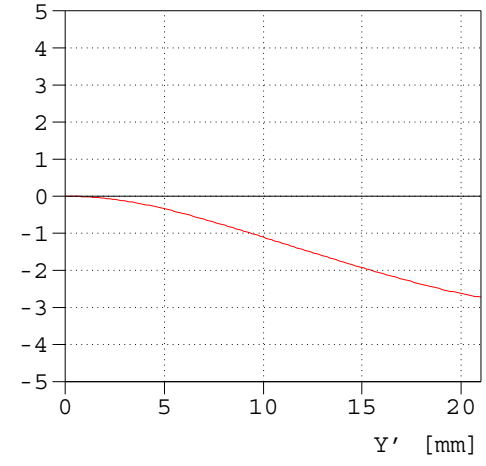
Vignetting



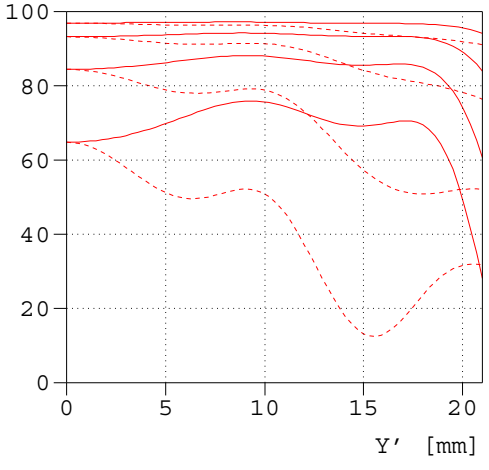
Aperture Stop 5.6



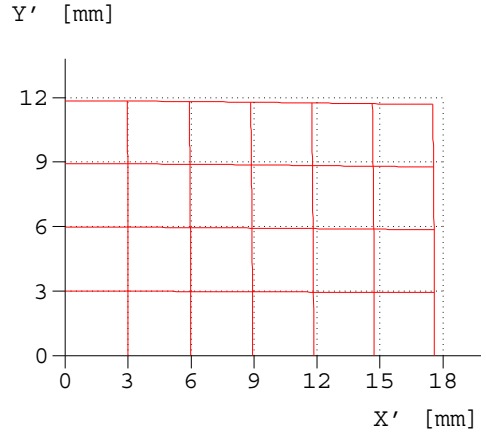
Relative Distortion



Aperture Stop 8.0

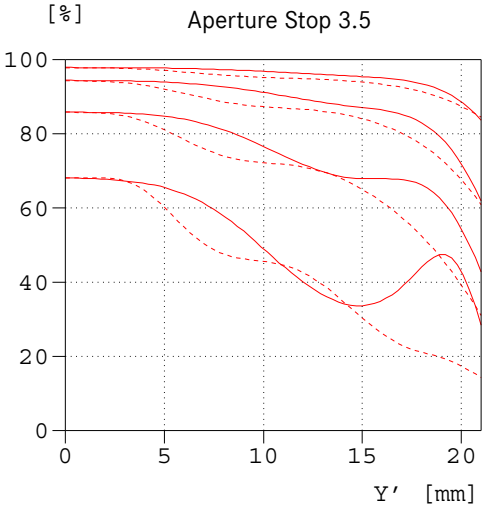


Effective Distortion

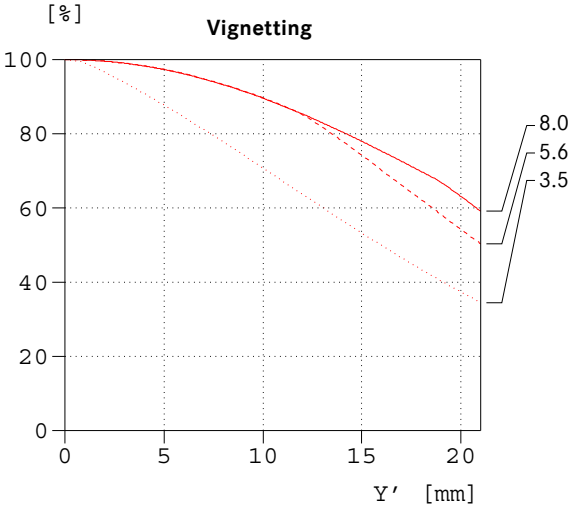


28 mm

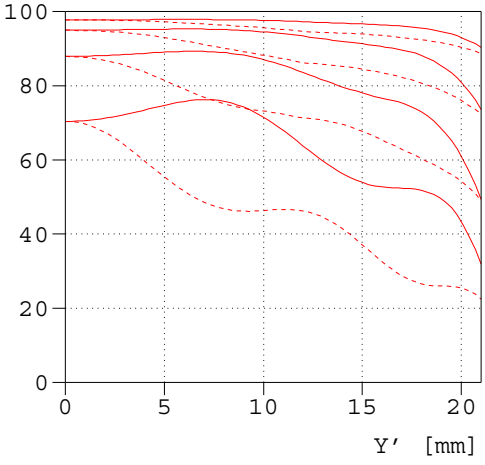
Aperture Stop 3.5



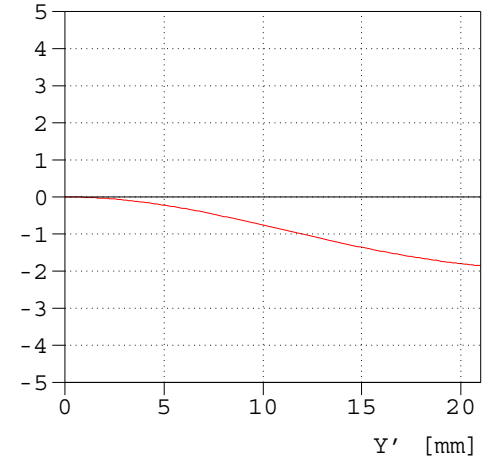
Vignetting



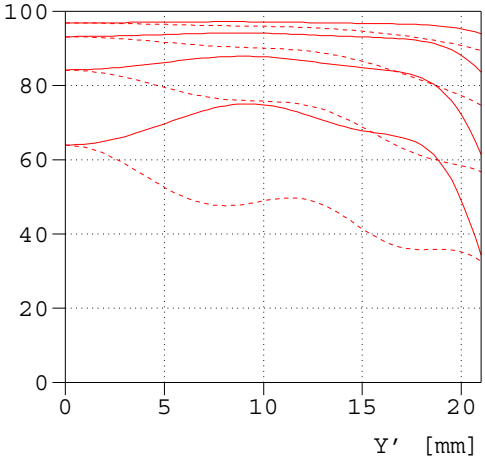
Aperture Stop 5.6



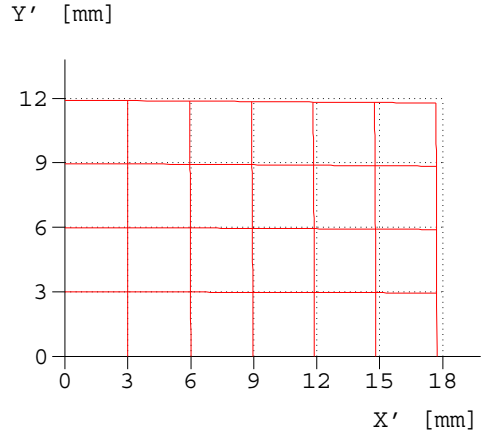
Relative Distortion



Aperture Stop 8.0

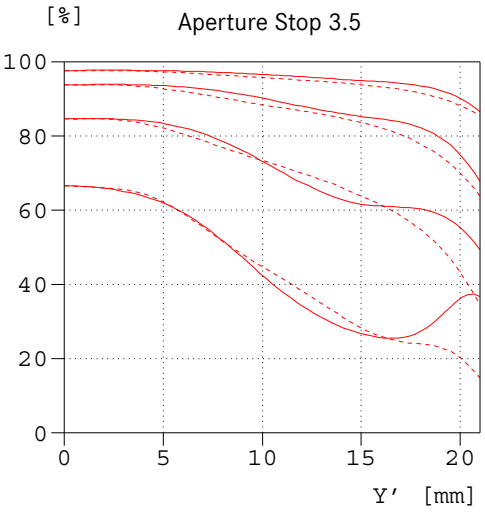


Effective Distortion

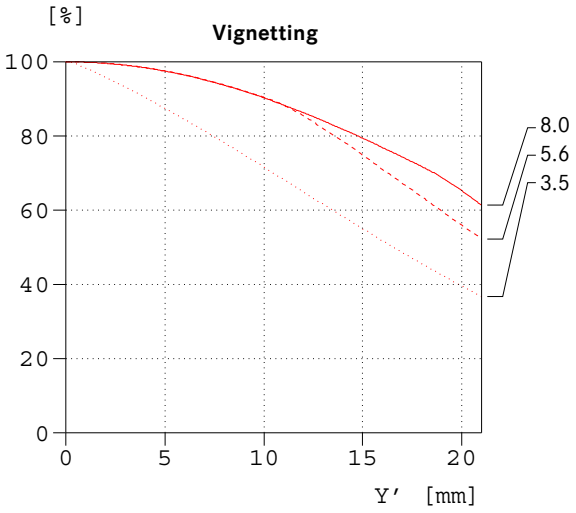


31 mm

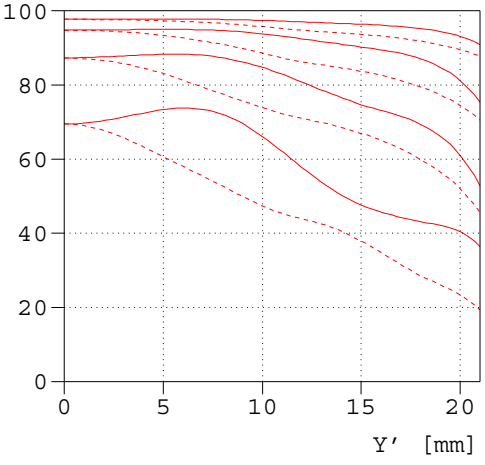
Aperture Stop 3.5



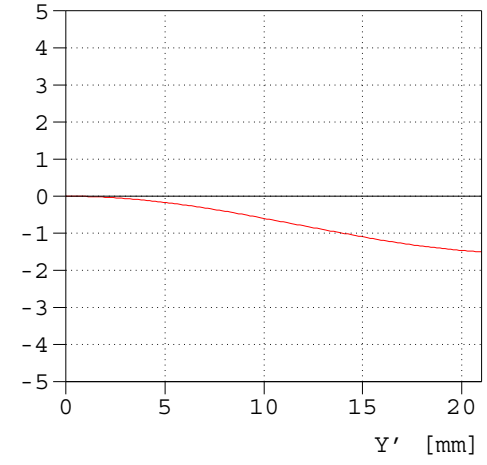
Vignetting



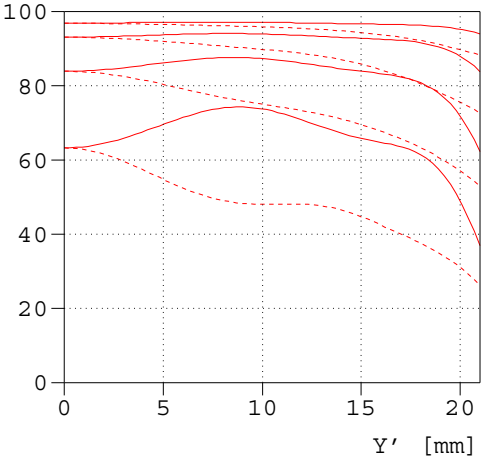
Aperture Stop 5.6



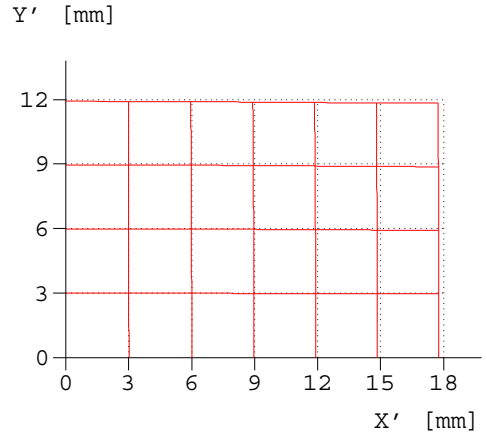
Relative Distortion



Aperture Stop 8.0

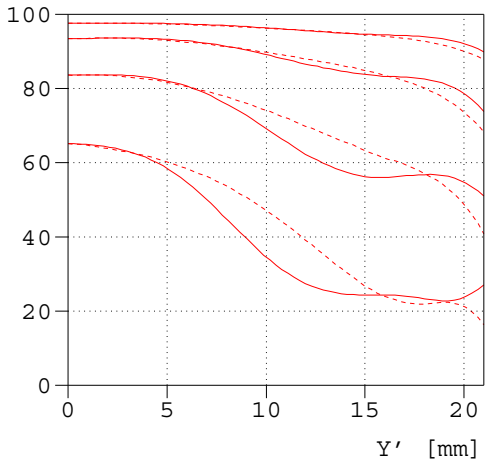


Effective Distortion

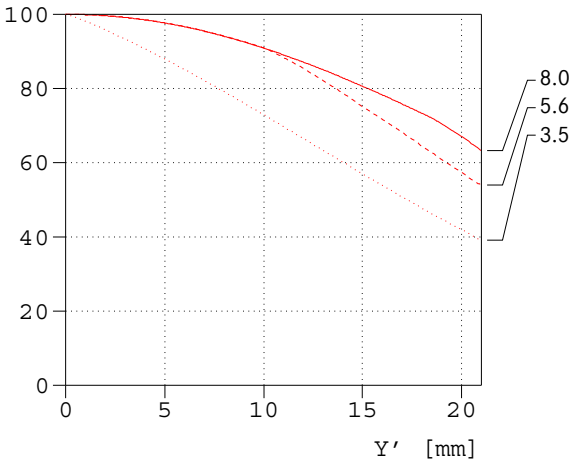


35 mm

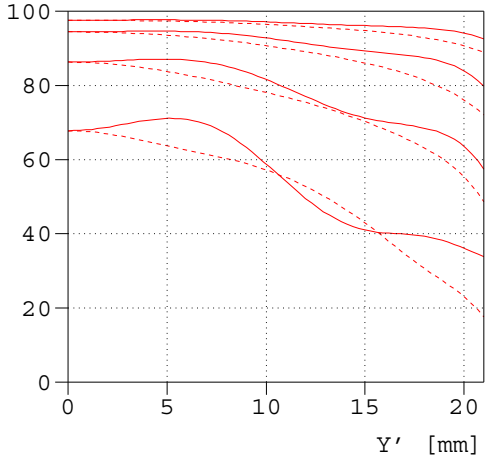
Aperture Stop 3.5



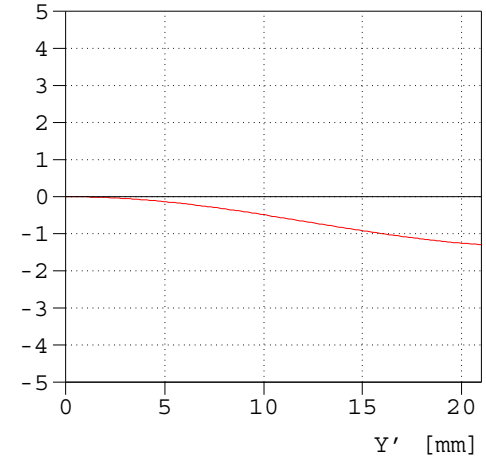
Vignetting



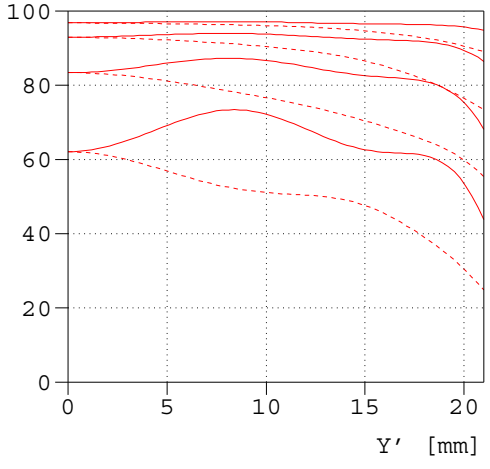
Aperture Stop 5.6



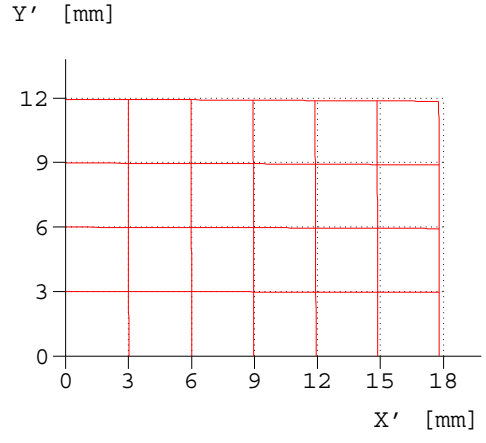
Relative Distortion



Aperture Stop 8.0

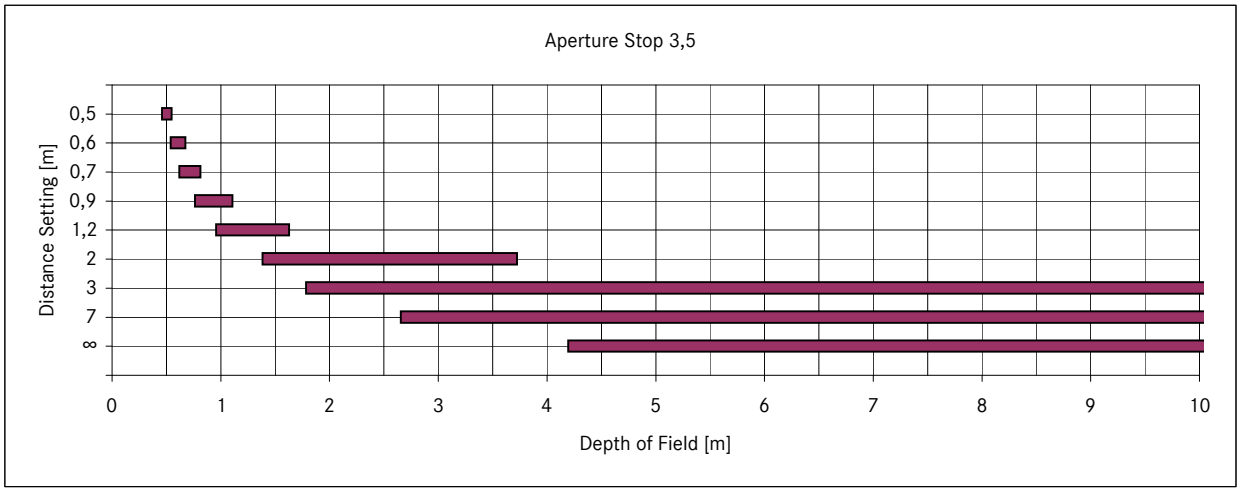


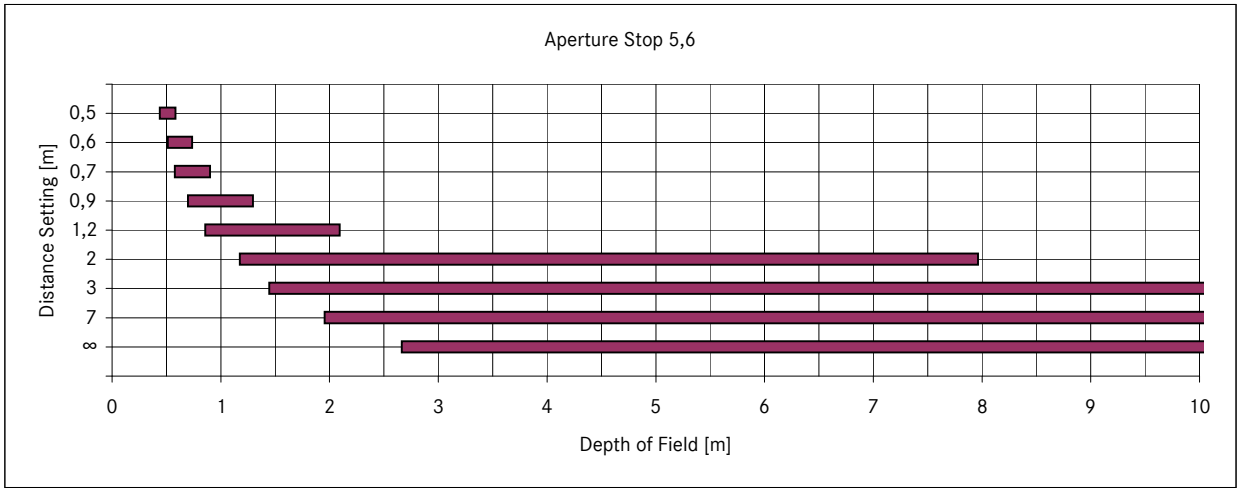
Effective Distortion

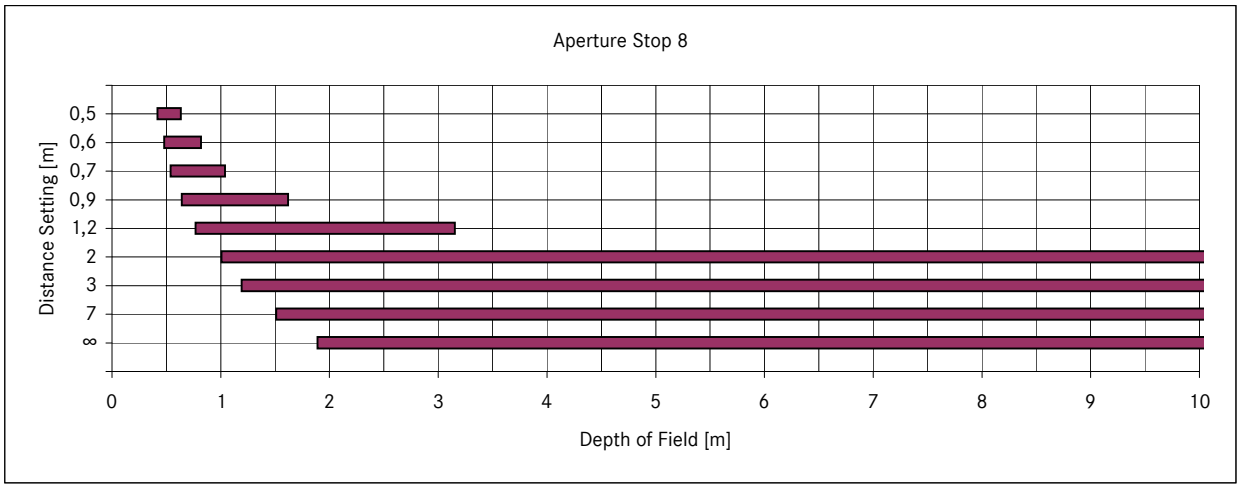


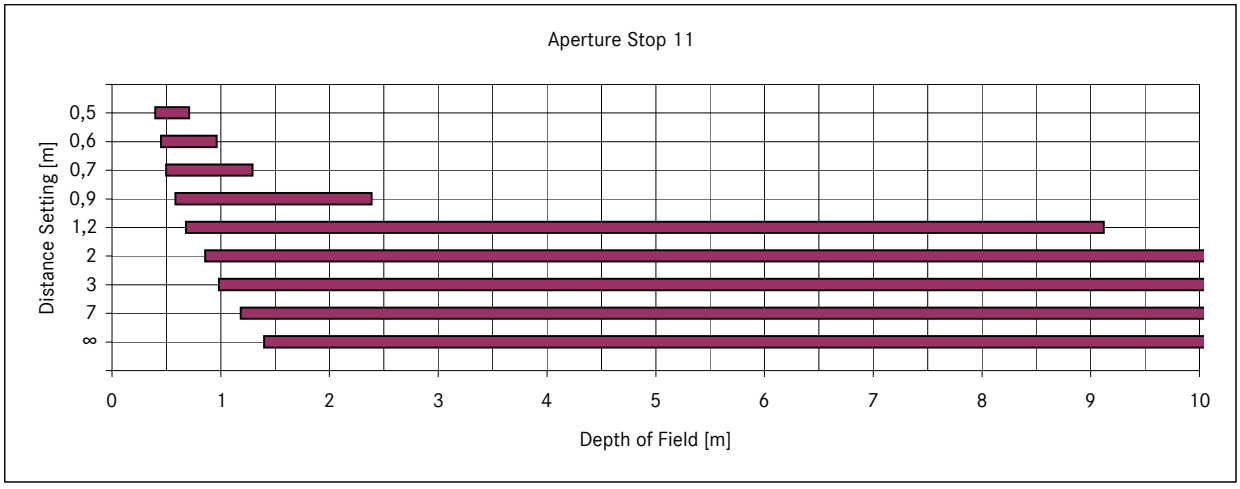
Depth of field table 21 mm

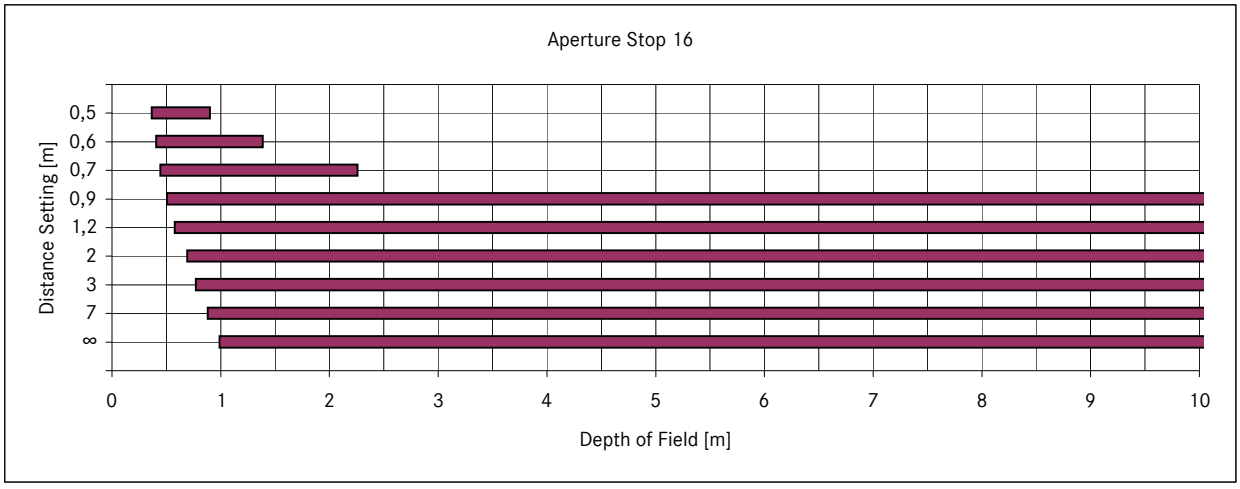
Distance Setting [m]	Aperture Stop 3,5	5,6	8	11	16	22	Magnification
0,5	0,460 - 0,550	0,440 - 0,586	0,419 - 0,635	0,396 - 0,712	0,364 - 0,903	0,334 - 1,378	1/19,4
0,6	0,540 - 0,678	0,511 - 0,738	0,481 - 0,822	0,450 - 0,966	0,407 - 1,389	0,368 - 3,191	1/24,0
0,7	0,617 - 0,814	0,577 - 0,905	0,539 - 1,042	0,498 - 1,296	0,445 - 2,262	0,397 - 55,83	1/28,6
0,9	0,761 - 1,111	0,699 - 1,298	0,641 - 1,621	0,582 - 2,389	0,507 - 14,05	0,443 - ∞	1/37,8
1,2	0,957 - 1,631	0,857 - 2,095	0,768 - 3,155	0,681 - 9,124	0,577 - ∞	0,493 - ∞	1/51,6
2	1,385 - 3,728	1,176 - 7,967	1,007 - ∞	0,857 - ∞	0,693 - ∞	0,569 - ∞	1/88,4
3	1,783 - 10,44	1,445 - ∞	1,192 - ∞	0,984 - ∞	0,770 - ∞	0,618 - ∞	1/134
7	2,654 - ∞	1,956 - ∞	1,511 - ∞	1,184 - ∞	0,881 - ∞	0,683 - ∞	1/318
∞	4,194 - ∞	2,663 - ∞	1,890 - ∞	1,398 - ∞	0,989 - ∞	0,743 - ∞	1/∞

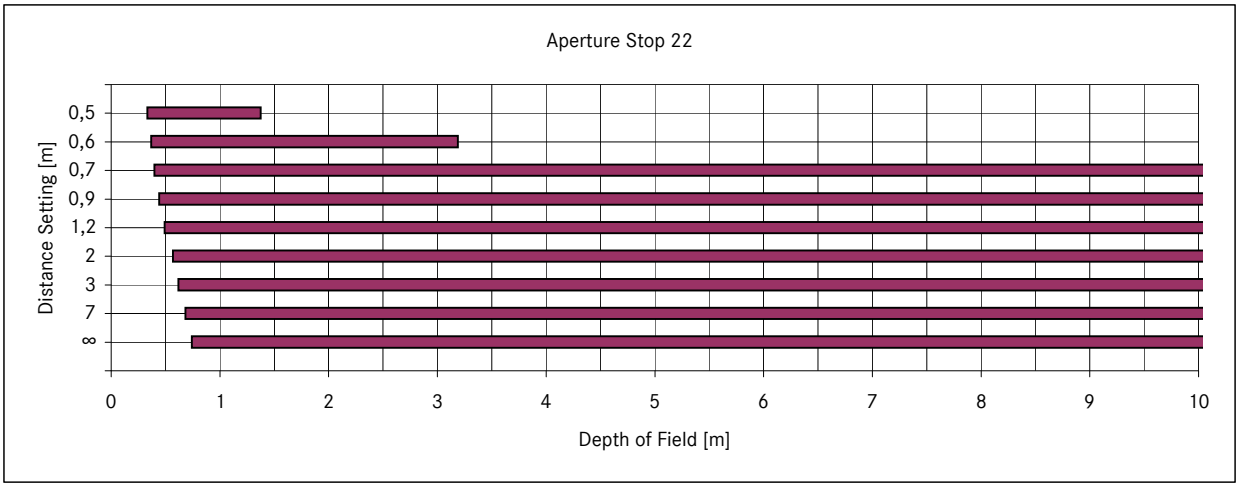





Aperture Stop 8
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]

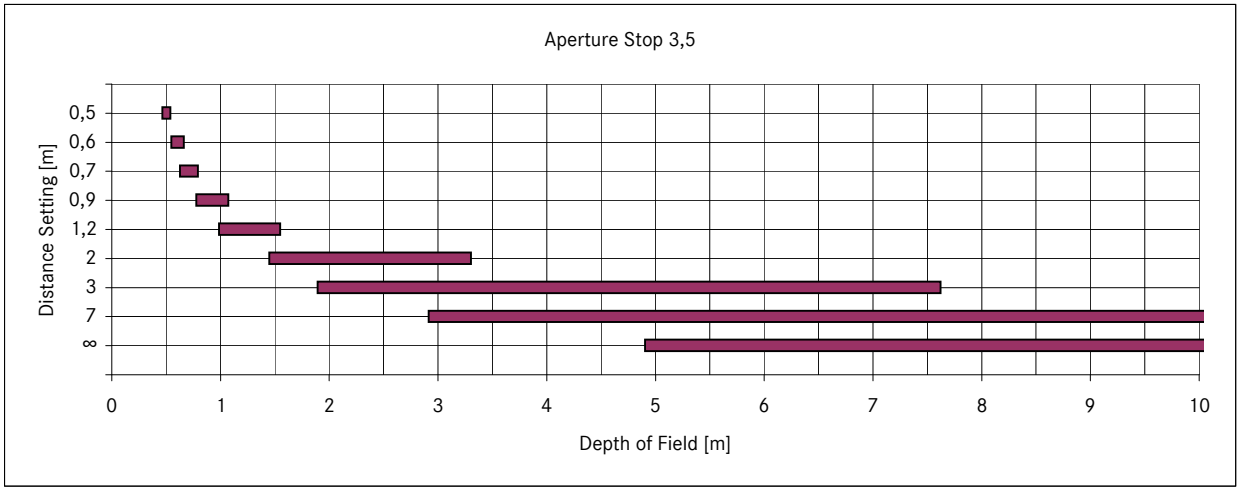

Aperture Stop 11
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]

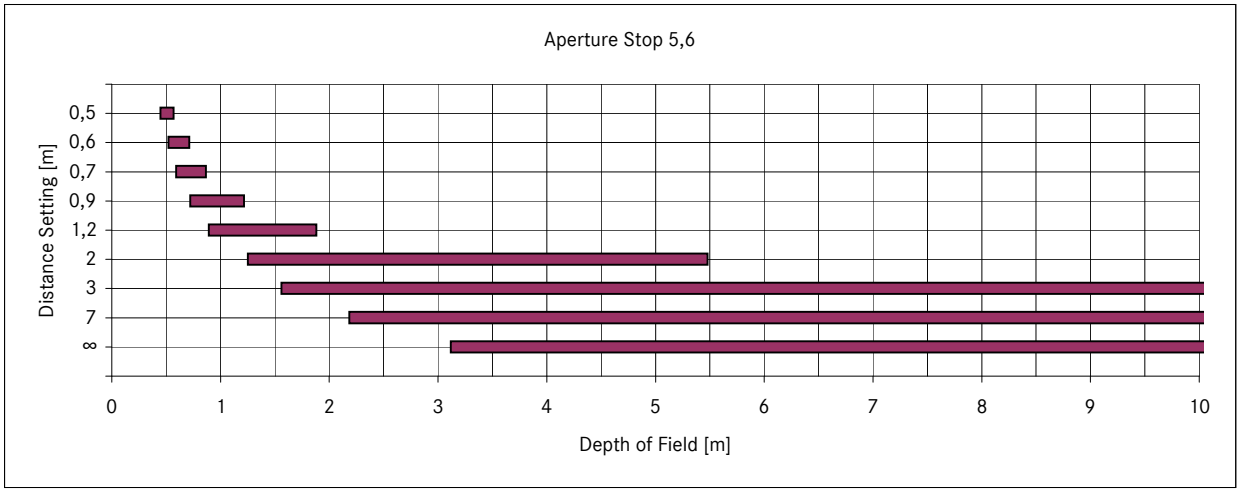

Aperture Stop 16
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]

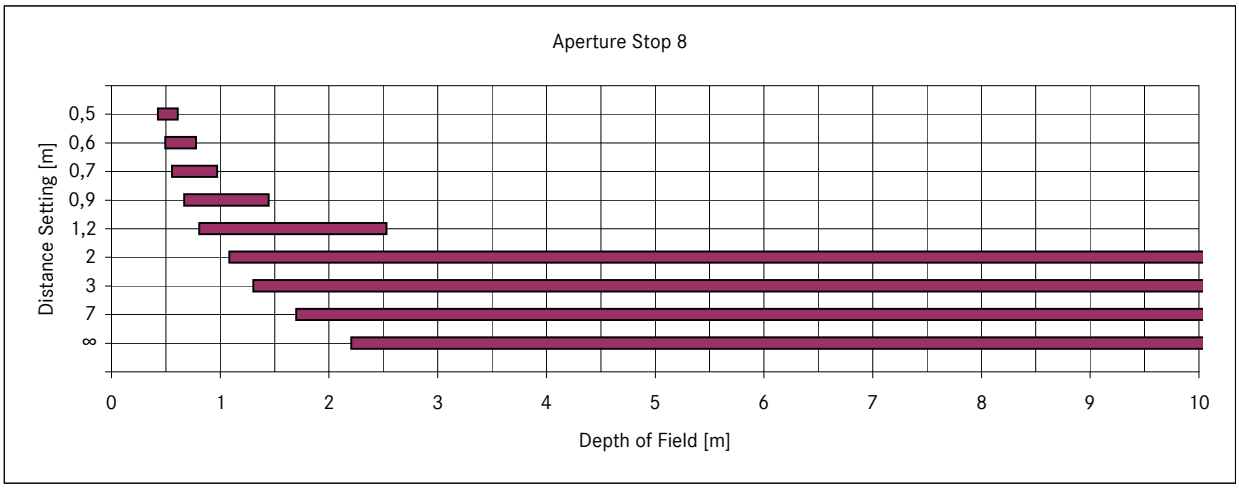

Aperture Stop 22
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]

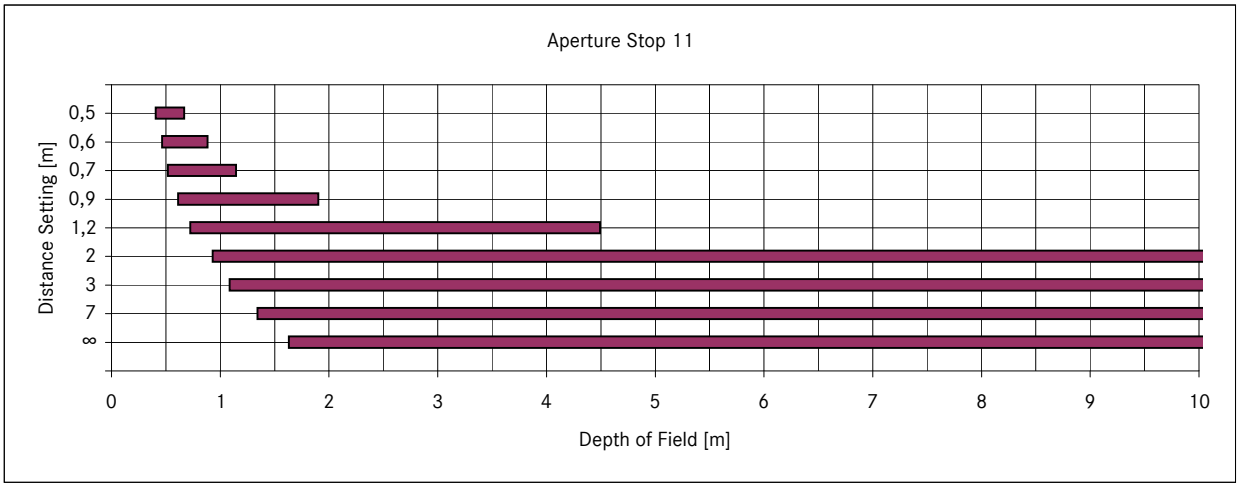
Depth of field table 24 mm

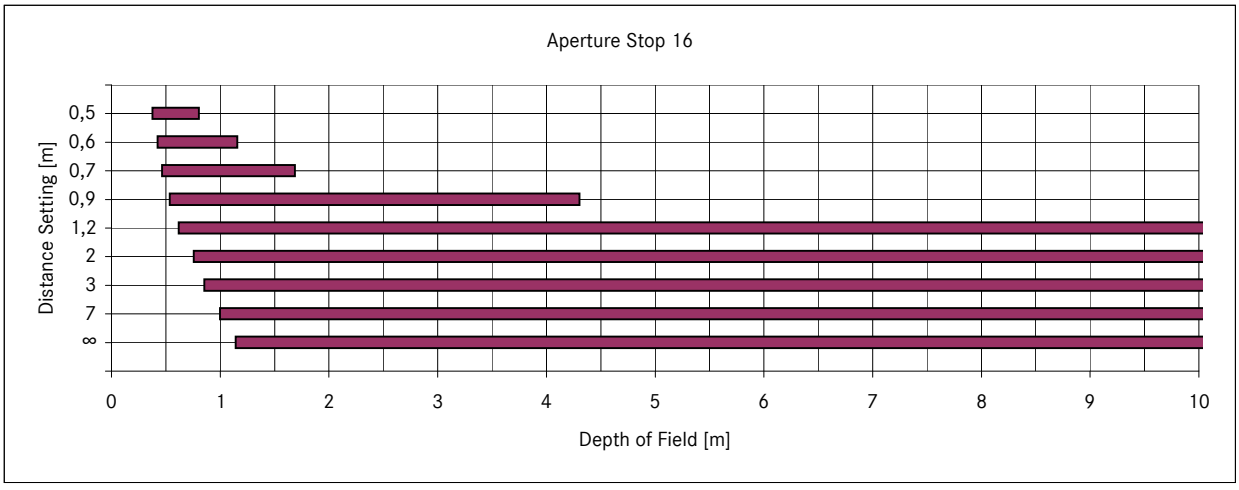
Distance Setting [m]	Aperture Stop 3,5 (3,61)	5,6 (5.76)	8 (8,24)	11 (11,3)	16 (16,5)	22 (22,6)	Magnification
0,5	0,465 - 0,543	0,447 - 0,572	0,428 - 0,612	0,407 - 0,670	0,377 - 0,807	0,348 - 1,081	1/17,8
0,6	0,547 - 0,666	0,521 - 0,714	0,494 - 0,781	0,465 - 0,885	0,424 - 1,160	0,386 - 1,890	1/22,0
0,7	0,627 - 0,796	0,591 - 0,868	0,556 - 0,973	0,518 - 1,149	0,466 - 1,689	0,419 - 4,064	1/26,2
0,9	0,778 - 1,075	0,721 - 1,219	0,667 - 1,449	0,611 - 1,905	0,537 - 4,306	0,473 - ∞	1/34,5
1,2	0,985 - 1,550	0,893 - 1,885	0,807 - 2,533	0,724 - 4,496	0,619 - ∞	0,533 - ∞	1/47,0
2	1,448 - 3,306	1,250 - 5,480	1,082 - 25,07	0,931 - ∞	0,758 - ∞	0,628 - ∞	1/80,4
3	1,892 - 7,623	1,561 - 119,7	1,303 - ∞	1,086 - ∞	0,854 - ∞	0,690 - ∞	1/122
7	2,915 - ∞	2,184 - ∞	1,699 - ∞	1,342 - ∞	0,998 - ∞	0,777 - ∞	1/289
∞	4,905 - ∞	3,116 - ∞	2,204 - ∞	1,630 - ∞	1,143 - ∞	0,858 - ∞	1/∞

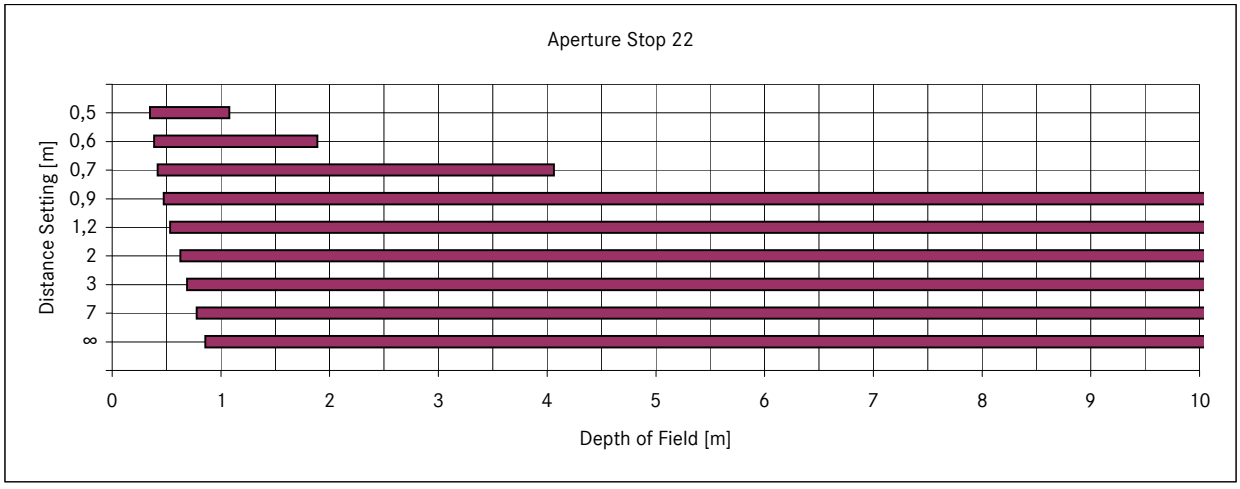





Aperture Stop 8
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]

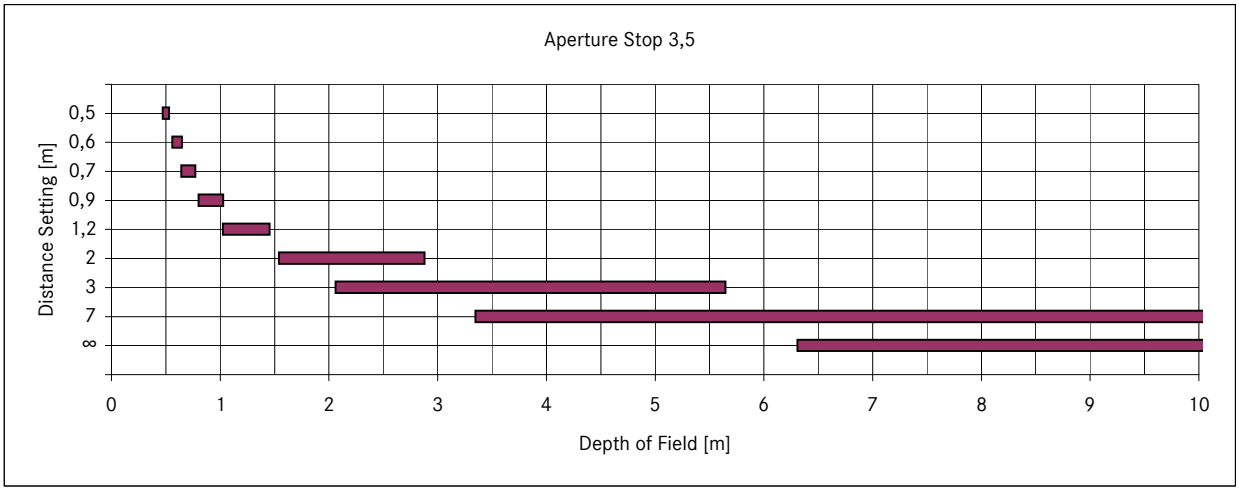

Aperture Stop 11
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]

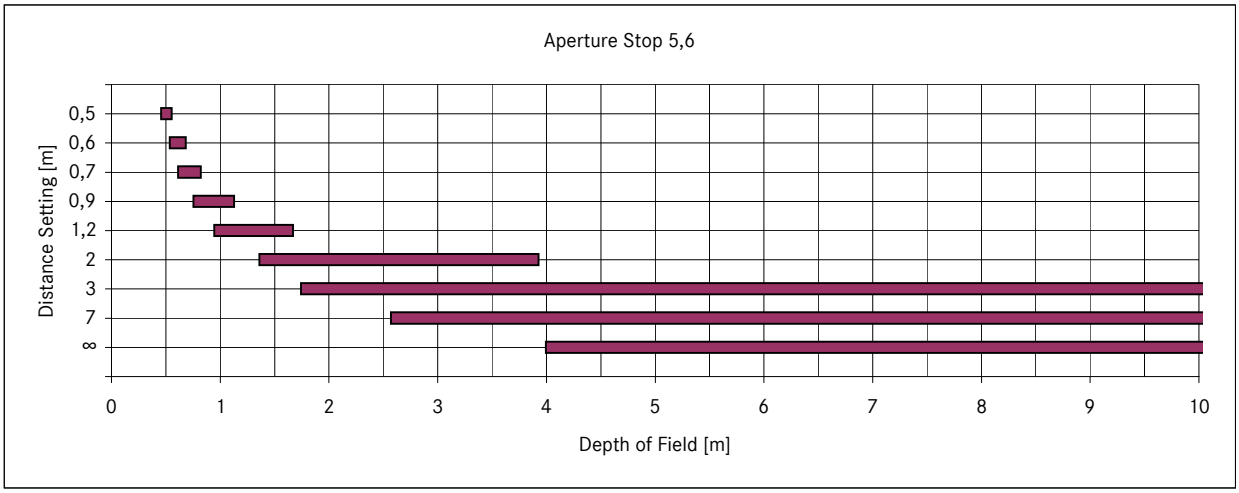

Aperture Stop 16
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]

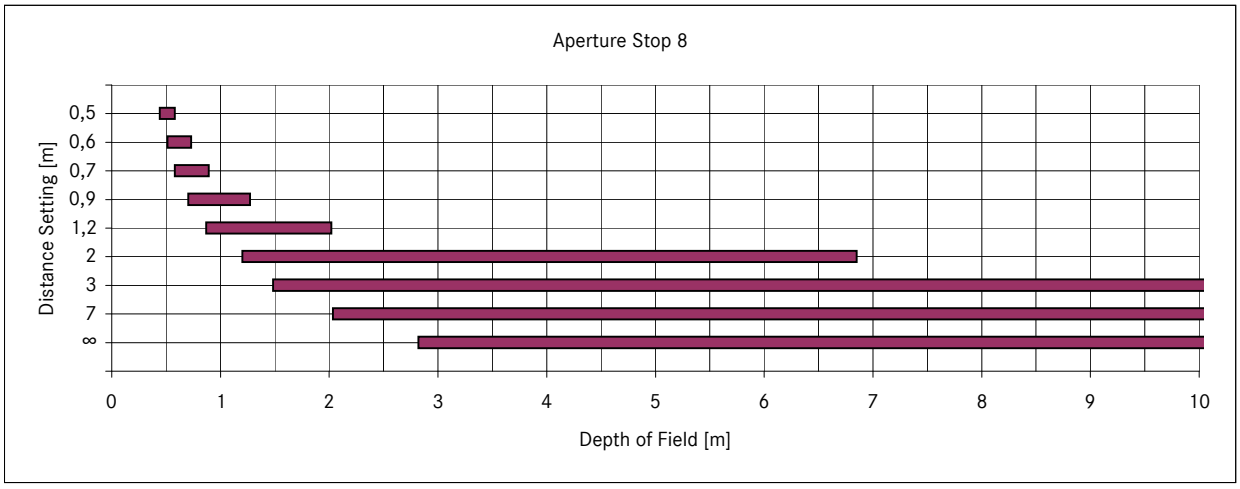

Aperture Stop 22
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]

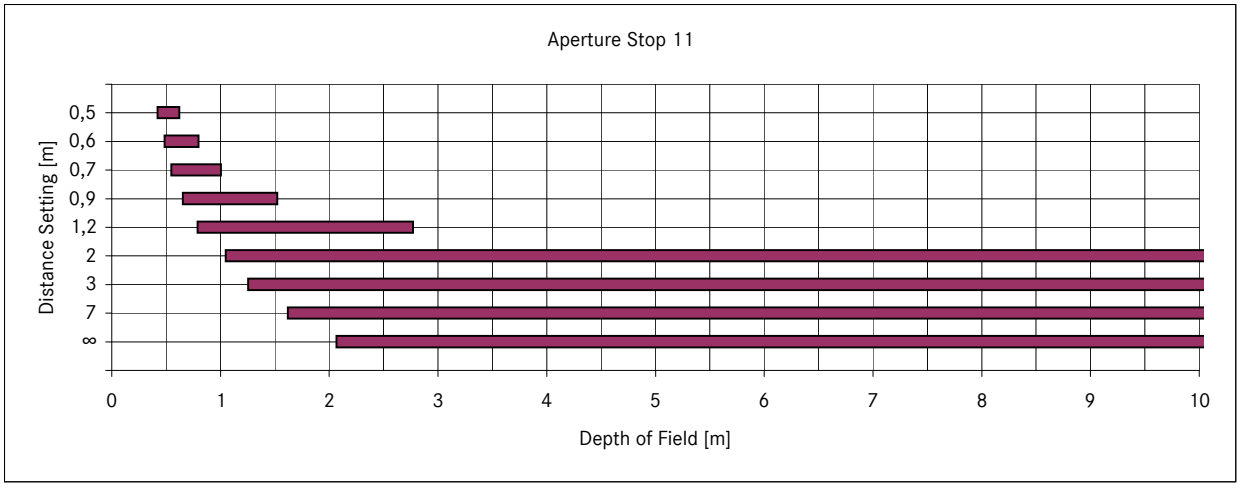
Depth of field table 28 mm

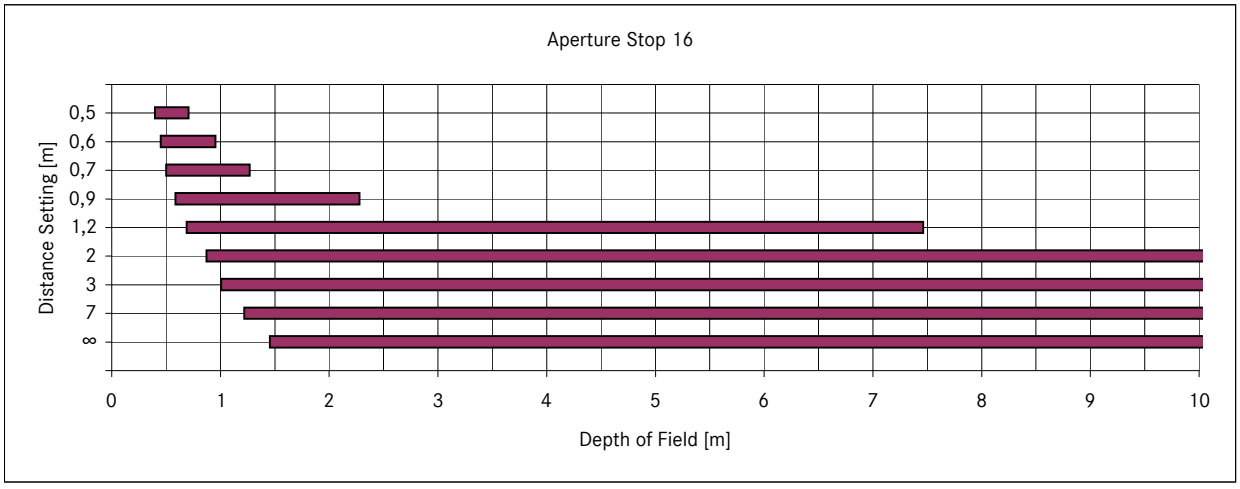
Distance Setting [m]	Aperture Stop 3,5 (3,82)	5,6 (6,09)	8 (8,70)	11 (12,0)	16 (17,4)	22 (23,9)	Magnification
0,5	0,472 - 0,533	0,457 - 0,555	0,441 - 0,583	0,422 - 0,625	0,396 - 0,709	0,369 - 0,854	1/15,3
0,6	0,558 - 0,651	0,536 - 0,686	0,513 - 0,732	0,487 - 0,802	0,451 - 0,956	0,415 - 1,260	1/18,9
0,7	0,641 - 0,773	0,611 - 0,825	0,581 - 0,895	0,547 - 1,006	0,500 - 1,273	0,455 - 1,908	1/22,5
0,9	0,801 - 1,031	0,753 - 1,130	0,705 - 1,274	0,654 - 1,524	0,585 - 2,282	0,522 - 6,088	1/29,7
1,2	1,025 - 1,456	0,945 - 1,671	0,868 - 2,022	0,788 - 2,774	0,688 - 7,465	0,600 - ∞	1/40,4
2	1,541 - 2,882	1,360 - 3,929	1,200 - 6,852	1,048 - 175,9	0,872 - ∞	0,730 - ∞	1/68,9
3	2,060 - 5,649	1,743 - 12,12	1,485 - ∞	1,254 - ∞	1,006 - ∞	0,818 - ∞	1/105
7	3,348 - ∞	2,571 - ∞	2,035 - ∞	1,618 - ∞	1,220 - ∞	0,950 - ∞	1/247
∞	6,309 - ∞	3,995 - ∞	2,821 - ∞	2,068 - ∞	1,453 - ∞	1,080 - ∞	1/∞

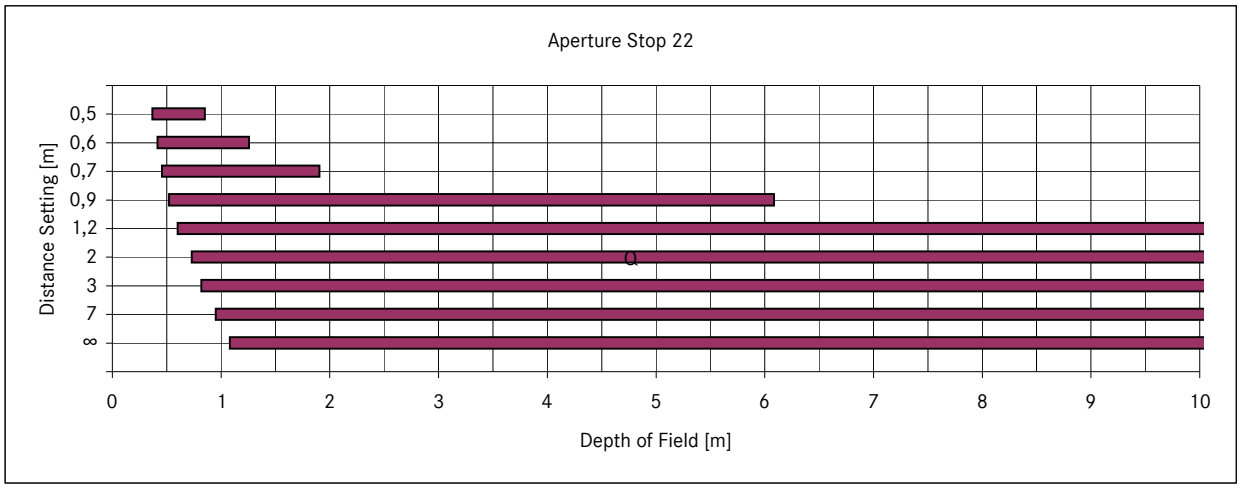





Aperture Stop 8
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]

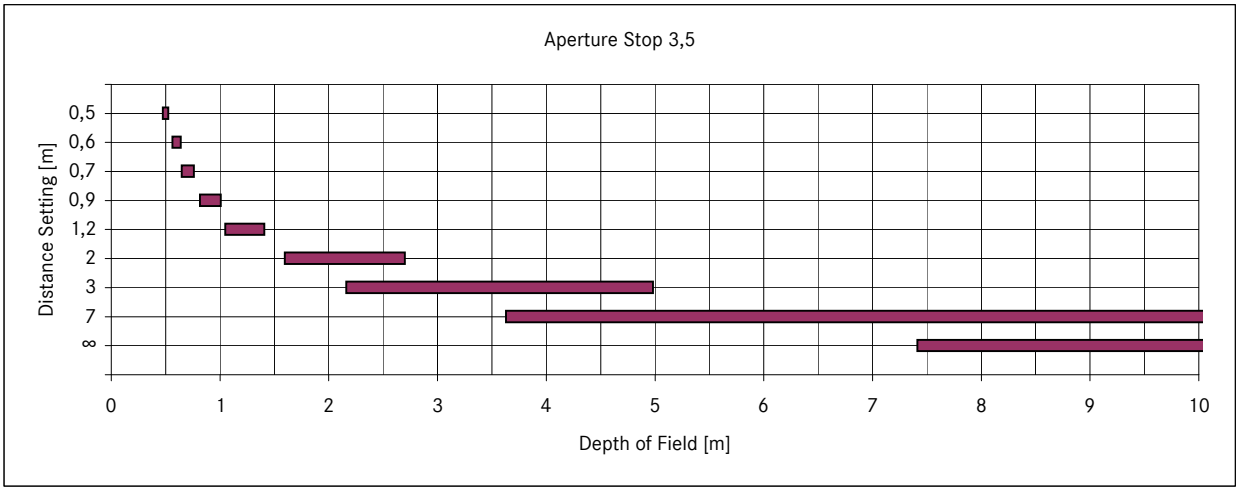

Aperture Stop 11
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]

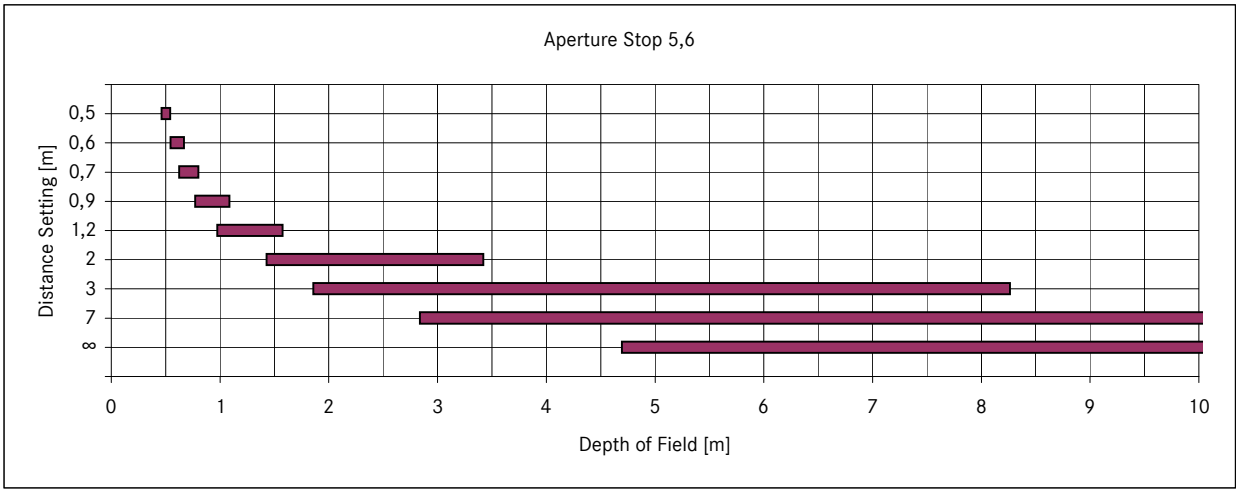

Aperture Stop 16
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]


Aperture Stop 22
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]

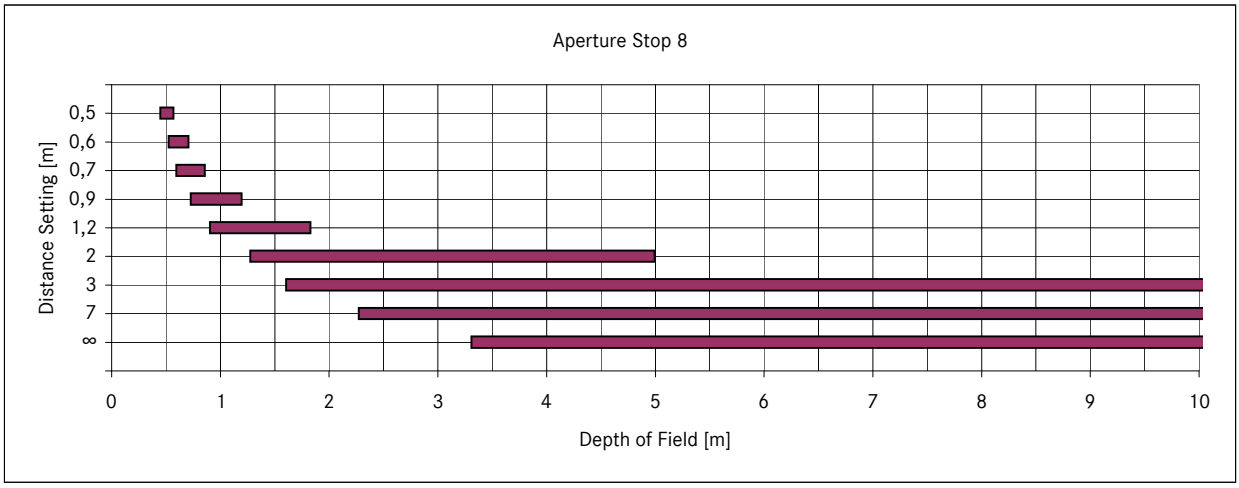
Depth of field table 31 mm

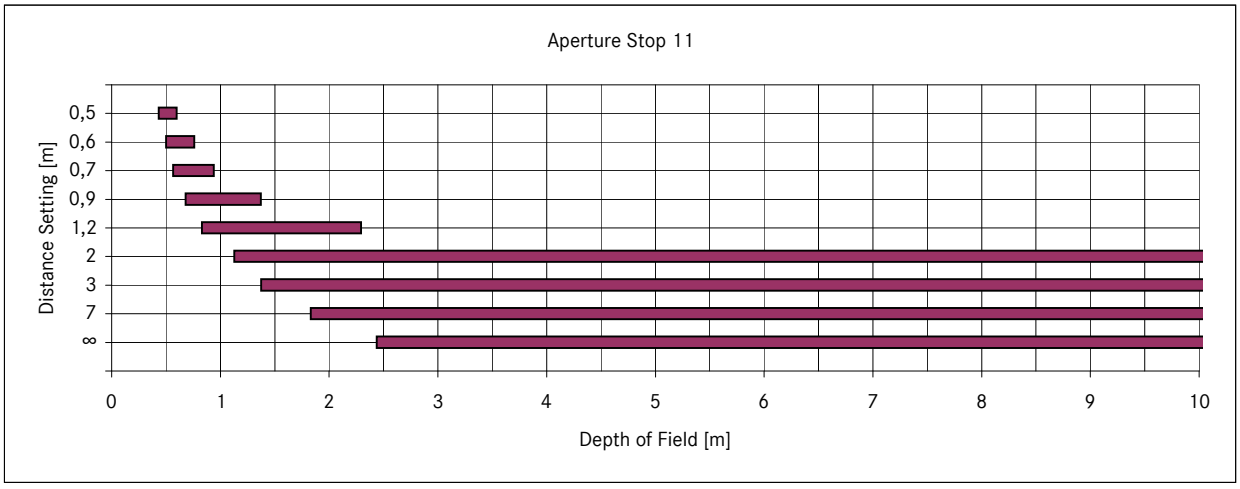
Distance Setting [m]	Aperture Stop 3,5 (3,98)	5,6 (6,33)	8 (9,05)	11 (12,4)	16 (18,1)	22 (24,8)	Magnification
0,5	0,475 - 0,528	0,462 - 0,546	0,448 - 0,570	0,432 - 0,602	0,408 - 0,667	0,383 - 0,769	1/13,9
0,6	0,563 - 0,643	0,544 - 0,672	0,523 - 0,709	0,501 - 0,762	0,467 - 0,877	0,433 - 1,074	1/17,1
0,7	0,649 - 0,761	0,623 - 0,804	0,595 - 0,860	0,565 - 0,942	0,521 - 1,131	0,478 - 1,498	1/20,4
0,9	0,814 - 1,009	0,771 - 1,088	0,728 - 1,199	0,681 - 1,374	0,615 - 1,844	0,555 - 3,166	1/26,8
1,2	1,047 - 1,411	0,975 - 1,577	0,904 - 1,831	0,831 - 2,295	0,732 - 4,114	0,645 - 123,6	1/36,5
2	1,595 - 2,703	1,427 - 3,425	1,274 - 4,995	1,128 - 11,75	0,947 - ∞	0,801 - ∞	1/62,3
3	2,160 - 4,984	1,858 - 8,267	1,603 - 36,69	1,374 - ∞	1,111 - ∞	0,912 - ∞	1/94,6
7	3,629 - 141,8	2,837 - ∞	2,272 - ∞	1,830 - ∞	1,383 - ∞	1,083 - ∞	1/224
∞	7,412 - ∞	4,694 - ∞	3,308 - ∞	2,437 - ∞	1,696 - ∞	1,260 - ∞	1/∞

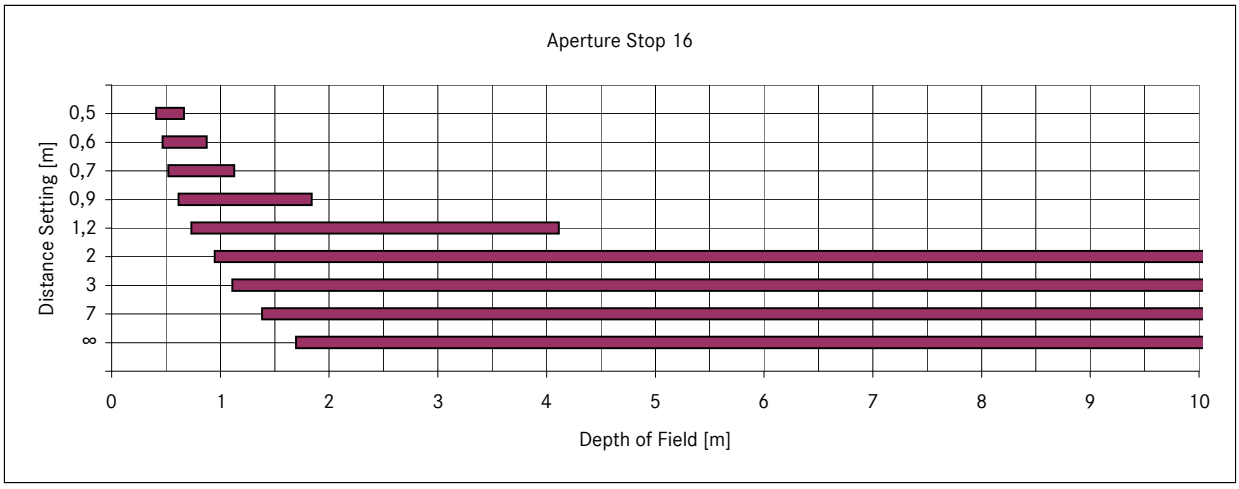


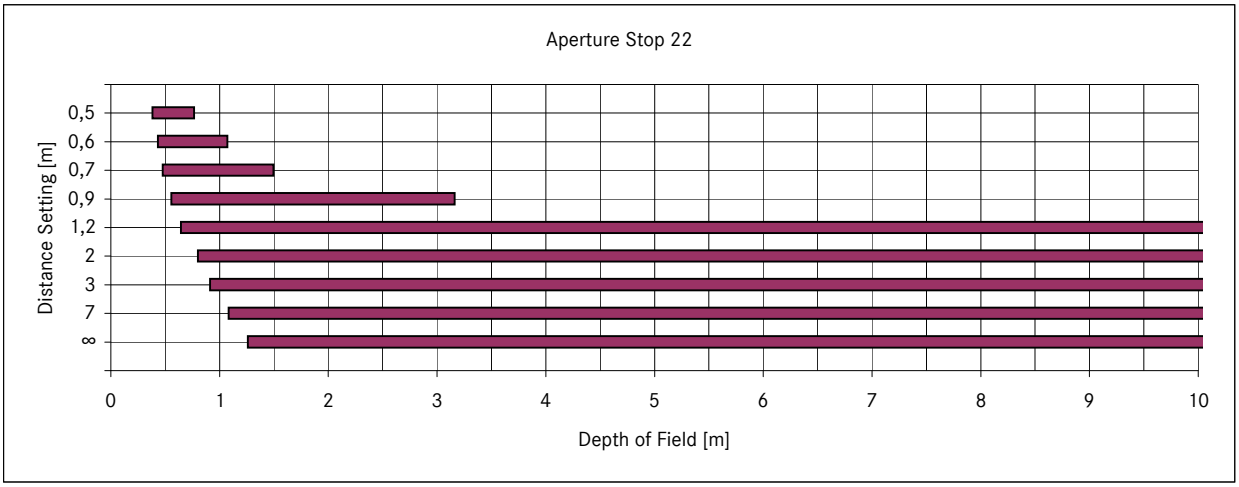


Depth of field table 31 mm



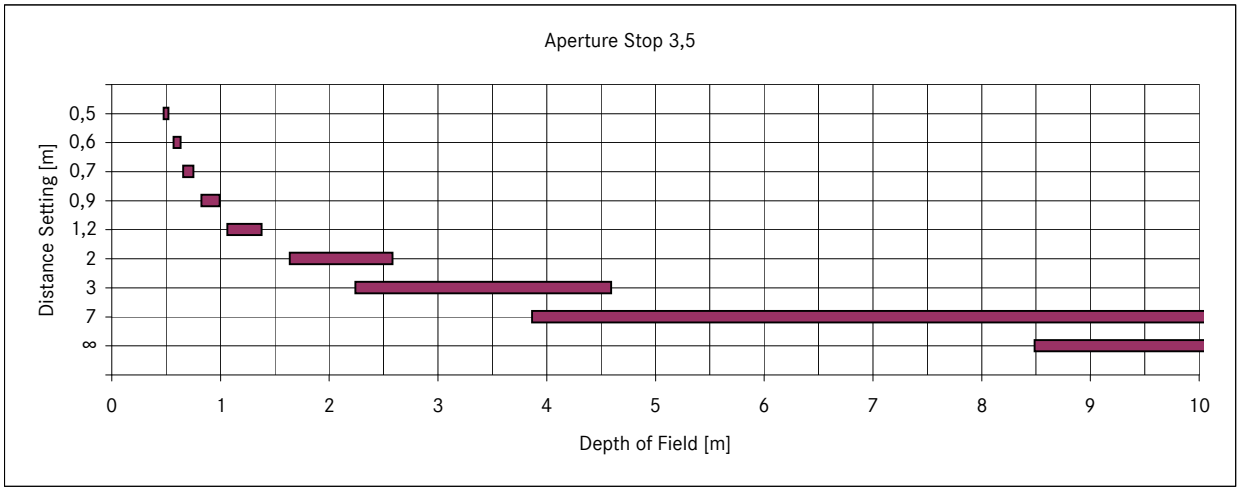


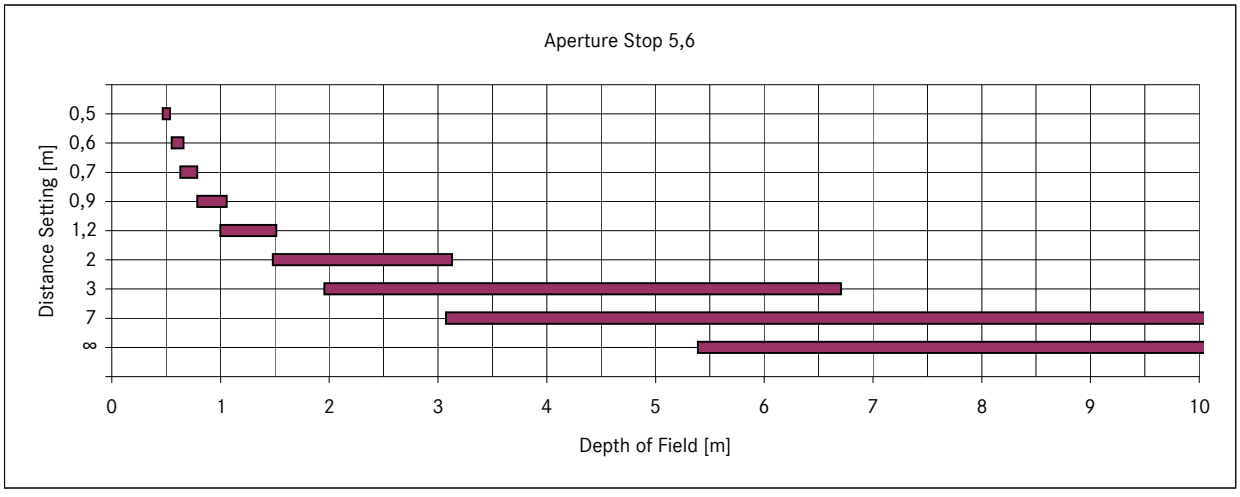


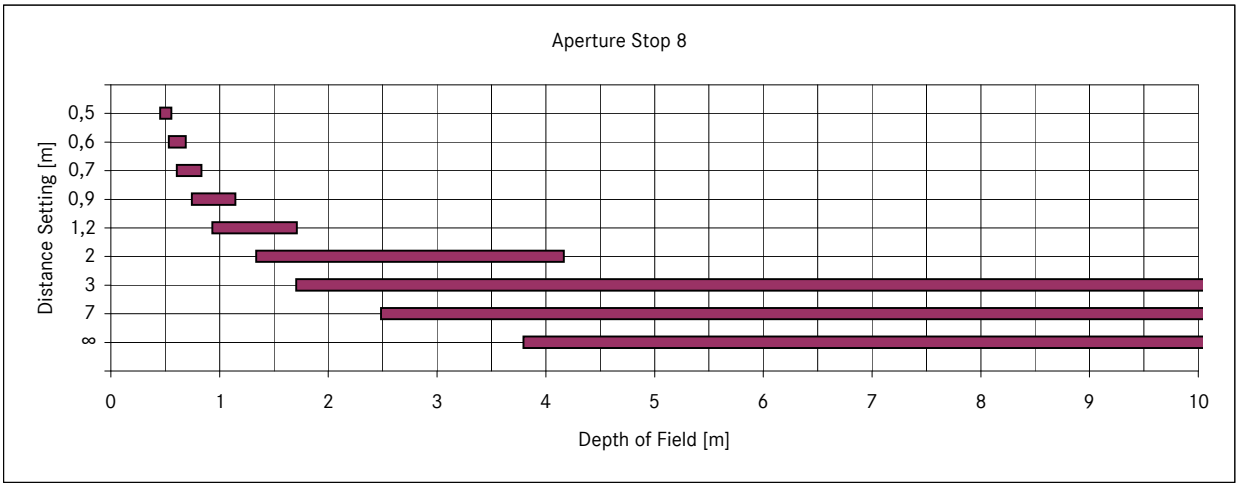

Aperture Stop 22
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]

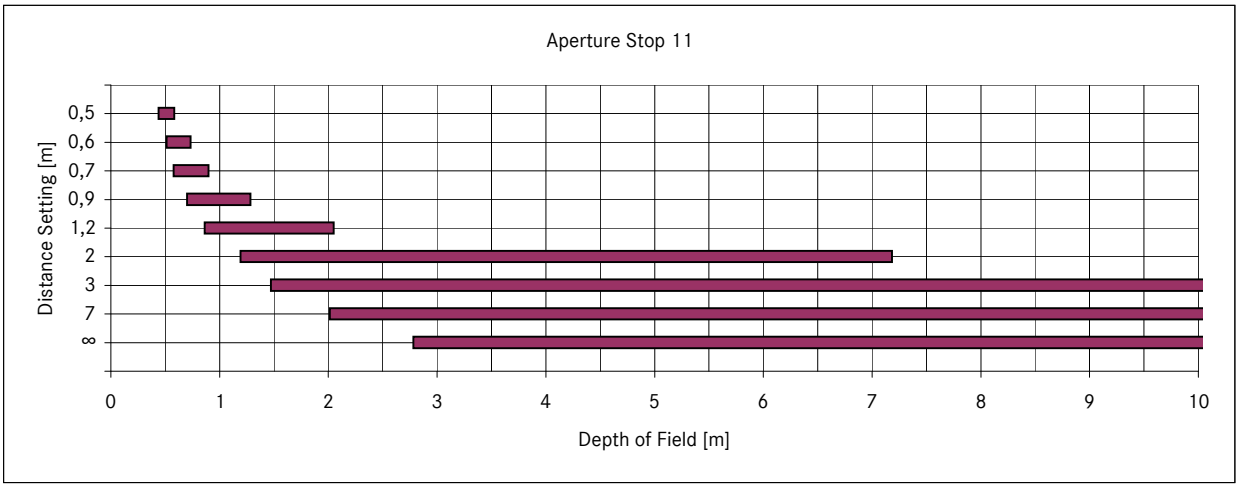
Depth of field table 35 mm

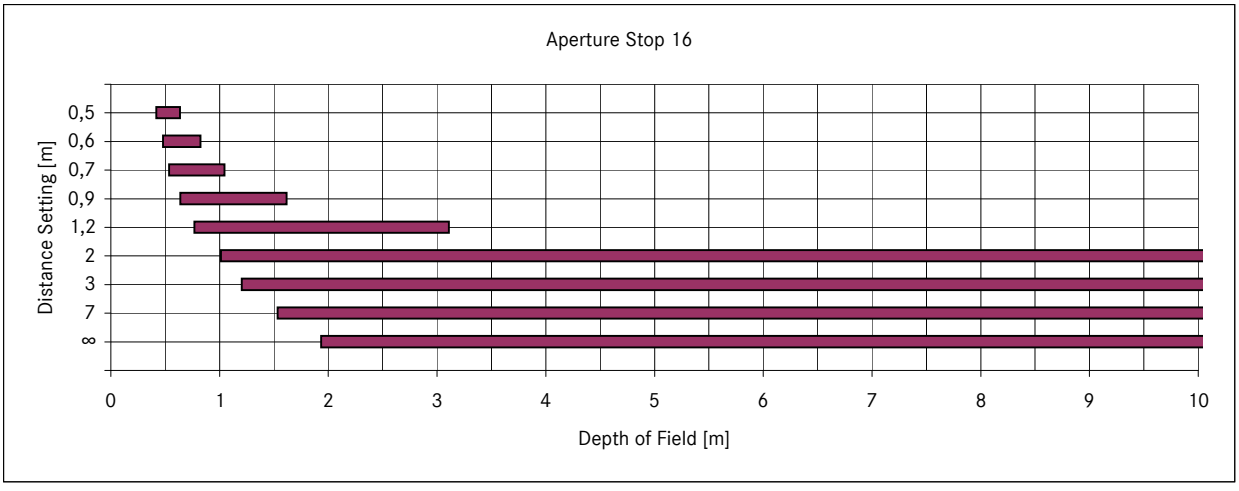
Distance Setting [m]	Aperture Stop 3,5 (4,10)	5,6 (6,56)	8 (9,38)	11 (12,9)	16 (18,8)	22 (25,8)	Magnification
0,5	0,478 - 0,524	0,467 - 0,540	0,454 - 0,560	0,439 - 0,587	0,417 - 0,640	0,394 - 0,719	1/12,7
0,6	0,567 - 0,637	0,550 - 0,662	0,532 - 0,693	0,511 - 0,737	0,479 - 0,827	0,448 - 0,973	1/15,7
0,7	0,655 - 0,753	0,631 - 0,788	0,606 - 0,835	0,578 - 0,902	0,537 - 1,047	0,497 - 1,303	1/18,7
0,9	0,824 - 0,994	0,785 - 1,059	0,745 - 1,149	0,702 - 1,287	0,640 - 1,620	0,581 - 2,373	1/24,6
1,2	1,064 - 1,380	0,999 - 1,515	0,933 - 1,713	0,863 - 2,053	0,768 - 3,111	0,682 - 8,458	1/33,4
2	1,636 - 2,586	1,481 - 3,131	1,336 - 4,168	1,192 - 7,185	1,013 - ∞	0,863 - ∞	1/57,1
3	2,239 - 4,594	1,954 - 6,709	1,704 - 14,71	1,472 - ∞	1,204 - ∞	0,995 - ∞	1/86,6
7	3,864 - 40,70	3,073 - ∞	2,486 - ∞	2,014 - ∞	1,535 - ∞	1,205 - ∞	1/205
∞	8,488 - ∞	5,390 - ∞	3,794 - ∞	2,782 - ∞	1,935 - ∞	1,433 - ∞	1/∞

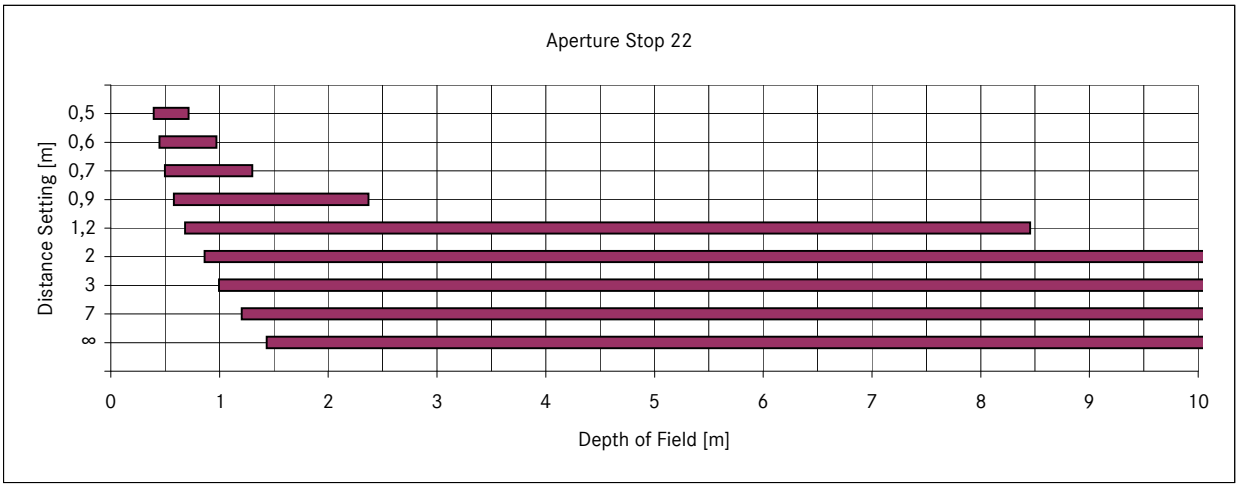





Aperture Stop 8
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]


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


Aperture Stop 16
Distance Setting [m]
0,5
0,6
0,7
0,9
1,2
2
3
7
∞
0
1
2
3
4
5
6
7
8
9
10
Depth of Field [m]



Leica Camera AG / Oskar-Barnack-Straße 11 / D-35606 Solms / Telefon +49 (0) 6442-208-0 / Telefax +49 (0) 6442-208-333
www.leica-camera.com / info@leica-camera.com