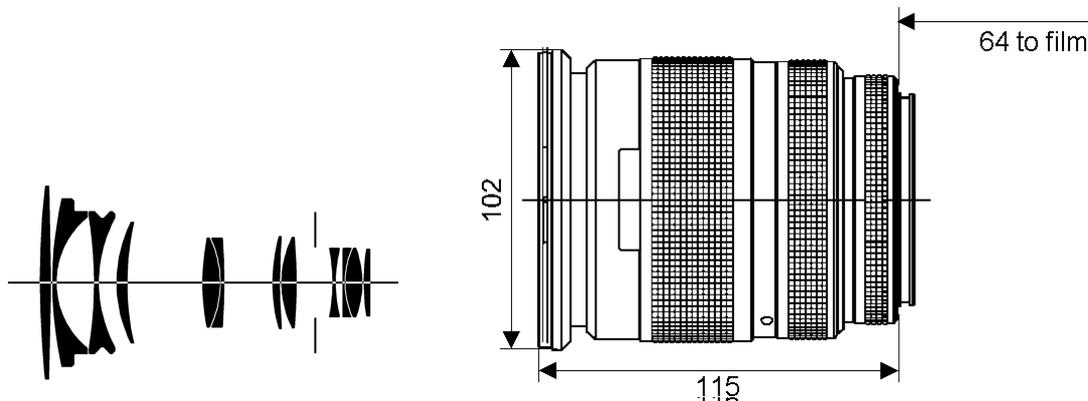


Vario-Sonnar® T* 4.5/45-90



CONTAX® 645

The Vario-Sonnar® T* 4,5/45-90 lens is an allround autofocus lens for the Contax 645. It is particularly well-suited for demanding photojournalistic work, where prints may be enlarged to poster size with fine details which cannot be reliably captured with 35 mm cameras. Weddings, travel, and industrial photos for annual reports and business presentations are typical tasks of this kind, where medium format has proven to be indispensable. Imaging performance of the Vario-Sonnar® T* 4,5/45-90 lens is on the level of fixed focal length lenses. Both sharpness and brilliance satisfy even high demands, while distortion is very well corrected.

The combination of these characteristics produces an outstanding lens for forensic documentation. Straylight absorbing measures are integrated with great care to enable this multi-element Vario-Sonnar® T* 4,5/45-90 lens to deliver professional quality results even under unfavourable lighting conditions.

Preferred use: demanding photojournalistic work, weddings, travel, street photography, people, industrial and forensic documentation

Cat. No. of lens	10 47 71	Entrance pupil*	
Number of elements	12	Position	W = 39.1 mm behind the first lens vertex T = 31.1 mm behind the first lens vertex
Number of groups	10	Diameter	W = 10.2 mm T = 18.6 mm
Max. aperture	f/4.5	Exit pupil*	
Focal length	W = 45.9 mm, T = 87.5 mm	Position	W = 16.4 mm in front of the last lens vertex T = 16.4 mm in front of the last lens vertex
Negative size	41.5 x 56 mm	Diameter	W = 17.2 mm T = 24.7 mm
Angular field 2w*	W = width 63°, height 49°, diagonal 74° T = width 36°, height 27°, diagonal 43°	Position of principal planes*	
Min. aperture	32	H	W = 57.6 mm behind the first lens vertex T = 52.5 mm behind the first lens vertex
Camera mount	Contax 645	H'	W = 14.7 mm behind the last lens vertex T = 11.5 mm behind the last lens vertex
Filter connection	M 95 x 1	Back focal distance	W = 60.7 mm T = 99.0 mm
Focusing range	infinity to 0.5 m	Distance between first and last lens vertex*	W = 111.3 mm T = 76.1 mm
Working distance (between mechanical front end of lens and subject)	0.32 m	Weight	1140 g
Close limit field size	W = 345 mm x 469 mm T = 175 mm x 236 mm		
Max. scale	W = 1 : 8.1 T = 1 : 4.2		

* at infinity



Performance data:

Vario-Sonnar[®] T* 4.5/45-90

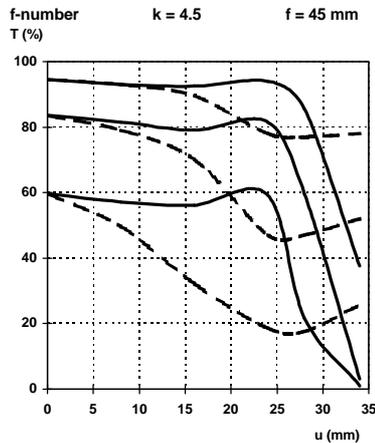
Cat. No. 10 47 71

1. MTF Diagrams

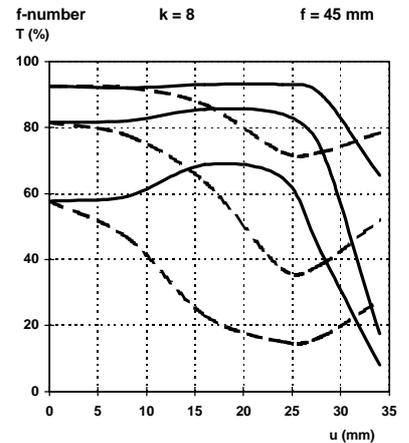
The image height u - calculated from the image center - is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top of this page.

The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph, the f -number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight. Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

Modulation transfer T as a function of image height u .
White light. Spatial frequencies $R = 10, 20$ and 40 cycles/mm



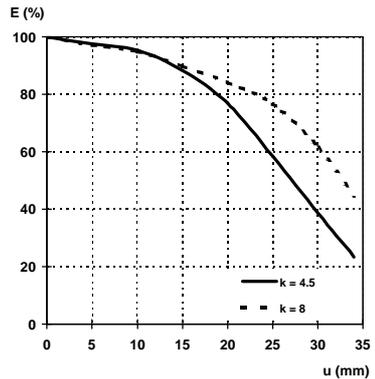
Slit orientation: — sag — tan



2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E , both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

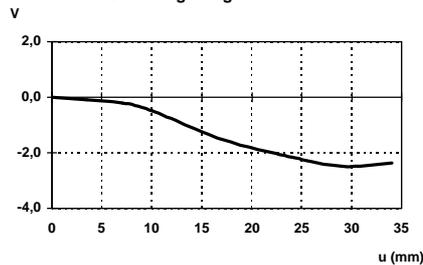
Relative illuminance E (%) $f = 45$ mm



3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

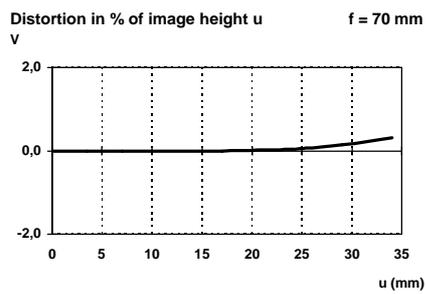
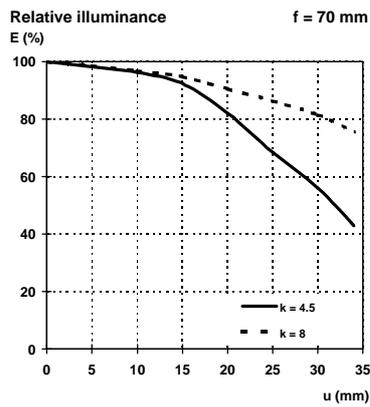
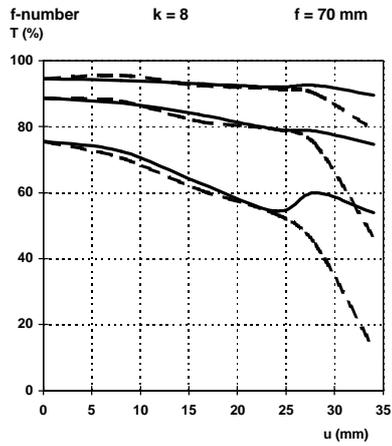
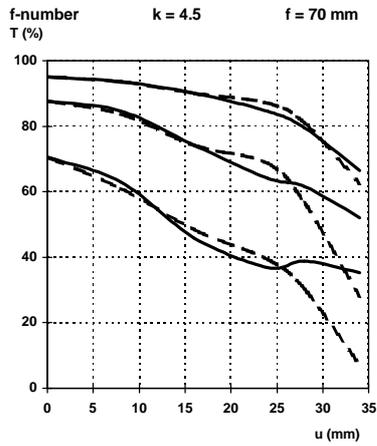
Distortion in % of image height u $f = 45$ mm



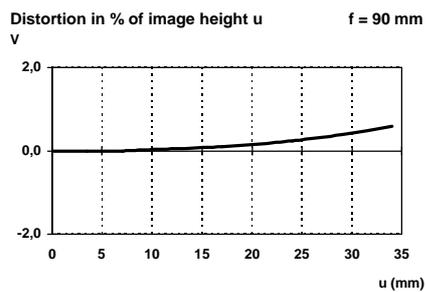
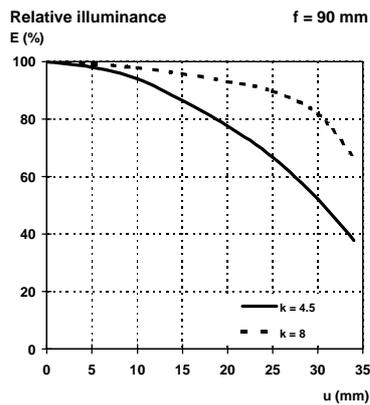
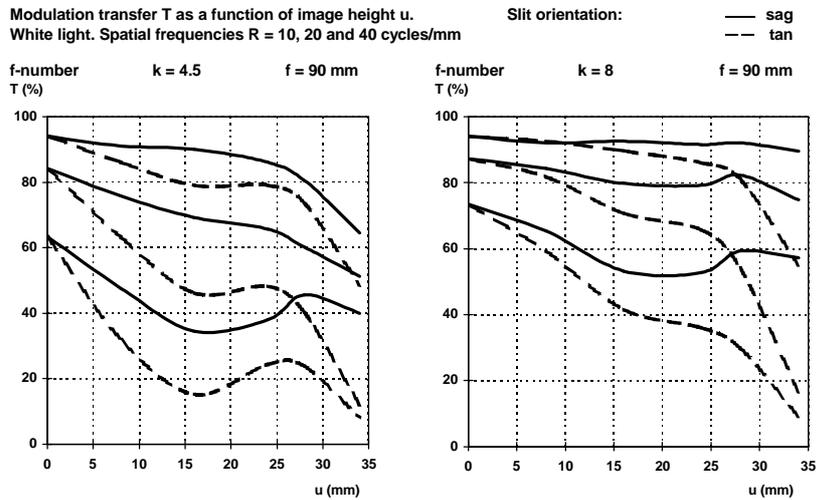
Performance data:
Vario-Sonnar[®] T* 4.5/45-90
 Cat. No. 10 47 71

Modulation transfer T as a function of image height u.
 White light. Spatial frequencies R = 10, 20 and 40 cycles/mm

Slit orientation: — sag — tan



Performance data:
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