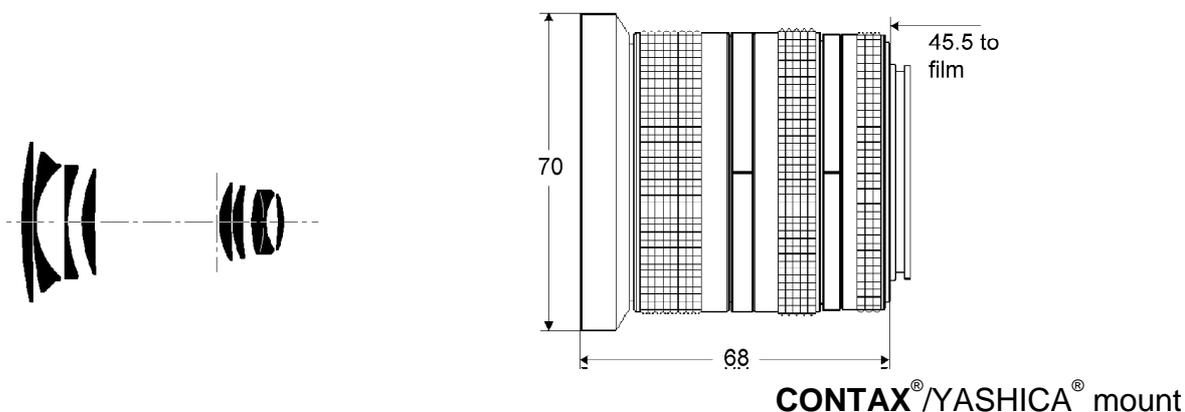


Vario-Sonnar® T* 3.5-4.5/28-70



The Carl Zeiss Vario-Sonnar® T* 3.5-4.5/28-70 lens is a compact high-performance zoom lens in the Contax SLR system. It is the perfect choice for the travelling photographer who prefers to use a general purpose zoom lens as his or her standard optic, but still wants to get the superior image quality associated with fixed focal length lenses.

The Carl Zeiss Vario-Sonnar® T* 3.5-4.5/28-70 lens offers the focal length range most often used in 35 mm photography, indoors and outdoors. It combines the renowned image quality of a Carl Zeiss lens and the durability of a metal lens barrel with a moderate weight which is almost as low as that of a high quality 50 mm f/1.4 standard lens.

Two separate precision rings are used for smooth focusing and zooming respectively, thus allowing to adjust one without affecting the other unintentionally. The special makro-function enables close-ups to cover object fields down to the size of e.g. a tulip blossom or an identity card (approx. 7 cm x 11 cm).

An aspheric lens element and a special optical glass with anomalous partial dispersion are utilised to achieve a superb imaging performance while keeping the lens quite compact.

The large filter thread of M 67 allows for the use of filters completely without blackening the corners of the image - even with the lens set to the wide angle position.

Cat. No. of lens	10 47 63	Entrance pupil*	
Number of elements	9	Position	W = 28.1 mm behind the first lens vertex T = 18.5 mm behind the first lens vertex
Number of groups	8	Diameter	W = 8.0 mm T = 14.7 mm
Max. aperture	f/3.5-4.5	Exit pupil*	
Focal length	W = 28.0 mm, T = 67.9 mm	Position	W = 8.5 mm in front of the last lens vertex T = 20.6 mm in front of the last lens vertex
Negative size	24 x 36 mm	Diameter	W = 14.4 mm T = 17.7 mm
Angular field*	W = width 67°, height 47°, diagonal 2w 77° T = width 30°, height 25°, diagonal 2w 35°	Position of principal planes	
Min. aperture	22	H	W = 40.4 mm in front of the first lens vertex T = 29.8 mm behind the first lens vertex
Camera mount	Contax/Yashica mount	W = 13.4 mm behind the last lens vertex	T = 7.1 mm in front of the last lens vertex
Filter connection	M 67 x 0.75	Back focal distance	W = 41.5 mm T = 60.8 mm
Focusing range	infinity to 0.5 m	Distance between first and last lens vertex	W = 79.5 mm T = 55.5 mm
Working distance (between mechanical front end of H' lens and subject)	0.4 m	Weight	320 g
Close limit field size	W = 370 x 566 mm T = 149 x 223 mm		
Max. scale	W = 1:15 T = 1:6.2		

* at infinity W= Wide T= Tele



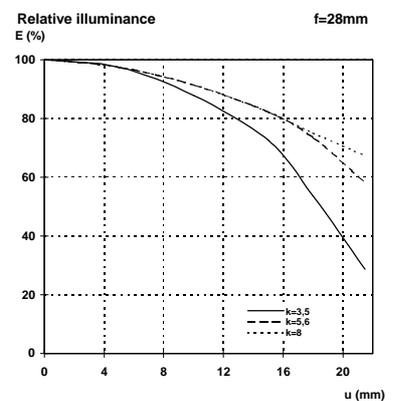
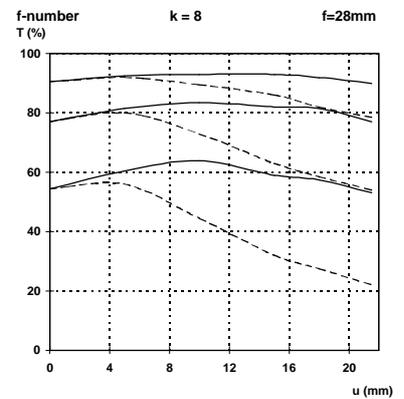
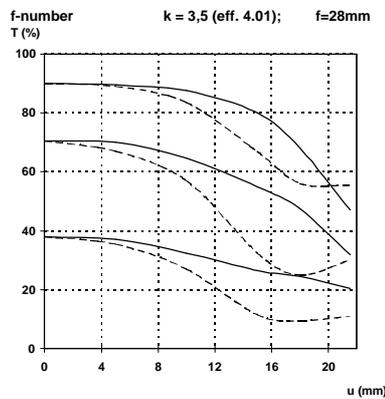
Performance data:
 Vario-Sonnar® T* 3.5-4.5/28-70
 Cat. No. 10 47 63

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 . Slit orientation: tangential sagittal
 White light. Spatial frequencies $R = 10, 20$ and 40 cycles/mm.



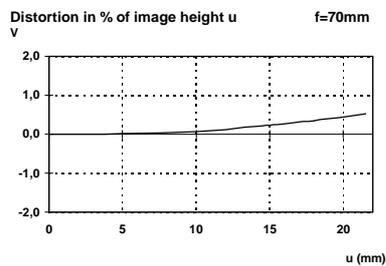
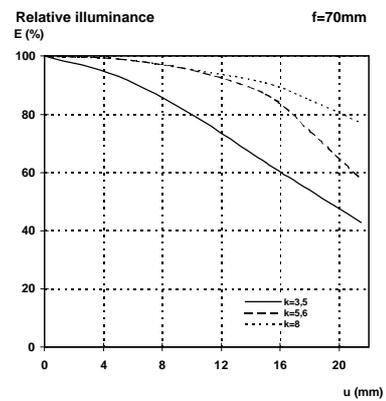
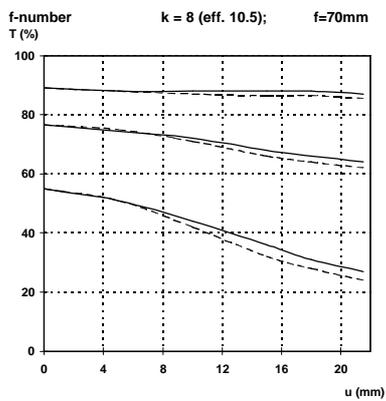
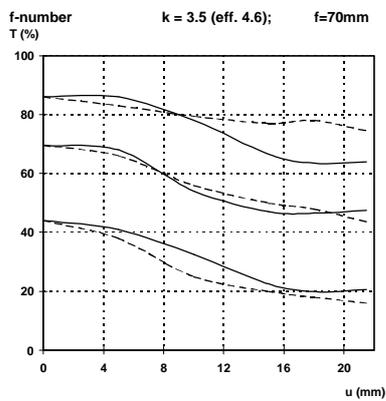
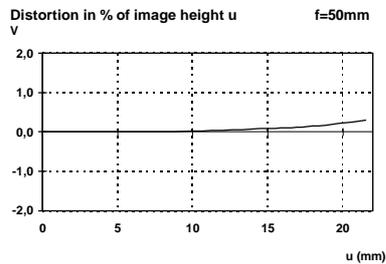
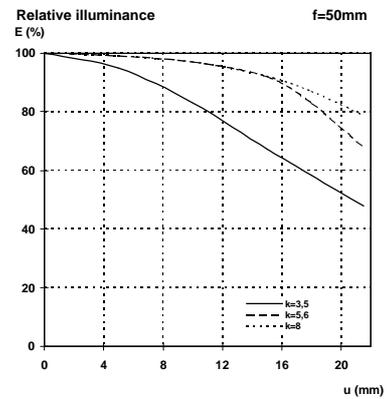
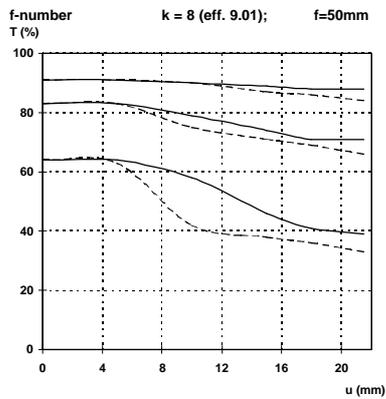
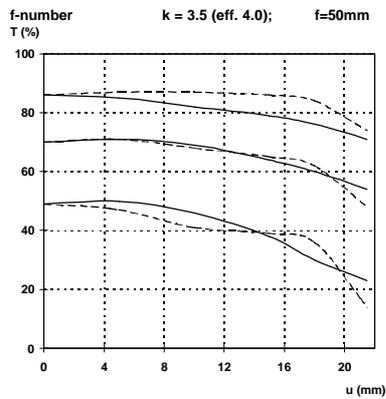
2. Relative illuminance

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.

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.

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