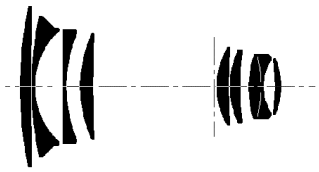
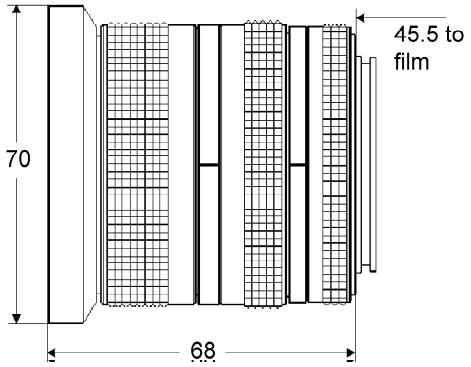
Vario-**Sonnar**® T* 3.5-4.5/28-70





CONTAX®/YASHICA® mount

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**
Number of elements	9
Number of groups	8
Max. aperture	f/3.5-4.5
Focal length	W = 28.0 mm, T = 67.9 mm
Negative size	24 x 36 mm
Angular field*	W = width 67°, height 47°, diagonal 2w 77°
	T = width 30°, height 25°, diagonal 2w 35°
Min. aperture	22
Camera mount	Contax/Yashica mount
Filter connection	M 67 x 0.75
Focusing range	infinity to 0.5 m
Working distance (between mechanical front end of lens and subject)	H' 0.4 m
Close limit field size	W = 370 x 566 mm
	T = 149 x 223 mm
Max. scale	W = 1:15
	T = 1:6.2

Entrance pupil*	
Position	W = 28.1 mm behind the first lens vertex
	T = 18.5 mm behind the first lens vertex
Diameter	W = 8.0 mm
	T = 14.7 mm
Exit pupil*	
Position	W = 8.5 mm in front of the last lens vertex
	T = 20.6 mm in front of the last lens vertex
Diameter	W = 14.4 mm
	T = 17.7 mm
Position of principal planes	
H	W = 40.4 mm in front of the first lens vertex
	T = 29.8 mm behind the first lens vertex
W = 13.4 mm behind the last lens vertex	
	T = 7.1 mm in front of the last lens vertex
Back focal distance	W = 41.5 mm
	T = 60.8 mm
Distance between first and last lens vertex	W = 79.5 mm
	T = 55.5 mm
Weight	320 g

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* 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 = M odulation 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.

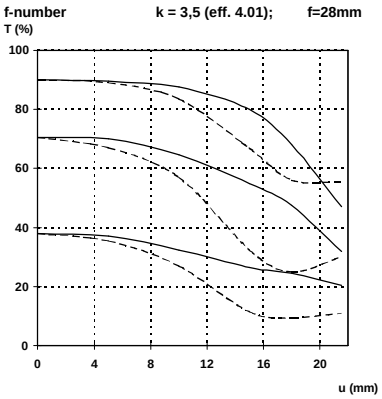
2. Relative illuminance

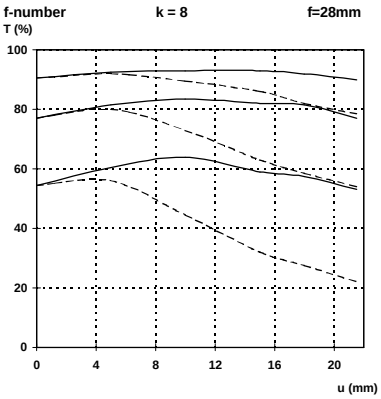
In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

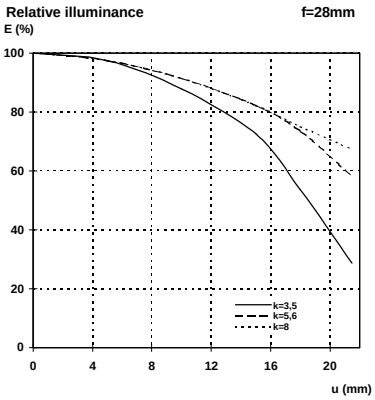
3. Distortion

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.

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.

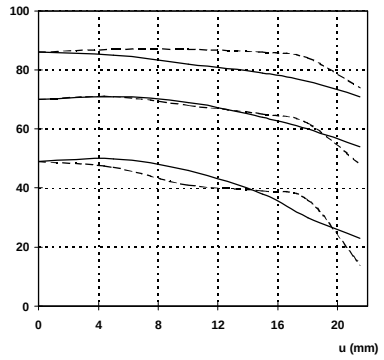




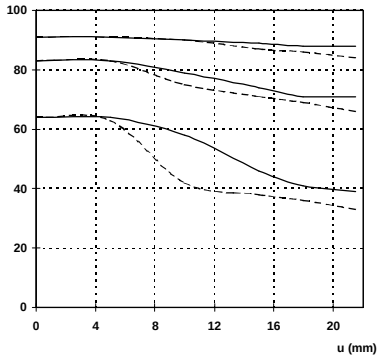


Performance data:
Vario-**Sonnar**® T* 3.5-4.5/28-70
Cat. No. 10 47 63

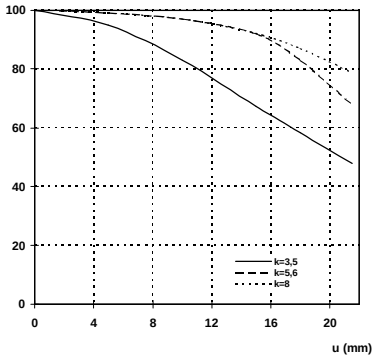
f-number k = 3.5 (eff. 4.0); f=50mm



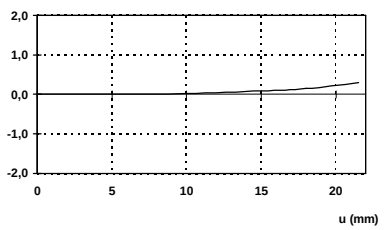
f-number k = 8 (eff. 9.01); f=50mm



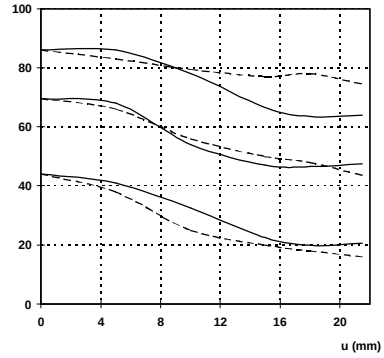
Relative illuminance f=50mm



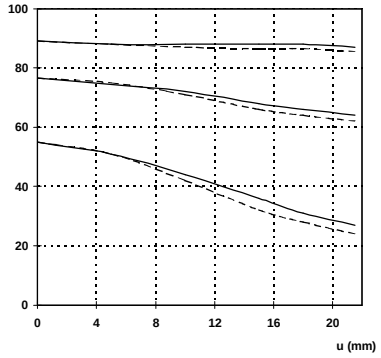
Distortion in % of image height u f=50mm



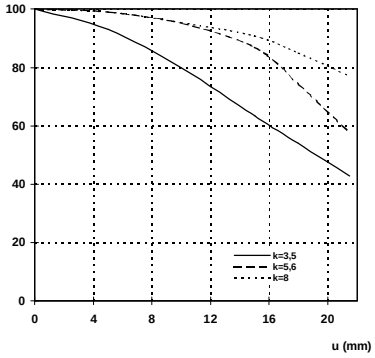
f-number k = 3.5 (eff. 4.6); f=70mm



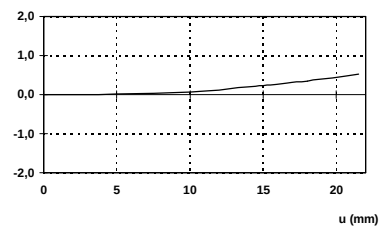
f-number k = 8 (eff. 10.5); f=70mm



Relative illuminance f=70mm



Distortion in % of image height u f=70mm



Subject to change.
Printed in Germany 25.07.2000

Carl Zeiss
Photoobjektive
D-73446 Oberkochen
Telephone (07364) 20-6175
Fax (07364) 20-4045
eMail: photo@zeiss.de
http://www.zeiss.de