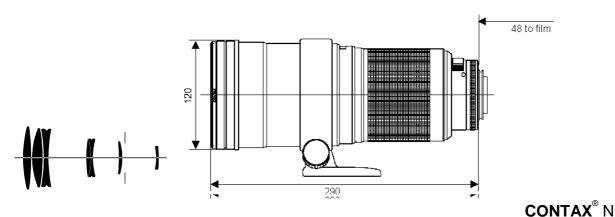
# Tele-Apotessar® T\* 4/400



Fast, yet handy apochromatic telephoto lenses have become indispensable optics for both sports and wildlife photographers.

For the Contax N SLR system, Carl Zeiss has designed an all new autofocus lens Tele-Apotessar® T\* 4/400. It is relatively fast, yet handy enough to be used without a tripod. A filter slot accepts filters of rather small diameter. The lens Tele-Apotessar® T\* 4/400 produces images of stunning sharpness and brilliance delivering high image quality even fully open, and over the entire frame. Field flatness is immaculate. And so is field illumination. The resolution of fine detail impresses even very demanding photographers.

The distortion is very well corrected. This lens's high performance ist kept virtually constant over the entire focussing range from infinity to the close-up limit. Utilising the latest in optical glass technology and precision manufacturing, the Tele-Apotessar® T\* 4/400 lens marks a summit in the development of Zeiss Tele-Apotessar® lens designs. Its performance challenges the quality of the best color films to their limits.

Preferred use: Sports, wildlife, photojournalism, fashion, advertising, documentation of inaccessible objects and actions.

Cat. No. of lens 10 45 58 Number of elements 7 Number of groups 6 Max. aperture f/4

400.0 mm Focal length Negative size 24 x 36 mm

width 5.2°; height 3.4°; Angular field 2w\*

diagonal 6.2° 32

Min. aperture Camera mount Contax N Filter connection insertable filter Focussing range infinity to 2.9 m Working distance (between mechanical front end of

lens and subject)

and last lens vertex 232.8 mm 2.56 m

Close limit field size 148 mm x 221 mm

Max. scale

Entrance pupil\*

Position 385.7 mm behind the first lens vertex

Diameter 98.2 mm

Exit pupil\*

Position 49.7 mm in front of the last lens vertex

Diameter 35.4 mm Position of principal planes'

729.7 mm behind the first lens vertex 306.8 mm in front of the last lens vertex

Back focal distance 93.2 mm

Distance between first

Weight 3580 g

\* at infinity



#### Performance data:

## Tele-Apotessar® T\* 4/400

Cat. No. 10 45 58

#### 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.

### 2. Relative illuminance

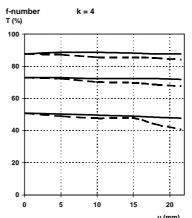
In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

### 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.

White light. Spatial frequencies R = 10, 20 and 40 cycles/mm



f-number T (%)

100

80

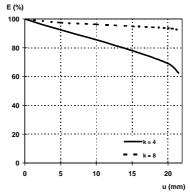
60

40

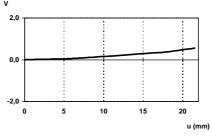
20

Slit orientation:

#### Relative illuminance



#### Distortion in % of image height u



Subject to change.
Printed in Germany 09.09.2002



**Carl Zeiss** 

Camera Lens Division 73446 Oberkochen Germany Telephone ++49-7364-20-6175 Fax ++49-7364-20-4045 eMail: photo@zeiss.de http://www.zeiss.de/photo